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The Field.

Harvesting Grain.

A great difference of opinion exists between the theoretical writer and the practical farmer, as to what is the best period of time at which wheat and other grain should be cut or harvested.

The theorists say wheat should be cut while green, or some fourteen days before the grain becomes fully ripe, and not only advance many plausible scientific reasons for the utility of this practice, but also give the results of numerous experiments as tending to confirm their theory. They argue that both the straw and grain contain starch and sugar, a portion of which would become converted into woody fibre, or into bran, were the crop allowed to ripen on its roots; while if cut while green they would remain unchanged, and the grain would then yield a larger proportion of flour, and the straw be of greater value as food for stock.

This sounds very fine, but like a great many other theories, does not seem to bear the test of actual experience, as if it did, farmers are too practical not to have found it out long ago, and acted accordingly. Still, it must be admitted that they often go to the other extreme, and leave the grain standing till it gets over-ripe, in which case serious loss may occur from the shedding of the grain during the process of harvesting, and removing to the barn. This is especially true of barley and those varieties of wheat that are smooth-headed and beardless. Barley may be, and often is, cut at an earlier stage of the ripening process than other grain. The colour of the grain in barley has so much to do with the value put upon it, that, in order to have it of a clear bright colour, it often needs to be harvested a little before it is ripe, and left to ripen in the shock, or cock, as the case may be, and great care taken not to allow it to become exposed to a continuous or soaking rain, which is very apt to give the seed a streaked and discoloured appearance.

This renders it necessary that the farmer should watch the weather, cut his barley crop and put it under cover, as quickly as he can, and get it harvested while the days are full of sunshine and warmth, at the season of the ripening of this crop.

Rain hurts barley less when it is standing on its roots than when it is cut, and less when it is lying in the swath than if it is bound or raked up. Barley should never be stacked, in this country, and is better to be put away where it can be readily got at in the barn, to thresh it out as soon as harvest is over, for it generally commands the best prices in the fall, while the season of navigation lasts.

The best time to cut wheat is as soon as the berry is solid, and the straw turned to a yellow colour. The general use of reaping machines now renders it a comparatively easy matter for the farmer to so manage his work as to cut and carry every field of wheat as fast as it ripens, so that there is no excuse for delaying harvest operations a day longer than is absolutely necessary. In these days of progress, a farmer who takes an agricultural paper, and watches the market, sees the turn it is taking, and often finds it profitable to harvest, thresh out, and market his fall wheat at once; or if he has a crop of some new variety, to get it ready in good time to dispose of for seed before seeding time comes. When wheat is cut just at the right period, no time need be lost in waiting for it to dry out, so as to thresh well, as would be the case when it is cut in a semi-ripe state, entailing also a necessity for the crop standing out in the field for a length of time, at the risk of becoming injured should a spell of wet weather come on before it is fit to go into the barn or stack.

Oats are and can be cut at an earlier period of ripeness than other grain, not only without injury, but with manifest advantage, as they are not only so peculiarly liable to shell out from the stalk when cut fully ripe, but the straw contains a larger percentage of saccharine juice than any other, which can be in a measure retained by early cutting, the straw then being of more value as fodder for stock.

In Australia, the bulk of the hay used for feeding to horses in the cities and towns is made from oats cut when in full bloom, or just enough past it to give an admixture of half ripened grain with the fodder.

Every farmer does not grow grain enough perhaps, to make it worth his while to purchase, or even use a reaping machine; but the introduction of these great labour-saving implements enables those who need to depend on manual labour to secure their grain crops, to get more of it than they otherwise could, and by concentrating their available labourers on one harvest-field at a time, to have it cut and got under cover in a short space of time. In this way the small farmers reap a great advantage from the employment of horse-power in harvesting, though they may not themselves make direct use of labour-saving machinery.

Binding and Carrying Grain.

Many of the reaping machines now in use are so constructed as to allow a self-raking attachment to be put on them at a small additional expense. This, if it works well, is a great saving of labour to the binder, as it does away with the necessity of his carrying a rake, or employing a boy to rake up the straw into sheaves for him. Still, it must be admitted that more loss of grain occurs under such a system of rapid work, than where hand-raking is resorted to; and it is only on farms where there is a large crop of grain to be cut, and the work requires to be done rapidly, with but few hands, that it will prove profitable to employ self-rakers. Binding is a part of harvest work that not only requires a skilful hand to accomplish it well, but is also so very fatiguing to the laborer employed, that only the highest wages will tempt men to engage in it. All attempts to construct a machine, or fix an attachment to a reaper, that would accomplish the very difficult task of binding the sheaves, have

hitherto failed, or at least none of them have proved satisfactory when put to the test of practice in the harvest field. Binding with wire has been tried, but the wire was found to be too troublesome at threshing time.

In general, too few hands are employed at this work of binding when a reaper is going its rounds, and as a consequence of being required to keep up with the machine, they often do their work too hastily, leaving a great deal of grain in the straw scattered over the ground. Often they are supplied with whiskey, and urged into rivalry with one another, each endeavouring to be able to boast, at night, of having bound the most sheaves. We have known a man to boast of having bound 690 dozen of sheaves in a day. As a natural consequence of such hasty work, when the grain comes to be drawn to the barn, a large proportion of sheaves break loose, entailing a great loss of time and labor in rebinding them.

Setting up the shooks usually falls to the lot of the binder, though it is sometimes done by boys. If the crop is large and being rapidly harvested, a man is or should be detailed to attend to this work, which will require all his time, if it is to be well done. Each shook can be made to contain the same number of sheaves, so that the owner, by counting the shooks, can form an approximate estimate of the yield of the crop, and the amount of room required for housing it. It is of consequence that the shooks be nicely made, put together so as to stand firm, and yet allow free ventilation through them to dry off the moisture, from any grass or weeds that may have got bound into the sheaves. Should the weather threaten to be wet, the shooks may be capped, to save the grain from getting discoloured, or sprouted by rain, but the caps are to be removed as soon as dry weather comes on.

The work of pitching and carrying the grain to the barn or stack is too often entrusted to the boys, if there are any on the farm, and as a consequence many sheaves fall out of the load on the road to the barn. Sometimes every third or fourth load tumbles out of the waggon. Boys can do the pitching well enough, but a careful hand should be on the load to stow away the sheaves and place them snug and compact. A good hand will stow away quite as many as the team can draw, without making the load so high or wide as to run the risk of upsetting, or getting jammed between gate posts. The pitcher ought to send up each sheaf separately, with the head towards the loader, and pitch no faster than he can get them

stowed away, otherwise the loader cannot do his work either quickly or properly. One load upset, and many sheaves broken and grain shelled out, will cause more loss than the little time gained by hasty work will pay for. When the load reaches the barn, the loader should do the work of stowing away the sheaves in the mow, and if the work is well done, there will be room found for many more sheaves than if the work is left to be done by a lot of boys, who often care more for the fun they can make out of the operation than for saving barn room for the crops.

Can we not reduce the expense of the Turnip Crop?

The turnip crop is every year being more and more appreciated in Canada. In districts which will not produce fall wheat, it is indeed a *sine qua non*, and the cattle fattened by it are now depended on to produce the cash necessary to carry on the farmer's operations. The manure resulting from the cattle feeding is only of secondary importance to the cash obtained for the cattle, and if it were not that the crop will not bear the expense of hired labour to any great extent, added to the necessity of housing in the winter, the area sown with turnips might be increased until the farmer could, as in England, afford to buy large flocks of sheep for the purpose of consuming a large portion of the turnips on the ground before the frost destroys them, instead of, as now housing or pitting the entire crop.

Theoretically the benefit of the turnip crop could be increased in two ways; first, by having the crop so forward, as to ensure its coming to perfection at so early a date as to give time for the consumption of it on the ground by sheep; and secondly, if the late crop, sown at the ordinary time, could be so managed as to avoid the expense of hoeing and singling. Now, apart from the question of expense, both ends are attainable; and when this is once shown, the practical knowledge and common sense of the farmer ought very soon to provide the means for the attainment of so desirable and profitable an end.

William Cobbett, the great English Radical and agriculturist, was the first person to put on record and to practically show on a large scale, that the Swedish turnip, (I do not mean the modern improved hybrid Swedes and yellows, for they were not then known, but the old genuine Swedish turnip,) would produce a larger and a better crop when transplanted, than when sown and hoed to the necessary thinness in the ground,

The success he met with in transplanting Swedish turnips was almost marvellous, as may be seen on reference to his "Farming," "A year's residence in America," and "Cottage Economy." He showed that the Swed-

ish turnip both could be, and was by him at Long Island (United States), transplanted with success, and that it would flourish and grow when set out in the summer time, notwithstanding the ardent heat of the American summer. His statements at the time, like all new doctrines, were looked on with great suspicion, and even ridicule, and it was not until he carried out the same system at Botley in England, and like our present Meech, invited all to come and see the roots in the field, that Englishmen came to believe his statements. Cobbett insisted that in England all that the Swedish turnip required was "good ground" and "time," and "room to grow." Good ground he obtained by manure and deep tillage, draining and general good husbandry. In the transplantation of Swedish turnips, he insisted on two things:—First that the plants should be strong and healthy, that they should not be fly-bitten, and that they should be extracted from the seed bed with the least possible injury to the root; and secondly, that they should be planted in "newly moved ground." So particular was he in this latter respect, that if the plough gained on the planters, the plough was stopped until the planters came up, and he declared that half a day's advance of the plough before the planters would ruin the crop.

The first grand point he attained by sowing the entire seed, in seed beds, under glass, in the same way as early cabbages are raised. The soil in which the plants were sown was composed of the lightest and richest material, so that the plants could be raised and drawn forth with the least possible injury, while being under glass and with bottom heat, the fly never attacked them. Before transplantation the beds were soaked with water to moisten and loosen the soil, and in this way the plants were scarcely deprived of their fibrous roots, and never of their tap root. When separated the plants were dipped into clay and water, made rich with liquid manure, so that each root was protected in the same manner as the nursery men protect the roots of their trees before shipment. The plants were only withdrawn from the bed in small numbers as wanted, and were planted in the "new earth" before the roots had time to dry. The consequence was great success, and very few losses. Vacant spaces were afterwards filled by taking plants from the seed bed, treated in a similar manner to those first planted, and the ground of each space being first moved and turned over with a spade. Eventually his crops were beautifully even, and the amount per acre of weight far exceeded that of a broad-sown, and hoed, or of a drilled crop.

The writer having heard of the wonders of the transplanted turnips, visited Botley, and saw the field wherein they then were. The leaves and tops had just been removed previous to harvesting the crop for use at the cattle byres, and also for ascertaining the

total weight grown. The remark of the friend who was with the writer, (and who had been a strenuous disbeliever till that time) was, that the turnips were like "little beehives;" and so they really were. He of course meant the old round straw hive; no other was then known in that part. The weight of the crop almost exceeded belief, and the quality of the turnips was most excellent. No doubt, there were disadvantages, or the plan would have been more followed than it was; but many others tried it and succeeded equally well. On the farm on which the writer lived, the plan was tried with full success. One remarkable thing was that the deep roots of the turnips instead of being the regular top roots, became a mass of tips, as if the great bulbs required more than could be obtained from a single source.

It is not necessary to go more deeply into this matter now. There was the fact proved, that the Swedish turnip crop could be made a certainty, could be planted as early as early cabbages, and would continue to grow and increase in size until the frost stopped them. Now, in England, they had not the incentive for early Swedes that we have in Canada, and therefore any plan that gave less trouble was preferred. Their winters admit of the turnips standing out, and being fed on the ground. Our winters require the housing of the crop, or the consumption of it on the ground before the frost and snow drives the sheep into the yard and winter quarters. The turnips as we now grow them cannot be consumed extensively by sheep on the ground, but if the turnips could be forced to a large size, some considerable length of time earlier than they now are, there would be so much more time for the sheep to feed, and in that time they would fatten; and better than all that, the results of the turnips in the way of solid and liquid manure would be on the ground without the expense of carrying it there, the land would be as clean as land could be, and in the primeval possible condition for a crop of barley or spring wheat. The first proposition may therefore be granted. Turnips can be grown so early in Canada as to enable full and large crops to be fed off the ground by sheep. I say nothing at present as to the expense of this course. I will come to the expense bye and bye.

The second requisite for a cheap turnip crop is the dispensing with manual labour and hoeing. Let us see now whether this is not as possible as the early maturity of the crop by transplantation, still avoiding all questions of expense; looking to facts first, and in future, examining to how expense can be lessened, or avoided.

When turnips are sown on new land, that is, land newly cleared from the forest, such land cannot be hoed, neither does it require it. There is no fly in the new ground, the roots of the trees prevent hoeing, and the seed is so thinly sown that the turnips never want thinning or singling. If it were not

for the expense of first clearing the land, and the fact that many farmers have no new land to clear, turnips on new land would be the cheapest crop of that root obtained; but physical difficulties prevent that course in most cases. The fact, however, shows that turnips, if favourably situated, will do without hoeing; let us now see if we cannot by some system of cultivation banish the hoe altogether, or nearly so.

Turnips, to do well, must be on a fallow, and the fallow must be manured; the manure must be under the soil and well rotted, and the land must be clean. A very intelligent farmer from Nichol was talking to the writer a short time since, and amongst other questions he was asked—"How did you get on with your turnips last year in the drought?" and the answer was, "Never better. I never had a better crop. It was the envy of the neighbourhood." He was asked the reason, and replied "I made a half fallow of it the fall previous, and ploughed in my manure in the fall—leaving it so all winter. The consequence was that when the land came to be worked in the spring, the manure was all well rotted and mixed in the ground, and the land did not lie too light, as it does when the manure is ploughed in at the time of sowing the crop;" and he added, "I will never again manure turnip land otherwise than I did this time," namely, in the fall. This is one point gained, and the example cannot be too much followed. The next is as to weeds.

Now, we all know that every time we plough, we bring up to the surface, a fresh crop of weed-seeds, which lie naturally in the ground, and as soon as they feel the influence of the air they will grow. We also know that if flat or scuffle hoed often enough, and if this is done without exposing too much of fresh surface, we not only kill all the weeds that have grown, but we prevent other naturally sown weed seeds from germinating, because they are too deep in the soil. We have killed all that are within an inch or so of the surface of the soil; those below that depth will not grow, for want of exposure. But the hoeing must be even, and shallow, to produce this effect, and must on no account go too deep. After the weed seeds are all killed, and when the fly season is past, then sow your turnips broadcast, so thinly that they will never want singling or cutting out, roll the ground slightly, and the turnip seed being on the top, and in a favourable position, will grow, although the weed-seeds will rot.

To attain this end, plough in your manure in the fall; plough again once or possibly twice in the spring; and harrow and roll all down as smooth as possible; then take a light scuffle horse hoe or some similar implement, at least eight feet wide, and as fast as the weeds grow, cut them off, first giving a light rolling each time to make all fine, and break all the little clods. If instead of the scuffle horse hoe, a very light harrow is

used, the teeth of which do not penetrate the ground more than an inch, and if this is used often enough, it will keep down the weeds without the hoe. They sell such an implement as this in England; it is called "Phillip's patent poppy and weed exterminator." It takes eight feet wide, requires only one horse, and a boy, and will easily harrow or cultivate eight acres a day; the teeth are prevented from going too deep into the ground by wheels at each end, and the implement is so constructed as to take a shallow or deeper till as required. These dressings of the soil must be continued till the seeding season for the turnips comes. Then sow the seed, and lightly harrow with the above implement, or lightly roll alone will be as well, and you have given the weeds such a "back set," whilst you place your turnip seed in such a favourable position, that the latter will take hold and grow with rapidity, and in a short time cover the ground, whilst the weeds will be conquered for the season.

But it will be said, this is all theory, and we want practice. Well, it is theory, but it is theory founded on the strongest and most positive of facts. It is the business of the agricultural writer, not only to deal with actual bare and naked facts, but to start theories. The chief use of an agricultural paper is to gather together thoughts, opinions, practices, theories and facts, lay them before the readers of that paper, and let them judge for themselves. If they are not capable of judging, they read to but little profit.

Others will say—Yes all this is very fine, but it requires new implements, and my farm does not pay well enough to afford to buy them. Very true, this may be the case; but when the ingenious man once is told what he wants, and what will answer, he very soon adapts something to the end required. He cannot possibly afford a "Web Harrow," or a "patent Poppy Exterminator," but when once he knows that he only wants to make the ground fine to half an inch or an inch in depth, he will with his own hands, or those of some ingenious neighbour, make a light roller out of the trunk of a small tree, and a weed exterminator out of thorny bushes, nailed or pegged on to the frame of the roller. The ingenious man, who during the winter wants a light sleigh to travel with, if he cannot buy one, does not go without one, but goes to the nearest bush, and with an axe, drawknife and auger, makes a "jumper" which runs as light as a sleigh, if it won't last quite so long.

It has thus been fairly shown not only that the season during which the turnip crop can be consumed on the ground can be lengthened by an alteration in the growth of the crop, but also that the expense of hoeing, (which is the chief expense of the crop,) can be done away with. I have shown the "possibility;" let the reader apply the facts here given to his own individual circumstances and necessities, and some good must arise, and I shall not have written in vain.

In a future article I may possibly go farther into both systems.

How to Grow Turnips.

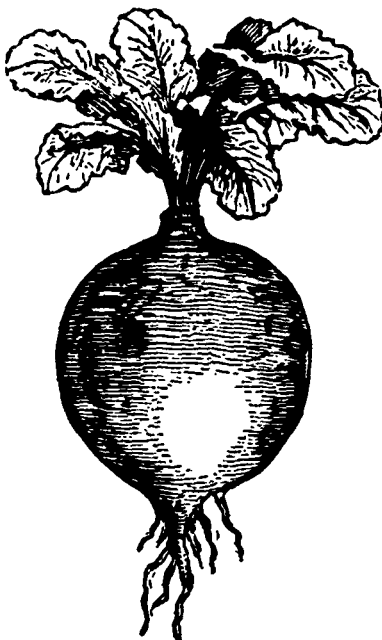
One would imagine that so much has been already written on this subject, and the crop is one so generally grown on Canadian farms, that it would be superfluous to say anything more about it. But we are constantly receiving letters asking information on the best method of the planting and cultivation of turnips and other roots, which shows that they are still gaining in favour with our farmers, notwithstanding the supposed cost of the crop, and that there are still many novices in the business of root growing. There are two kinds of roots that are called by the name of turnips, namely, the turnip proper, having a round and rather flat bulb, either white or yellow in colour, and rough, light green leaves, and the Swedish turnip, or Ruta Baga, which has a solid, yellow, and rather oval or elongated bulb, and smooth dark green leaves. The former is the kind most generally grown in Great Britain, for winter pulling or feeding to stock on the ground, and it is usually grown as a supplementary crop after beans, or on the stubbles after grain harvest, but is not so well adapted for storing as the Swedish turnip, and therefore not much grown here in comparison with Swedes.

In the newer settlements, where a clean, well-burnt surface of newly-cleared forest land can be obtained, all that is necessary to do is to sow the seed thinly broadcast over the surface, any time between the 20th June and 10th or 15th July, covering it in with a bush harrow made by tying together some brushwood at one end, and drawing the thing over the ground among the stumps by means of a yoke of oxen or a single horse. Failing that, a hand rake may be used; or should a heavy shower of rain follow the sowing of the seed, no covering becomes necessary, as the rain will wash it into the light, rich surface soil of decayed vegetable mould and ashes. After the plants are well up, and it can be seen how far they are likely to cover the ground, they should get one hoeing, just to thin them out to the proper distance apart that will allow of the bulbs having plenty of room to form good-sized roots, as weeds seldom make their appearance on newly-cleared land. This is about all the work that will be required until the turnips are to be drawn and stored, which is generally done by putting them into small ridges or pits, of about one hundred bushels each, on the field, just before the ground freezes up, with twelve or fourteen inches of earth thrown upon them, without any straw. We have grown eight hundred bushels per acre in this way on a twenty acre field, years ago, when what are now old settlements were newly-cleared lands.

In the older settlements, where the land has been deprived by successive grain crops of nearly all its vegetable humus, and the potash left from the burnt-up timber, and the soil has become infested with noxious weeds that are ready to dispute with the turnip for

the mastery, it becomes necessary to adopt more careful and expensive modes of preparation and cultivation.

For those who can afford the necessary time and labour, the plan suggested by "Vectis," in another column, as having been originated by William Cobbett, many years ago, may answer well. The part relating to the preparation of the soil by fall ploughing, and the killing out of the weeds by successive harrowings of the surface before the plants are put out, seems feasible enough, but we confess to having doubts of the utility of the transplanting method in Canada, where labour is scarce, and farmers are so fully occupied with other crops till nearly the first of June, that they may be excused if they do but partially adopt it, more in the way of the trial of a novelty than as a general method of starting this important crop.



The land in any case should be well prepared by repeated ploughings and harrowings before the drills are to be laid out. At this point there are two diverse methods in favour among farmers, namely, the ridge, and the flat drills. The former is usually followed where fresh unfermented long manure is to be applied to the crop, and consists in throwing the land into ridges twenty to twenty-six inches apart, with a plough, filling the furrows with long manure spread evenly in, at the rate of twelve to fifteen waggon loads or twenty-five cart loads per acre, then covering the manure by splitting the ridges again with the plough, leaving ridges over the manure. The drills so made are then to be somewhat compressed and flattened with a roller, and the seed sown along the centre of each, either with a turnip drill or by hand, as may be most convenient, and covered lightly not over a quarter inch in depth. About two pounds per acre will be necessary. Even more may be given where the fly is likely to take a good part.

Where short well composted manure can be had, it is best to apply it to the soil at as heavy a rate as the grower can afford; plough or cultivate it in lightly, harrow the land to a fine tilth, then sow the seed in drills on the flat surface, taking care to run them perfectly straight and evenly apart. Cover by rolling with a very light roller, which will compress the soil about the seed, and leave the surface smooth and free from clods. We have generally found the first week in July about the right time to sow, say the last thing before haymaking begins to become general.

As soon as the young plants show above the soil, dust finely slaked lime, superphosphate, or a mixture of soot and ashes, along the drills in the early morning, while the dew is on, or immediately after a rain shower. This will keep off the fly, and stimulate the plants into a rapid growth. When they are grown in flat surface drills, they can be planted nearer together, say 15 or 20 inches, and if the land is rich, or the manure well composted and incorporated with the soil, ought to produce a very heavy crop of nice medium sized bulbs, which are always to be preferred to those that are larger and coarser. Above we give a cut of what a Ruta Baga root should be like when well grown and properly cultivated. When the drills are too closely grown, it is, however, difficult to have them cultivated in any other way than by repeated hand hoeings, as in England, for an ordinary scarifier or drill hoe will not work well in such a crop. The ridge system is therefore the most generally adopted here, and has one advantage and not a small one either, in that the work of destroying the weeds can be commenced early, before hand hoeing becomes necessary to thin out the turnips.

The first hand hoeing is usually done to the flat drilled crop as soon as the turnips are large enough to be distinguished from the weeds, and the thinning out as soon as the plants are strong and well established. After the thinning out is done on either the flat or ridge system, the cultivation is directed towards destroying weeds, keeping the soil mellow, and permeable to atmospheric influence. The more the scarifier or drill cultivator can be used up to the time the cool weather and early autumn rains set in the better. After that the crop is to be left undisturbed for the bulbs to swell and ripen before hard frosts come, and the more moisture they get the larger they will grow. Let it be borne in mind that neglect or inattention on the part of the grower is absolute ruin to this crop. What is worth doing, is worth well doing, should be his axiom in this instance, as in every other undertaking he engages in.

Coal ashes and cinders make an excellent material for walks and roads, and in many respects are preferable to gravel,

Economy and Improvement vs. Westward Emigration.

The formation of farm yards, and consequent preservation of manure and ultimate regeneration of our partially exhausted soils, is a subject that can scarcely be too often touched on. As the case now generally stands all manure is allowed to lie out of doors, exposed to the action of rain and bad weather, without any attempt to retain its most important constituents. Most farmers say that "were they going to begin again," a great deal might be done, but as they are now situated, their outlay has been made, and they cannot now alter their buildings so materially as to enable them to have manure cellars under their stables, nor extensive sheds to cover in their farm yards to prevent the loss by heavy rains. I am one of those who believe greatly in keeping my eyes open to the doings, and sometimes my ears open to the sayings of my neighbours. I have long since come to the conclusion that men are not fools, and that straitened circumstances do more towards preventing progress than want of sense. Moreover, I often find many of my friends sound on some particular points connected with their vocation, if they are old-fashioned and slow on others, which have for some reason been more remote from their experience. Depend on it, if we all believe that every man's experience, and practical necessities, are to a great extent valuable as precedents, we shall be wiser to reflect on them than to condemn them without thought. Farmers have for the most part followed the course which they have found the best, and perhaps the only one open to them, with such means as they possessed at that time.

This has been exemplified in a thousand cases. Men have begun life on a farm with little or no means, and have been very glad to get a roof to cover their cattle and grain without feeling called on to trouble their heads with further expenditure, to enable them to turn things in the future to the best advantage afterwards. When better circumstances alter the case under which the original crude designs were carried into execution, amendment and alterations would be made.

This is most particularly sure to be the case in the early settler's farm buildings; and indeed when fortune smiles on his endeavours in after years, the old place that suited him so long "from circumstances" is still the one he most clings to, and he feels averse to the apparently useless outlay of alterations. To meet this difficulty, agricultural writers too often go into the other extreme. They preach so much reform that to follow such preaching is almost or quite impossible. "Where are the means to do this?" says one. "No doubt all we read of is true, but, bless my life, if I were to follow out one half of what I read about, as quite practicable and even necessary, I should be run into irre-

trievable debt before I knew what I was about." No doubt whatever, this is in the main true; no doubt also that all the writings of great and experienced agricultural chemists are true; but in my opinion they go too far; they assume that because they find such and such constituents in the ashes of certain plants, that nothing but the application direct of those constituents will produce a good result. Now we all know that the same land exists, at the present time, that has existed since the time of the flood, and with very little alteration of quality; and as good crops can now often be grown with good tillage, and without any of the modern manures, as formerly, when the land had never carried a crop. And were it otherwise, and if nature was not our great practical restorer, how could such immense quantities of organic matter be retained in the soil for such a vast number of years, if each crop had reduced it as we are led to suppose it does? Why the thing is absolutely impossible, or the land must have been a perfect mine of organized matter formerly; and this we know is not the case, and we have plenty of land now that has never borne a crop.

We read in almost every American Agricultural paper glowing accounts of the Western Prairies, and what heaven on earth they are to the agriculturist in comparison with poor Canada. In these accounts, the fencing with oak or ash posts, (that rot almost directly, and cost nearly 20 cents each), is thought little of as an item of expenditure, whilst here the same posts would not be used if laid down for nothing at the farm. There lumber at \$20 to \$30 a thousand, and very common at that, is supposed to be comparatively cheap, and an item of expenditure not worth calculating; whilst here the best common lumber never exceeds \$6 to \$8 per thousand, and often in favoured districts can be procured for much less. The taxes here are thought oppressive enough; but in the letters we read from Kansas and Missouri, a far heavier burden does not seem to be any annoyance, although we all know that you can hardly sneeze there without being taxed for it. All articles of household consumption are double in price, and generally inferior in quality in that favoured land. People here, with what is termed "a run out farm," gather together \$100 and go to the Western States to prospect, spend their money on the road freely, and think they will always be able to do so; everything is fresh, and their minds are exhilarated by travel and sights that are new to them, and for a time their sober judgments are carried away, and they take a disparaging view by comparison of the solid and real advantages of Canada. Depend on it, we had all better attend more to the homely practical comfort we have than run away to the west after something we do not entirely understand. These very men who go west and return after their \$100 are spent, will only look on the black side of everything here, and the

bright side there—they at once advertise their farms, "pull up stakes" and leave Canada; in my firm belief never to regret it but once, and that as ever after.

As my motive is simply to assist, not by any means to condemn, I will in a future communication proceed to speak of the practical arrangement of any farmer's farm yard. I propose to adapt my curative process to almost all cases requiring such cure, and to try and induce my brother farmers to follow the wise course of an old friend of mine who was impressed pretty much with the same idea that I have endeavoured to express, but who thought better of it, and declined selling out—to show that with ordinary precaution, and some money combined with energy and brains, the farm that now grows ten bushels of wheat an acre will produce 25 if not 30, and in a great measure bid defiance to the ravages of the midge, an insect pest that, by the by, is quite as bad in the Western States as here in Canada.

C.

NOTE BY EDITOR.—In reference to one portion of the communication, in which the writer speaks of the exhaustion of soil, we would just remark, that the natural course of vegetation does not exhaust, but rather enriches the soil, by eliminating plant food, and restoring it to the land in decayed vegetable matter. It is the artificial method of growing crops and removing them entirely from the land, without any return, that exhausts or impoverishes.

Wheat and Clover.

The great authority in agricultural chemistry in England of the day is Dr. Voelcker. He has found the necessity of combining practical farming knowledge with the most extensive researches in chemical science, and the result has been that his experience is now regarded with the greatest respect, and his dicta in agricultural matters are adhered to not only by theoretical but by practical agriculturists.

A short time since, the Doctor delivered a lecture, at Hanover Square, before the Royal Agricultural Society of England, on his chemical investigations in 1868. The paper is extremely interesting, and well worth transferring entire to our columns, were it not for its great length, and its being too learned for the general class of readers. We shall therefore condense his investigations on the subject of wheat and clover, which are by far the most important for Canada. After going deeply into the subject of chemical manures, he says:—

"I have come to the conclusion that the very best preparation, the very best manure for wheat, if you will allow me thus to express myself, is a good crop of clover. Now at first sight nothing seems more contradictory than to say that you can remove a very large quantity of both mineral and organic food from the soil, and yet make it more pro-

ductive, as in the case of clover. Nevertheless, it is a fact that the larger the amount of mineral matter you remove in a crop of clover, and the larger the amount of nitrogen which is carried off in clover hay, the richer the land becomes. Now here is really a strange chemical anomaly which cannot be discarded, and invites our investigation; and it is an investigation which has occupied my attention, I may say for more than ten years. The explanation is very simple, though puzzling when you know not the chemical points that are involved in the investigation."

The Doctor then goes into some extensive calculations and analyses to prove his case, and continues:—

"We should, therefore, naturally expect that clover, which removes so much more nitrogen from the soil, would be greatly benefited by the application of nitrogenous manures; but the reverse is the case. Wheat, it is well known, is benefited by the application of nitrogenous matters, but not clover. On the other hand, clover is benefited by mineral manures, and at the same time it leaves the land even in a better condition in this respect for the succeeding grain crop than it is without the intervention of clover. I believe a vast amount of mineral manure is brought within reach of the grain crop by growing clover. It is rendered available to the roots of the grain crop, while otherwise it would remain in a locked up condition in the soil. Clover, by means of its long roots, penetrates a large mass of soil. It gathers up, so to speak, the phosphoric acid and the potash which are disseminated in the soil, and when the land is ploughed the roots are left in the surface, and in decaying they leave in an available condition the mineral substances which the wheat plant requires to enable it to grow. Although in clover hay these mineral matters are removed in great quantity, yet the store of mineral food that we have in six or twelve inches of soil is so great that the quantity removed is utterly insignificant in comparison with what remains.

"Some experiments bearing on this subject were tried by me at Leighton Buzzard, upon the farm of Mr. Robert Valentine. We had a capital field of clover, and I thought I should have a good opportunity of ascertaining whether there was more nitrogen accumulated in the soil after the clover crop was cut twice, or whether more was accumulated when the clover was mown once, and then allowed to run to seed. At first sight, you would think that the land was in a worse condition when the crop was grown for seed. We know, indeed, that this is generally the case, but in clover we have a remarkable exception to this rule; and I find, on looking into this matter, that, after growing clover for seed, a very much larger quantity of nitrogen remains in the surface soil, in the first six inches of soil as well as in the second six inches, than when the clover is mown

twice. I have ascertained that when you feed off clover by sheep, when it is still young, and everything is returned to it as it is removed from it, the land is in a worse condition than when you take off the clover hay. This is an anomaly. You say it is against all principle and against all reason. But when you see positive evidence in our fields, I think no scientific man has a right to say that it is against all reason and against all principle. It is certainly not against fact. All who are practically acquainted with the subject must have seen that wheat invariably grows less luxuriantly when you feed the clover off quite young, and that the best crop of wheat is produced when you grow clover for seed. I have repeatedly and repeatedly seen it. Referring to those clover investigations, I would just give you the total amount of nitrogen which I found in different layers of soil in the same field, and upon one half of which the clover was mown twice, and upon the second half of which the clover was mown only once, and then left for seed. The percentage of nitrogen in the clover soil twice mowed, for the first six inches amounted to .168, in the second six inches to .032, and in the third six inches to .064. Thus you see that it becomes very much less the deeper you go down. The accumulation takes place chiefly in the surface soil, and I believe it is principally due to the dropping of the leaves. When we grow clover for seed, those leaves continually drop and enrich the surface soil; and if it be the case, which I think is likely, that the clover tribe of plants is satisfied with the ammonia which exists in the atmosphere, we can at once account for the accumulation of nitrogen in the soil. The clover plants take the nitrogen from the atmosphere, and manufacture it into their own substance, which, on decomposition of the clover roots and leaves, produces abundance of ammonia. In reality, the growing of clover is equivalent, to a great extent, to manuring with Peruvian guano; and there is a larger amount of nitrogen accumulated in the first six or twelve inches of soil than there is in the heaviest dose of Peruvian guano that any person would think of using.

"Thus, there is more certainty of growing a good crop of wheat through the instrumentality of clover than through the direct supply of nitrate of soda. These, then, are the chief points which have been established, I believe, by my chemical experiments in the laboratory with respect to the chemical history of the clover crop"

Rotary Engine for Farmers' Use.

There are, probably, many of our best farmers, who are quite unacquainted with the term, "rotary engine." Their ideas of a steam engine are principally formed from seeing the ordinary engine in use attached to locomotives, flouring mills, saw mills, and such like applications of the well known ordinary steam engine. But I have great

faith in the recent invention of Messrs. Hamilton & Sons, of the St. Lawrence Foundry, Toronto, who, after two years trials, have produced the long desired "rotary engine." This consists of a revolving centre with wings attached, that close and open as it passes certain points within the outside casing. These wings are not a new invention, nor is the rotary motion a new invention. Probably thousands of trials have been made to produce an engine that would go continuously in a circular direction, instead of back and forth, as we see them ordinarily used, but hitherto without perfect success. The engines made would go round well enough, and had a certain amount of power, but there was always an unequal friction that wore some part away so fast, that the engine was virtually a failure, as regards any practical utility to be derived from the adaptation of the rotary instead of the crank motion, as ordinarily used.

The Messrs. Hamilton have, it is hoped, quite overcome this difficulty. Their engines are so constructed that the pressure all round and on each side is equalized, thus reducing all wear in any one section of the machine, and causing the revolving centre to "float," as it were, in steam. The great benefit to be derived is extreme cheapness, as the cost will not exceed one-fourth that of an ordinary engine; great simplicity, as no skill is required to manage them. All that need be done is to open the communication with the boiler, and away goes the engine round and round, only requiring oiling, which any boy can apply, to prevent wear. The corner of any room will contain engine and boiler. A six-horse engine and boiler can be erected in a space of five by five feet, eight feet high, with outlet to the air for a chimney, about twice the size of an ordinary stove-pipe. The speed is another great advantage, as smaller pulleys or drums will do the work, and lighter and narrower belts, these engines being calculated to run about two hundred revolutions in a minute, with perfect ease.

Farmers have long required such a machine. Nothing uses up horses faster than threshing machines, and the work they do is very small in comparison with a six or eight horse-power rotary steam engine, and the cost of feeding the horses is five times that of feeding the engine; moreover, the engine eats nothing when idle. The total weight of engine and boiler would not exceed an ordinary two-horse team load, and the moment the waggon stopped, on which the engine was loaded, the engine could be set to work. No staking down wanted, or making a track for the horses. Light the fire, and put on the steam, and the man who feed the machine will call out to stop long before the engine will be fired. The fuel consumed is very small. About one-third of a cord of common soft wood will run the engine twelve hours at full speed. Then, for sawing wood, nothing can be better adapted, or for any

kind of work on the farm where power is used. It would require very little work so to adapt its power as to make the engine drive itself on common roads to the different farms where its work was required. This adaptation of steam is now a fixed fact at home. Many thousands of tons of goods are now moved by ordinary steam traction engines in England. When any heavy piece of timber, engine belt, cylinder, girder, or in fact any great load, has to be transported from the manufactory, or other locality, the contractor does not now necessarily send for his horses, but for his engine, and twenty tons is nothing uncommon for one load on English roads. At present our bridges and culverts would not generally bear such great weight, but they would all of them bear the light load of a small threshing machine, engine, and carriage—not as much weight as an ordinary two-horse load and team included.

The writer has seen several of these rotary engines at work, and they, so far, do their work well, and are, apparently, all that is claimed for them. One great advantage about them is, they are all warranted for one year, so there is little or no risk in buying and proving the article.

This is the age of improvement and progress. Everything that saves labour is of immense value to the farmer. Labour it is that "kills" profit on the farm. With cheap labour, farming would pay well, better indeed than any other application of the same amount of capital, and with much less risk; so, anything that will lessen labour, and facilitate the farmer's work, must be a very great advantage to the community at large.

C.

The Turnip Fly.

There is no greater injury to the crops of the farmer than this insect—were it not for its ravages the Turnip Crop could be raised at far less expense than it now can. Human ingenuity has been taxed to the utmost to get rid of it, but hitherto without success, or at all events with a very partial degree of success.

Among the various methods which have been from time to time adopted are the following:—

ROLLING with a heavy roller at night.

ROLLING with a very light roller, to the front of which was fixed a sort of platform made smooth on the under side, and covered with bird lime or other glutinous matter, this being carried just above the surface of the ground and within the jump of the insect, so that when they are disturbed by the light roller and the screen coming over them, the insects jump up against the glutinous screen and are caught. Great numbers are taken in this way, but its efficacy as a remedy is very doubtful.

SOWING ASHES AND SOOT, or ashes alone, on the young plants during the time the dew is on them; this is one of the most efficacious

plans which has been tried. Strange as it may appear, the dust of dry earth or sand answers nearly if not quite as well.

SOWING RADISH SEED amongst the turnips. Many suppose that the insect has a preference for this kind of food over that of the turnip plant, and that as the radishes generally start before the turnips, the worst of the ravage is committed on the broad leaves of the radish rather than on the turnip, thus saving the latter.

SOWING ANY OTHER SEED OF THE SAME KIND OF PLANT, to which the insect is supposed to be particularly attached, such as ripe, the common kind of cabbage, or any other cheap seed; this is sown a little before the turnip crop, comes up before the turnips, and forms food for the fly.

SOWING THE TURNIPS AT TWICE, calculating for the first sown crop to be destroyed, while that sown a week later is to escape, the over sowed plants to be destroyed by the hoe.

All turnips are sown many times thicker than required; not more than one in twenty of the plants ever stand for a crop, the remainder being either destroyed by the fly, or hoed out in singling, to reduce the crop. If we could find some method of sowing the turnips so that they could be protected from the fly, and at the same time not require thinning out, it would most materially reduce the expense of the crop.

In one of our late English exchanges there was given the results of a most extended series of experiments made with various washes and substances, for the purpose of preparing turnip seed in such a manner as to resist the attack of the fly. All (some thirty or forty in number and extending half over the catalogue of substances within reach of the farmer) proved to be worthless, except the soaking of the turnip seed for from five to six hours in train oil, or linseed oil, the seed being afterwards dried in powdered dry earth, so as to enable it to be easily sown.

The effect of the oil was to render the growth of the plant far more vigorous than it was in either a natural or an otherwise prepared state; the seed leaf was darker, larger and fatter, than other seed leaves; the plant appeared to be nearly if not quite unmolested by the fly, it turned into rough leaf much sooner, the rough leaves being also in a great measure exempt from attacks of the fly, and the general growth continued afterwards to be superior. A long soaking in oil did not appear to be more beneficial than the six hours; it is a thing well worth trying, and is within the reach of all.

Items of Agricultural Experience.

1. All soils are benefited by being under-drained, but the benefit is most apparent and lasting in those of a clayey nature, or having a subsoil retentive of moisture.

2. After drainage, subsoiling and good cultivation are necessary to ensure good crops on heavy soils.

3. Lime is the best manure to apply to strong clay soils. It renders them more pervious to light and heat, and also corrects their acidity, by combining with some of the chemical salts in the soil, making plant-food of plant-poison.

4. Summer-fallowing is the most efficient and profitable means of preparing a strong soil for wheat, and of beginning a rotation after grass has been grown for a length of time.

5. Green crops ploughed under, when in the most succulent state, are powerful auxiliaries in rendering a light soil fertile, but if this is done too often successively, the soil becomes overcharged with carbonaceous matter.

6. Leached ashes applied in large quantities to sandy soils, or those containing too much vegetable humus, will greatly ameliorate their condition, and render them more compact.

7. There is no soil so poor or sterile but some mode may be found of ameliorating and enriching it.

8. Blowing sands may be gradually made productive by spreading six inches thick of straw over them, to remain till rotted. Then seed thickly with clover on the surface, without ploughing, and when the clover has taken hold and becomes established, pasture sheep upon the land for two or three years, preparatory to manuring and cultivating it.

9. Two successive grain crops on the same land leave it very foul.

10. Summer fallowing ameliorates a soil, and if properly done gets rid of most of the weeds and noxious plants infesting it.

Hungarian Grass.

The trouble about Hungarian grass is, that it is not generally cut at the proper time. I have raised it several years, and consider it the very best hay for horses. They will keep fat on it where on timothy they will grow poor. I sow half a bushel per acre. It then makes fine hay, and on good land should yield from 2 to 3 tons to the acre. Cut it when in the blow, before any seed is formed; wilt in the swarth the same as clover and make in the cock. The stalk is nearly solid and the hay very heavy, and if made in this way will be as green as grass, and a horse will want little grain for ordinary farm work. I only feed grain in the spring when doing heavy ploughing. Give your horses all they will eat of it, and they will fat with decent usage. But if allowed to turn yellow and form seed it is the same as any other grain, and will, of course, injure a horse the same as if he were feed wheat in the bundle to excess. Any over-feed of grain is bad. It is better to rake it by hand, but on a good soil you will tumble up a big cock in a small space.

If cut at the time I mention, it will sometimes sprout up again and make good fall feed or a green crop to turn under. In one case I cut at the second time for seed, but it was short.—*Prairie Farmer.*

Turnip Field Cleaners.

An implement that would accomplish the work of stirring the soil, and tearing out the weeds between rows of turnips, or other root crops, and at the same time not move the soil so much as to smother over the young plants with it, as is too often done by the



drill cultivators at present in use, would be a great help to our farmers. Such a machine has been invented, and brought into use in Great Britain, where it meets with great favour. We give a cut of this machine, from which it will be seen that it is a sort of harrow and cultivator combined, cleaning out four rows at a time, the spaces between the harrows being kept exactly over the turnip drills by means of the handles shown in the cut. It is called Dickson's New Patent Double Drill Turnip Cleaner, and is worked by one horse. It is patented in Britain, but not here, that we know of, and might be made by our own implement makers to advantage. It need not be costly. Major Greig, of Beachville, has imported one of them, and we were told it only cost \$25, including freight and all charges from Scotland. Such an implement would greatly lessen the labour and cost of the turnip crop, and could doubtless be so constructed as to enable the cultivator to use it between drills set closer together than it is possible to use a horse hoe or drill cultivator in. It is made only by Thomas Hunter, Maybole, Ayrshire, Scotland, from whom Major Greig obtained his implement.

Buckwheat.

We have never grown this crop, although we confess to a partiality for the griddle cakes made from it in winter. Our land has been generally kept in too high a state of cultivation to make it worth while to resort to growing buckwheat.

But there are many farms on which there are patches of neglected or over cropped soil that can be turned to little use, and on them buckwheat will grow and produce a remunerative crop when any other would fail. It delights in a warm dry sandy soil, and as it acquires much of its plant food from the atmosphere, will often produce fifteen or twenty bushels of seed per acre, where nothing else would produce a crop worth harvesting. From the last week in June to the second week in July, sometimes later, buckwheat may be sown, requiring usually a bushel and a peck of seed to the acre. If sown early the blossoms are apt to become unfruitful from the effect of the scorching sun during the last of July,

while if sown too late the frost may destroy the crop before the seed is matured. It will produce good crops on almost any soil, but is not in sufficient demand to make it worth while to grow it except a little for home use, and to feed to the fowls in winter, or a patch from which the bees may gather a store of late honey for their own use, after the boxes of good honey they have laid up for their master have been removed. Buckwheat honey, though good enough for bees, is neither wholesome nor agreeable for the use of man. Buckwheat is often sown on summer fallows to keep down the weeds, and its dense growth, together with perhaps some unknown noxious quality inherent in the plants, makes it so completely master of the ground that even the Canada thistle has been got rid of by sowing the land with successive crops of buckwheat. It makes a good green crop for turning under on poor soils, to enrich them by the decayed vegetable matter of its leaves and stalks. No stock of any kind like to feed on it, and we have seen it stated that cattle and horses have been lost through being compelled to eat it, which they will not do except when pressed by hunger.

BEET ROOT SUGAR.—Professor Voelcker thinks that the application of sewage at the early period of growth to mangold and beet root would promote the development of saccharine qualities, and also that the withholding to a great extent of ammoniacal manure, fresh barn yard manure, guano, and such like, and substituting super-phosphate of lime or similar phosphatic manures that promote early maturity, would produce a much larger percentage of sugar in the roots.

TOBACCO.—A subscriber, who is growing a small quantity of tobacco for home use, wishes to know how to dry and preserve it. We are sorry for him, and all others who indulge in the pernicious practice of smoking, or imbibing tobacco in any form; but desiring to be impartial, and set aside all personal predilections and antipathies, we would tell him just to hang up the stalks by the butts in any convenient room to dry. Our correspondent will find fuller information in the number of the CANADA FARMER for March 2, 1868.

CORN FOR FODDER OR SOILING.—Those who intend to give their cows good feeding through the summer drought by a little soiling, or keep up the supply of rich milk for butter-making till Christmas, should sow an acre or two of corn in drills. Make the land rich, plant the drills far enough apart to enable the drill cultivator to be freely used to destroy the weeds and mellow the soil. Strew the grains of corn along, about an inch apart, in lightly made plough furrows, and cover by harrowing lengthwise once. If to be used for soiling, the earlier sown the better. If to be saved and cured for fall and winter feed, sow about the first two weeks in July.

A machine has been invented and put in operation in California which, it is said, has cut, thrashed, cleaned and sacked the wheat from 20 acres in 10 hours, with only three men to work it.

HOW MANY PLANTS TO AN ACRE.

1	foot	by	1	foot.	43,560
2	"	by	2	"	10,890
3	"	by	1	"	14,520
3	"	by	2	"	7,260
3	"	by	3	"	4,810
4	"	by	4	"	2,722
6	"	by	6	"	1,210
10	"	by	10	"	435
12	"	by	12	"	302
15	"	by	15	"	194
18	"	by	18	"	134
20	"	by	20	"	103
25	"	by	25	"	70
30	"	by	30	"	48

Tlo. Weekly Press, in speaking of beet sugar manufacture, says: "In France and Germany they have found it so cheap, that cane sugar is scarcely in the market. The experiments on this continent have shown that a greater per centage of sugar is obtained from the same weight of beets than in Europe; and this, with a small tariff put on foreign sugars, in order to counterbalance the pauper labor of Europe, ought to make the beet sugar a very profitable article of manufacture, and beet raising a highly remunerative farm crop."

BUCKWHEAT is a good crop to sow on summer fallows in June or July, to keep down the weeds while haying and harvesting are distracting labour and attention from them. Sow about a bushel of seed per acre. If sown early, it will bloom in time to allow of the bees taking a good store of honey for their own winter use from the plants, before the time comes for wheat sowing. When harvest work is over, and the plants are in full vigour, they can be turned under with the plough as green manure, or if that is not thought desirable (and some, we know, are prejudiced against turning in green crops for wheat) set a mowing machine at work to cut the buckwheat, rake it up with a horse rake, and cart it to the barnyard to mix with the manure heap, before ploughing the land for wheat.

WHEN TO CUT GRASS.—Some one wants to know which field of grass should be cut first. This matter is not easily decided till near haying time. A good deal will depend on the soil and the kind of grass grown. Orchard grass, ryegrass, clover, or blue grass can be cut before timothy, in the order named. Red top can remain till the last. Usually, the hay crops on light, dry, warm soils, are fit to cut before those on heavier and more clayey ones, and newly seeded meadows before older ones. Those seeded down last year will be fit to cut before those that have already been mowed once or twice. It is better to cut too early than too late, and to make really good hay the grass should be cured in cocks rather than dried out in the sun.

The Dairy.

About Dairy Utensils.

It is really astonishing how small an amount of uncleanness in the vats, milk pails, or any other utensil used about the cheese factory, results in damaging the flavour of the cheese made. Wooden pails have, we know, been pretty well discarded for tinned ones at the factories, and yet once in a while, sometimes too often in a while, the entire making of a day's milk is spoiled through some slight and not easily discoverable neglect.

To destroy the germs of ferment existing in decomposing milk requires an exposure to a boiling heat of full 212 degrees Fah., and in cleansing any utensil in the dairy or factory, it becomes absolutely necessary to use water at the boiling point. Now it is here that many are careless. It is rarely that even those who have been brought up to kitchen work know exactly what constitutes boiling water, yet this is a most important point.

The mere noise of singing from the kettle, or emission of vapour from the water, does not show that it is heated to the boiling point, and the only reliable way to ascertain the fact is to see that ebullition is actually going on. If the water is fully boiling it is hot enough to kill any germs of fermentation that it may come in contact with.

It is not, however, so much the factory men, as the milkmaids and dairymaids, that need a talking to on this subject. The factory man, if he is anything of a good manager, knows how much his success will depend on his enforcing perfect cleanliness in every department of the factory. But he cannot well attend to the important branch of the business that still remains to be performed by the patrons who supply the material out of which the cheese is made.

It is here that the greatest deficiency in the factory system becomes manifest, and a uniform good quality in every cheese produced from the same factory becomes next to impossible.

The keeping of the milk-pails, strainers and carrying cans, is usually entrusted to female hands, and from our own observation we can say that few of even the best and cleanest of dairymaids seem to understand that there is any principle involved in so simple a matter as keeping a milk pail clean. Now, the principle is, that the germs of fermentation (which are somewhat analogous to the spores of fungoid life) existing in a very small quantity of old milk, will start the fermenting process in a large quantity of good milk, and to destroy those germs effectually the vessel must be well rinsed in water that is absolutely boiling. We do not say it is necessary to wash or scour the vessels in boiling water, but that after they have been washed and properly cleaned, they should

be set in boiling water for a short time, then taken out and set away to drain and dry off, without again coming in contact with a cloth or anything else, till they are to be again used, when they may, if it is necessary to cool them, be dipped or rinsed in clear cold spring water.

Of course, some of the patrons will attend to this matter with all due diligence; but should one or two be neglectful, and their milk get into the vats, all the care of the careful ones will but be thrown away. It is for this reason that the manager has need to be particularly careful in examining all milk brought to him, and rejecting without scruple any and all milk that may seem to him to have the least suspicion of taint or uncleanness about it. And, for the like reason where the whole of the operations of the dairy, from the feeding and milking of the cows, to the last finishing stroke to the cheese when it is boxed for market, is under the supervision of one and the same person throughout the process of manufacture, the cheese produced at such a dairy ought to be and can be of more uniform good quality throughout. Such we found to be the case in many large dairies we visited when in England some years ago. We believe just as good cheese can be made here as in England, or anywhere else in the world, for that matter, and we know of at least one dairyman in Canada who makes an article that has acquired an almost world-wide celebrity, and brings a price that we hardly dare mention; but the first requisite to the production of cheese, or butter either, of a No. 1 quality, is fresh, pure, rich, sweet milk.

Butter Making.

We are glad to notice that the persistent advocacy of the fact that it is as easy to make good butter as bad, is beginning to tell on our market, and that there is really an improvement manifest in the general quality of the article this year over last.

There are two facts relative to butter making, however, that are not yet fully understood, and are more especially applicable to those who manufacture the article for packing rather than putting up in rolls for immediate use. One of these is that butter may be, and often is overworked, i.e., that it gets too much handling or working in the effort to get rid of the buttermilk. The butter may appear good, and seem of fair flavour, yet it still has a sort of shining, solid, greasy appearance, and does not give the rich high flavour of prime butter to the taste. This is mainly due to the fact that the grain of the butter has been broken up by too much manipulation. To prevent this, the butter, after coming from the churn, should get abundance of washing in cold water, and be rolled over and cut up with the ladle, but should not be pressed and ground against the sides of the butter bowl. If properly managed, but very little work is

required to get rid of the buttermilk. The butter should be well washed in water twice. After the first wash, when the water runs clear from it, add the salt, and let it be set aside in the bowl in a cool place for ten or twelve hours, during which the action of the salt will have drawn out what buttermilk may still remain in the butter, and it is to be worked over again with the ladle and cold spring water.

The other fact is that there is too much carelessness in the use of the salt. We have bought excellent butter in the market, that on cutting into was found to be full of lumps of hard rock salt as big as hailstones. This is ridiculous, and we are sure is due rather to carelessness than wickedness on the part of the maker. If rock salt must be used, or in fact any kind of salt that is not specially prepared for dairy use, it should be made very fine by pounding in a mortar, or with a flat iron; a good plan is to spread it out on a sheet of paper on the top of a smooth table and roll it well with the dough roller, in the same way as would be done for pastry, when rolling it out preparatory to making into pies, &c. With the present low price of the very best Goderich-made dairy salt, there is no excuse for the use in butter making of the coarse, cheap Liverpool salt, which is generally impure, though strong.

Cows for the Dairy.

It is, perhaps, a difficult matter to settle what particular breed of cattle is the best adapted to produce cows in every way fit for the dairy, and so far there seems to have been but little effort made to settle the question. The Ayrshires are undoubtedly the best pure breed we have that are exclusively adapted to the dairy, but their small size, and want of aptitude to fatten, render them less profitable in general to the stock-breeder than the Short-horns or even the Galloway.

The Short-horns, while being the kind most generally adapted to cross upon native stock, in order to improve their size and fattening qualities, can also with advantage be made the basis of improvement in milking qualities. Some of the strains of blood, or tribes, among the Short-horns, are much better adapted to this end than others, and notably of them we may rank the Duchesses, Booths and Gwynnes.

Much has been said recently in American agricultural papers of the Alderney and Jersey breeds (which are identical for all practical purposes, though a distinction is made between them by fancy breeders), as giving extra good cows for the dairy; but they are as yet little known in Canada, and in our judgment are likely to prove too small and too tender ever to become favourites with our breeders. They suit gentlemen of wealth and large acres, who can admire their deer-like, picturesque appearance in parks and pleasure grounds, and can afford to keep them well housed and petted through the winter.

The establishment of cheese factories, and the high price of butter, promises to be a means of stimulating the farmers to pay more attention to the rearing of animals thoroughly adapted to the dairy. Such cows as give a large yield of milk during the season of grass, and can then be either kept dry through the winter, in good condition, without extra feeding and care, or will make a large quantity of really excellent beef at comparatively small cost, when put up to fatten, are what our farmers and dairymen want.

Not long since, we noticed some very fine cows that were said to be a sort of mixed cross of Short-horn and Ayrshire. They were called "grades," but in reality were the produce of a cross between a grade Short-horn cow and an Ayrshire bull, and appeared to possess the large roomy frame, with an adaptation to manufacture grass into milk or beef, as might be required, of the Short-horns, while they had the fine head, thin neck, full development of milk veins, capacious udder, and rich milk of the Ayrshire, with a hardness of constitution imparted by the native mother, from which the original first cross was obtained.

Rearing Calves.

An "Old Subscriber" in the *Irish Farmers' Gazette*, thus replies to "Young Breeder," who had complained of having lost some young calves from the milk getting curdy in the stomach: "I have had sixteen years' experience in the successful rearing of calves, and am thankful to say I have never lost a young calf, and have during that period followed out one plan in spite of the opposition of my herd, namely, when a cow's time for calving arrives she is put into a house well littered with dry straw. The calf, during five days, is left with her, and allowed to suck as often as it pleases, care being taken that it sucks each of the four teats, which keeps them in good order, and prevents them becoming hard. Every morning and evening, at the usual milking hours, the dairymaid milks the cow dry, first having put the calf to suck as much as it will. After the fifth day the cow is removed to the cow-house, and the dairymaid commences feeding the calf night and morning from the pail, giving it its dam's milk. Youatt expresses himself very truthfully when he says: 'It is a cruel thing to separate the mother from the young so soon. The cow will pine, and will be deprived of that medicine which nature designed for her, in the moisture which hangs about the calf, and the calf will lose that gentle friction and motion which helps to give it the immediate use of all its limbs, and which, in the language of Mr. Barry, increases the languid circulation of the blood, and produces a genial warmth in the half exhausted and chilled little animal.' He further says, and we are glad to quote from so high an authority: 'In whatever manner the calf is afterwards to be reared, it should remain with the mother a few days after it is roped, and until the milk can be used in

the dairy. The little animal will thus derive the benefit of the first milk, that to which nature has given an aperient property, in order that the black and glutinous fœces which had been accumulating in the intestines during the later months of the foetal state might be carried off; moreover, the cow's udder becomes more soft and pliant than it would otherwise be, by the calf being allowed to suck for a time. In the case of young cows especially, the udders of which are generally hard, it is often advisable to allow the calf to suck for a couple of weeks.

Sterling Alguire's Milk Agitator.

This indispensable and useful contrivance has now been in extensive operation in many of the best cheese factories of Canada and the United States. It is simple in its construction, easy of application, and not liable to get out of order. The constant and gentle agitation of the milk is found to cool it, to dissipate the animal odours, and to prevent the separation of the cream, points of great importance in the manufacture of pure flavoured and rich cheese. The Alguire Milk Agitator is manufactured by Mr J. B. Harris, of Belleville, to whose advertisement in the present issue we refer our readers for an illustration and particulars, and cordially commend the invention to the attention of Canadian cheese manufacturers.

Veterinary Department.

Bots in Horses.

Bots are very often found in the intestinal canal of horses, and are supposed to be a source of many of the derangements to which the digestive organs are liable. Bots are the larvæ of the *Astrus*, or gadfly, and the late Bracy Clark describes three different kinds, namely, the *Astrus equi*, or large spotted bot; the *Astrus hæmorrhoidalis*, or fundament bot; and the *Astrus velerinus*, or red bot. The female gadfly, during the summer months, deposits her ova on the horses' legs or sides, and they become firmly attached to the hair. After remaining on the leg for some time, perhaps four or five days, they become ripe, and at this time the slightest application of warmth and moisture is sufficient to bring forth the latent larvæ. At this period, if the tongue of the horse chances to touch the egg, its operculum is thrown open, and a small worm is produced, which readily adheres to the tongue, and with the food is conveyed into the stomach, and therein is lodged and hatched. It clings to the cuticular coat by means of its tenacula, between which is its mouth, and in such a firm manner does it adhere to the lining of the stomach, that it will suffer its body to be pulled asunder without quitting its hold. The spotted bot is the one commonly met with, and at

early seasons is often seen in the feces of horses. In the spring months they are often passed in large numbers.

Bots are often supposed to do a good deal of harm, but except in cases where they accumulate in very large numbers, we are of opinion that they are almost harmless, because in ordinary cases they are chiefly attached to the cuticular coat, and the cuticular coat of the stomach is not possessed of any great degree of sensibility. Most horses that have been running at pasture during the summer months become affected more or less with bots, and their presence in the stomach is thus accounted for. After the egg has been developed, introduced into the stomach, and finally expelled from the intestines in the manner described, the larva is changed into the state of chrysalis, out of which it finally changes into a fly.

Except at certain seasons, medicines have no effect in removing them. In the spring months, when they are losing their hold, a dose of purgative medicine will expedite their removal.

Worms in Horses.

There are several varieties of worms that inhabit the intestinal canal of the horse, and when they are present in great numbers, they no doubt occasion considerable irritation, finally leading to derangement and disease of the digestive organs. The round worms (*Ascaris lumbricoides*) are those that are frequently seen in the excrements of horses which are kept the greater part of their time in the stable, or when their food is chiefly of a stimulating and astringent nature. This description of worm resembles somewhat the common earthworm, but is rather thicker in the middle, and gradually tapering towards either extremity, and it may vary in length from two to twenty inches. The *Ascaris vermicularis* is another kind of worm, being very small, averaging in length about three quarters of an inch, and these are often found in great numbers within the large intestines, and are supposed to create a greater irritation than the larger worms.

Horses in which worms are numerous are generally in poor condition. Their muscular system is soft and flabby, and they perspire readily upon the least exertion, and are occasionally subject to attacks of diarrhoea, colic, &c.

Medicines administered to cause the removal of worms are termed anthelmintics, and a great many different medicines appear to have a very good effect in causing their removal. A very safe and useful remedy is tartar emetic, to be given in two drachm doses daily, combined with an equal quantity of powdered gentian, to be continued until five or six doses have been given; and afterwards administer a laxative, as four drachms of Barbadoes aloes. Another excellent remedy is oil of turpentine in one ounce doses, combined with four ounces of linseed oil. This may be given every second morning about an hour before feeding, and continued until four doses have been given. Care, however, should be taken to thoroughly mix the turpentine and linseed oil. A great many other remedies are in use; but those we recommend are safe, and easily procured.

Stock Department.

Notes on Canadian Herds.

NO. 2.

Situated near Hornby Village, in Trafalgar township, five miles from Milton, the county town of Halton, is a picturesque farm of 300 acres, belonging to John White, Esq., M.P. It is well watered, and kept in excellent order. The soil is a rich loamy clay, and the main dependence is on grass and stock-raising, a good many acres of roots being grown. Blood horses, Cotswold and Leicester sheep, form the chief items; but quite a number of short-horn cattle are also kept. Mr. White was from home, attending to his Parliamentary duties, when we visited the farm, and the manager had but recently taken charge, and could not give us much information. A large number of the cattle are grades, but of Herd Book Short-horns we saw several. A red roan cow, "Mercy," by "Ethelbert," [234], out of "Florence," by "Hero," [343], now 11 years old, with a red and white heifer calf by "Duke of Marlborough," 5587, red cow "Phoebe," 8 years old, by "Ethelbert," out of "Daisy Spot," by "Victor," [767] with a red and white heifer calf to Tuck's bull; red and white cow, "Duchess Bloom," by "Garibaldi," [253], out of "Duchess," of unknown pedigree, a rather nice-looking cow, with a bull calf to "Duke of Marlborough;" red cow "Young Duchess," by "Butterfly 2nd," [91], out of "Duchess;" white heifer, "White Rose," by "Butterfly 2nd," out of "Mirth," by "Ethelbert;" roan heifer "Butterfly Bloom," by "Butterfly 2nd," out of "Dairy Maid," by "Garibaldi;" red heifer "Virtue," by "Butterfly 2nd," out of "Countess 1st," by "Butterfly 2nd."

We did not see any bulls, and the manager said the above were all the thoroughbred Short-horns they had. A good many of the young stock had been sold off during the last fall and winter.

Three miles to the north of Milton, in Esquemas township, and thirteen miles from Bronte station, on the Great Western Railway, lives a tenant farmer, now getting somewhat famous as a breeder of Short-horns. His name is Joseph Kirby, for ten years the manager to F. W. Stone, of Moreton Lodge, Guelph. For the last five years he has been hard at work on a farm of 130 acres, which he has brought to a high state of cultivation, capable of carrying over forty head of cattle,

besides a large number of very choice Leicester and Cotswold sheep. He grows some grain; but most of the farm, which is a rather heavy, though rich clay, is in grass and roots; and while we were there, seventeen acres were being prepared for rape, a crop unknown to most of our farmers, though largely grown in Britain for feeding to stock in the fall and early winter. Being a working farmer, he looks after all his stock himself, and takes a lively interest in their welfare, sparing no pains to obtain the best animals he can. He owned the celebrated bull "Butterfly 2nd," [91], which has proved so prolific a stock-getter, and helped to fill the pages of the Canadian Herd Book. This bull went to the butcher last fall. Two years ago, Mr. Kirby bought the bull "Duke of Marlborough," 5587, from J. O. Sheldon, of Geneva, at a high figure, but he has proved almost worthless, as he has got but about a dozen calves since he came into Mr. Kirby's hands. We do not admire this animal, for though he has a good pedigree, with several crosses of the Duchess and Gwynne blood, he is not nice-looking, and has a savage disposition. His stock have, however, proved to be fine animals so far. In consequence of this bull not being of much use, he last year obtained the services of a pure-bred short-horn bull named "Breadalbane," the pedigree of which we did not learn. He has some most excellent Herd Book cows, most of them with calves at foot. "Flora," red and white, by "Ethelbert," [234] out of "Snowbird," by "Halton," [333] 556, now 9 years old, with a roan bull calf to "Duke of Marlborough;" "Florence," red and white, a fine cow by "Hero," 574, out of "Countess," by "Halton," now in her 13th year, and in high condition; "Mary," 9 years, red, by "Ethelbert," out of "Duchess;" "Mountain Dairy," roan and white, by "Garibaldi," [283], out of "Iris," by "Ethelbert," with a light roan bull calf to "Duke of Marlborough;" "Dairy Maid," red and white, by "Garibaldi" out of "Iris," with a red bull calf to "Breadalbane;" "Iris," roan, by "Ethelbert," out of "Wildame 4th," by "Duke of Wellington," (3654), with a roan bull calf to "Breadalbane;" "Buttercup," light roan, by "Butterfly 2nd," out of "Marchioness" by "Garibaldi," with white heifer calf to "Breadalbane;" "Magnet," roan and white, by "Garibaldi," out of "Mercy" by "Ethelbert," a good milker, with roan heifer calf to "Breadalbane;" "Darling," red and white, by "Ethelbert" out of "Britannia" by "Victor," [767]. 10 years old,

with red and white bull calf to "Breadalbane;" "Young Countess," red and white, by "Garibaldi" out of "Mary," by "Ethelbert;" "Countess 1st," roan, by "Butterfly 2nd" out of "Mary;" "Diadem" roan, by "Butterfly 2nd" out of "Darling;" "Louisa," light roan, by "Garibaldi" out of "Darling;" "Memory," roan and white, by "Butterfly 2nd" out of "Miss Miller;" "Miss Miller," red and white, by "Garibaldi" out of "Darling"—the last six mostly heifers in calf to "Breadalbane" or "Duke of Marlborough." Besides these, we noticed about half a dozen young heifers not yet named, and several very fair grade cows kept for the dairy, the thoroughbreds requiring all the milk they have for their own calves, which they are allowed to suckle.

This and Mr. White's herd are mostly from early importations, and more adapted to the butcher than the dairy. They are principally descended from the well known cow "Beauty," by "Snowball," (2647).

Sale of Short-horn Bulls.

A sale by auction of as fine a lot of young Short-horn bulls as has ever been offered by a single breeder in Canada, took place at the farm of Hon. David Christie, "The Plains," near Paris, on the 10th June. The day was cool and pleasant, though heavy clouds drifted across the sky from time to time, but no rain fell till about 4.30 p.m. There was a very large attendance, but although the hour named to begin was 1 p.m., it was past three before the sale commenced.

J. R. Page, of New York State, well known as a first-rate judge of Short-horns, acted as auctioneer.

The first animal brought out was "Pilot," a red bull 16 months old, got by "Crown Prince of Athelstane" (21512), out of "Placida"—a very nice-looking animal, with large horns, after his dam. After being led round for some time, he was taken back unsold, no one appearing to be willing to venture a bid high enough to come up to his real value. Next came "Prince Imperial," a roan, aged 16 months, by "Crown Prince," out of "May Queen," a cow of Mr. Stone's "Sanspareil" tribe. He finally went to Mr. John Snell for \$150. "Hopeful," another roan, aged 18 months, by "Crown Prince" out of "Joyful," a "Josephine" cow bred in Kentucky, went to David Henderson for \$185. Then came another of the "Sanspareil" tribe: "Prince of the Blood," white, aged 28 months, got by "Crown Prince" out of "May Queen." He sold for \$175 to J. W. Farr, of Michigan. "Knight of the Garter," white, another of the "Josephine" tribe, by "Crown Prince," out of "Beauty," aged 12 months, went out without a bid. A little 6 months old roan, got by "Prince of the Realm" out of "Rose of Athelstane," and

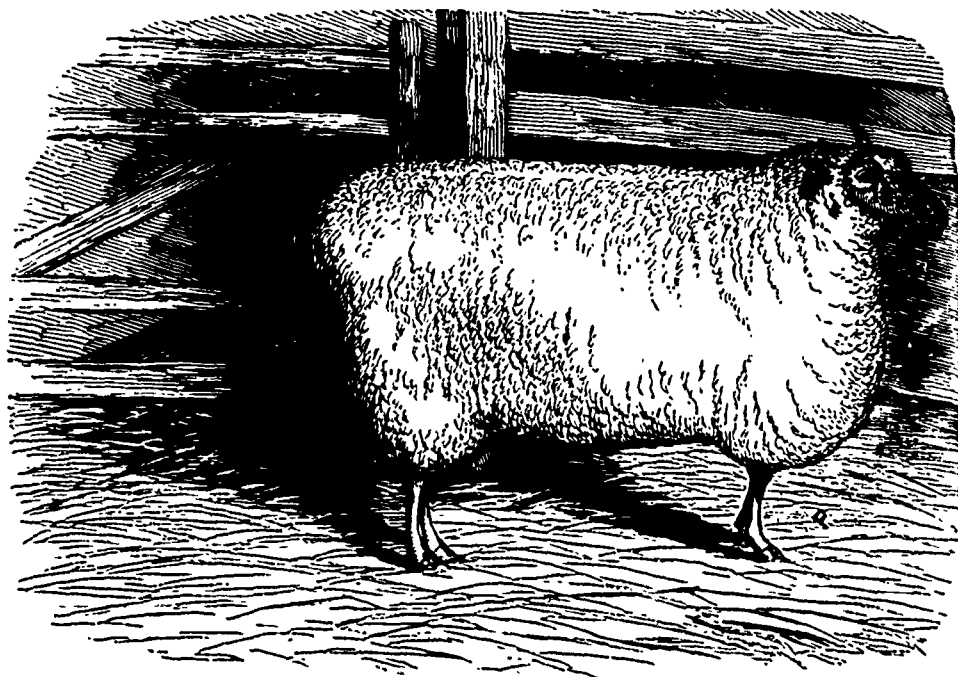
named "Rose Prince," excited a considerable amount of bidding, and went to John Snell for \$100—a nice animal, and worth more. The well-known aged bull, "Oxford Lad," (24713) 5056, bred by Mr. Sheldon, of Geneva, next came in. He was in good condition, quiet and gentle, and looked the noble animal his pedigree would lead one to expect; but his best breeding days were evidently past, and he was sold to D. McMillan, of Ohio, for \$325. A roan bull, "Junius," aged 18 months, by "Crown Prince," out of a Kentucky cow, "Josephine 3rd," went to James Smith for \$100. "Wallace, a very large, rather coarse-looking white bull, aged 28 months, by "Alfred," 4516, out of "Myrtle," came last, and was knocked down to James Innes for \$105. Just as he went out, a runaway horse, attached to a buggy, came dashing through the field, scat-

Prize Leicester Ram

The accompanying engraving is a portrait of one of the best prize Leicester Rams exhibited at the last Provincial Exhibition. This splendid breed of sheep, brought to a high degree of excellence by that eminent breeder, Mr. Bakewell, of Dishley, is on this continent very seldom seen really pure, animals under that name being often a cross of Leicester and Cotswold, a mixture of blood that, indeed, produces very fine, serviceable, and hardy sheep, with a better development of the hind-quarters than the pure Leicester. Bakewell's system of in-and-in breeding had produced a certain amount of delicacy of constitution, and impaired the prolificacy of the breed; but by a judicious mixture of

other Lying between and under the lower part of the skin and the upper part of the hoof, there is what is called the secretory band. From this band the hoof is made. It is a band of glands, which, though in some sense they resemble the other glands of the skin, yet their vast numbers here give the place a distinct character for vascularity and tenderness, being more liable to be affected by outer agents than other parts. Between the horny hoof and the bones of the foot, there is a very delicate structure, the laminae, those thin red leaves which edge out, studded over the foot bones. Then come the bones and their joints, and the bands that bind them together, the tendons that move the joints and the oil bags that lubricate the joints.

From the foregoing it will be seen that the foot of the sheep may become the seat of a



tering the crowd in all directions, knocking down the posts and ropes of the bull ring, and going clear through a board fence into the highway, leaving the debris of the buggy lying about along the way. A heavy storm came up just after, and many wishing to reach the railway in time for the 5.40 train, the sale ended abruptly at 4.30 p.m., leaving two bulls unsold.

The bidding was altogether too slow, and it would be well to begin sales of stock, if not earlier, at least at the time advertised, and have them conducted with more promptitude as regards the bidding. Another thing—if the place of sale is at any distance from a railway station, it would pay to provide conveyances for those who may come by rail, as it is annoying to a stranger to come perhaps hundreds of miles, and be unable to find his way to the sale, except he spends an hour or two hunting up a livery vehicle, and then is charged an extortionate price for it.

fresh blood, the best Leicesters of the present day have quite overcome these defects, and for size, early maturity, aptitude for fattening, and length and quantity of wool, continue to maintain the highest rank, occupying among sheep a position somewhat similar to that of the Durhams among cattle.

Foot Rot in Sheep.

The Journal of the Agricultural Society of New South Wales contains an article on "Foot Rot in Sheep," in which the writer says:

Between the skin that lines the parts within the digits or divisions of the hoof, there is a very extraordinary glandular structure which opens in front, and pours through a little round hole an abundance of lubricating oil, which lessens the friction occasioned by the movements of the digits one against the

variety of different diseases, rendering the success of a single remedy almost, if not altogether hopeless. The most simple and common form of lameness is caused by the tender parts of the feet being scalded during undue exposure in long rains. If the sheep are made to stand in turpentine and oil for half an hour, all is generally made right immediately, and this is easily accomplished by the formation of a pen boarded six inches deep, and two inches of the fluid being poured in. In this manner a thousand sheep may be foot-dipped in a very short time, the length of time depending on the size of the bath. One-tenth part of turpentine to one part of oil is sufficient. If this plan were adopted before rain, the tender parts of the feet would become coated, and thus render the scalding effects of the rain impossible.

There is another form of lameness produced by wet downs, of a more troublesome nature, and this consists of the overgrowth of horn.

Natural History.

The Woodpecker.

A correspondent from Port Hope, referring to a statement by a writer in this journal that the marks of the Woodpecker were an index of the presence of the borer or other insects, expresses his dissent, and affirms his belief that the bird in question attacks young smooth-barked and sound trees, for the purpose of sucking the sap; that in this way they frequently girdle the tree, and ultimately kill it, as he found from his own observation. Having, he says, lost a valuable plum tree from the attacks of these birds. The same correspondent condemns the importation of the House Sparrow into this country, believing it to be an unmitigated pest, and that the Hedge Sparrow would be a much more desirable acquisition. In his letter he further laments the introduction of Lincolnshire sheep, and their recognition in the prize list of our Agricultural Shows, saying that he would "encourage the importer of such sheep by putting him in the Penitentiary for two years, and feeding him on Lincolnshire mutton." He will doubtless be comforted by finding no mention of the obnoxious breed in the Prize List of the Provincial Association, and, as we have ourselves no partiality for the said mutton, we will not now discuss that question, but pass on to the birds. We have only a word or two by the way for the sparrow, but must attempt a

more emphatic vindication of the Woodpeckers. The House Sparrow (*Pyrgila Domestica*) and the Hedge Sparrow (*Accentor Modularis*), though somewhat resembling one another on a casual observation, are in reality very different birds, belonging not only to different genera, but to widely separated families. The former, or true sparrow, is a member of the Finch family, included in the sub-order *Conirostres* or conical beaked birds, while the latter belongs to another sub-order, the Tooth billed birds (*Dentirostres*), and is closely allied to the Blue bird and other warblers. Of the two, perhaps the denizen

of the hedges is the less omnivorous; both, however, destroy an immense number of insects, and are esteemed on that account most useful in their native haunts; but it doubtless admits of question whether their introduction into Canada, where we have already so many insectivorous birds, is called for or desirable. We shall perhaps do better by carefully protecting our feathered friends that are native to the country. Prominent among them are the much maligned and interesting family of Woodpeckers.

The peculiar habits and formation of this

and the claws are strong and sharply hooked, so that the bird can retain a firm hold of the tree to which it is clinging, while it works away at the bark or wood with its bill. The tail, too, is furnished with very stiff and pointed feathers, which are pressed against the bark, and form a kind of support on which the bird can rest a large proportion of its weight. The breast bone, moreover, is not so prominent as in the generality of flying birds, in order to enable the Woodpecker to press its breast closely to the tree; and the beak is long, strong, and sharp.

These modifications aid the bird in cutting away the wood, but there is yet a provision needful to render the woodpecker capable of seizing the little insects on which it feeds, and which lurk in small holes, tubes, and crannies into which the beak could not penetrate. This structure is represented on the other page by a sketch of a woodpecker's head. The tongue bones or "hyoid" bones are greatly lengthened, and pass over the top of the head, being fastened in the skull just above the right nostril. These long tendinous looking bones are accompanied by a narrow strip of muscle, by which they are moved. The tongue itself is furnished at the tip with a long horny appendage covered with barbs and sharply pointed, so that the bird is enabled to project this instrument to a considerable distance from the bill, transfix an insect, and draw it into its mouth. A further provision for capturing insects too small to be thus harpooned, or hooked out, is furnished by a viscid secretion poured upon the tongue from



tribe are so distinct that the naturalist assigns them a special sub-order, that of *Scansores*, or Climbing birds. The Cuckoos are members of the same family. The name, Woodpecker, indicates the well known habit common to those birds of picking among the decaying wood and bark of trees, in order to feed upon the insects found within. They also chip away the wood for the purpose of making the cavities or nests in which their eggs are deposited, and their young are reared. In order to enable them to perform these duties, their structure is very curiously modified. The feet are made extremely powerful,

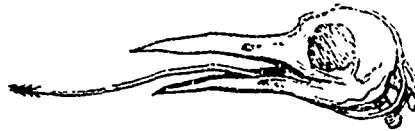
certain glands within the mouth, and which causes the tiny insects to adhere to the weapon suddenly projected among them. The whole arrangement is very analogous to the tongue of the Ant-eater, which feeds in a similar manner. A glance at this structure is sufficient to show how totally unfitted is the whole apparatus for any such operation as that attributed to these birds of sucking the sap.

The limits of this article will only allow a very brief notice of one or two of our Canadian species. Professor Hincks enumerates eight that are known as natives of Canada,

namely, the Pileated Woodpecker (*Dryopus pileatus*), the Arctic Three-toed Woodpecker (*Picoides Arcticus*), the Yellow-bellied Woodpecker (*Picus varius*), the Hairy Woodpecker (*P. villosus*), the Downy Woodpecker (*P. pubescens*), the Red-bellied Woodpecker (*Centurus Carolinensis*), the Red-headed Woodpecker (*Melanerpes erythrocephalus*), and the Gold-winged Woodpecker (*Colaptes auratus*). Of these the first is the largest. The Red-headed Woodpecker, the Hairy and the Downy Woodpeckers, and the Gold-winged species are the most common. The Red-headed Woodpecker, with his striking hues of red, black, and white, and his fearless and familiar disposition, which brings him into the neighbourhood of farm-houses and even town gardens, is perhaps the best known of the family. All the species make their nests in nearly the same manner. They select a tree which is partly decayed, so that the wood is soft and easily chipped, and then assiduously set to work with their bills and excavate a nest in the trunk. The entrance is by a small round hole, just sufficient to admit the bird. This leads to a narrow passage, extending in a direction only slightly deviating from the horizontal, for a few inches, when the cavity suddenly turns downward, for a depth of twelve inches or more, is considerably widened, and by the indefatigable labour of the tiny architects is smoothed almost as if turned in a lathe. The bottom of this cavity is lined with soft chips for the reception of the eggs. These are pure white and generally five or six in number. The young make their appearance about the 20th of June, and are most assiduously tended by the parents, who are constantly employed, all day, in carrying insects to their young, and carefully removing in their beaks, as they emerge, the ordure from the nest, after the performance of which needful but unsavoury office, they delicately clean their bills on the mossy bough of an adjoining tree, and are off again on another foraging excursion.

Our illustration, copied from Wood's Natural History, represents one of this species. The Downy Woodpecker is a smaller bird. Black and white are the prevailing markings of its plumage. The back is dark, divided by lateral strips of white, loose, downy, unwebbed feathers, a peculiarity which gives the name to the species. The Hairy Woodpecker very much resembles this in general appearance. Both species are known under the inappropriate name of Sap-suckers. That their object in perforating the bark of trees, apple trees especially, is to search for insects and not for the sake of the sap, is obvious from a variety of considerations. The structure of the bill and tongue is alone sufficient evidence of this. Then, they do not attack those trees in which the sap is most abundant, such as the maple; and they make their perforations chiefly in the fall of the year, when the supply of sap is at the minimum, and larvæ abound. As to their attacking smooth barked apple trees, these are just the trees

which the borer perforates. The Woodpecker's mode of operation seems to be something as follows. It first gives a succession of rapid strokes with the bill, producing a peculiar rattling sound. This probably alarms any insects within, and causes them to retreat to the extremity of the burrows; the movement is detected by the bird's delicate sense of hearing, and he proceeds to explore the bark by a series of slight perforations, conducted in a very regular, and engineer-like manner, till he lights upon the passage or burrow which the borer has excavated. He then in-



roduces his barbed tongue and extracts his victim. As evidence that the perforations made by the Woodpecker in his search after insects, are not injurious to the tree, Wilson says, "in more than fifty orchards which I have myself carefully examined, those trees which were marked by the Woodpecker (for some trees they never touch, perhaps because not penetrated by insects) were uniformly the most thriving, and seemingly the most productive. Many of them were upwards of sixty years old, their trunks completely covered with holes, while the branches were broad, luxuriant, and loaded with fruit. Of decayed trees more than three fourths were untouched by the Woodpeckers."

In our own experience, we can testify that we have had apple trees completely riddled with these holes, that were the most luxuriant and fruitful in the orchard. A friend of ours not long since, in pruning an apple tree, noticed these marks in a branch cut off very high up, a most unusual situation for either woodpecker holes or the borer. On cutting the branch open he found the burrow of one of these insects right in the centre, the passage leading to which had been opened by one of the woodpecker's perforations, and the occupant extracted. The branch was perfectly healthy; had the insect remained, this would not have been the case.

It cannot be denied that these birds are fond of fruit, and will help themselves to the ripest cherries, and peck away at the most luscious pears and apples; but the amount of service they render in destroying insects more than compensates for their depredations, and should induce all the owners of orchards and gardens especially, to respect and protect the whole tribe of woodpeckers as amongst their most assiduous and efficient friends and allies.

A correspondent of the *Montreal Minerve*, writing from Bout de l'Isle, says that at a place called the Chenaux, a large sturgeon has been caught, weighing 88 pounds. It took three men to haul it out of the water, owing to its struggles to get loose. The day before that, one weighing 82 pounds had been caught, the average size of sturgeons being 35 to 45 pounds. Such large fish were never before seen in these waters.

Poultry Yard.

Clear and Addled Eggs.

Most poultry keepers are aware of the fact that of the eggs that do not hatch some remain perfectly "clear," while others are "addled," and a third set become putrid, and are filled with so large an amount of compressed gas, chiefly sulphuretted hydrogen, that on the slightest shake they are apt to burst with a loud explosion, scattering their foetid contents in every direction. The conditions that lead to these three states are not always appreciated. A correspondent has written to me as follows:—

"Why do some eggs, when set upon, become addled and putrid? Why do others undergo no change? I have just been staying with some country cousins, who look to me to explain all scientific and natural history questions that they choose to propound; and great was the chaff to which I was subjected when unable to explain these egg questions. They have a theory that if an egg is fertilized and then imperfectly incubated it becomes addled; whereas if the egg had not been impregnated it would, at the end of the incubation, be found unchanged. In fact, they say that impregnation is necessary to produce addleness. Is that so? Do the changes in decomposition of a fertilized and a barren egg differ?"

With regard to the eggs that remain clear, I believe it to be ascertained beyond all question that they are those which have not been fertilized. Eggs laid by pullets that are secluded are always clear: these do not seem to undergo much change from the heat of the hen. My own practice is always to remove such eggs at the end of a week, and employ them in feeding the young chickens; but they are so little altered that they may be used for human food. A late servant of mine was in the habit of boiling them for her own breakfast whenever she had an opportunity. On breaking them before cooking the only differences to be observed between them and perfectly fresh eggs are that the air vesicle is somewhat larger, and the albumen more fluid. There is never the slightest trace of the enlargement of the germinal vesicle. When this has taken place and the chick begins to develop, but afterwards dies, the egg is not a clear one, but becomes addled.

The reason why some are explosive and others inexplusive is not quite evident to me, although I am inclined to suspect that the explosive condition occurs when the germ perishes at an early state of incubation, and the non-explosive when the chick dies at a later period; for when I have had the misfortune to experiment, quite involuntarily, on explosive eggs, I have never been able to trace any portion of the young bird, nor is the inside of the shell lined with blood-vessels, as takes place in an advanced stage of incubation.—W. B. Tegetmeier, in the *London Field*.

How to Raise Turkeys.

The first thing necessary to insure success, in raising turkeys, is to select a good kind. Keep them well—make pets of them if you like. Mine eat from my hand and answer to my call. A few days before they begin to lay, place them in a temporary enclosure till they have made their nests, then there is little or no danger of their straying. Next, take good care of the eggs. One year I set thirty eggs and raised but one turkey. The next year I took care of the eggs, and out of forty, thirty nine hatched and all lived but one. The eggs should be handled very carefully, placed between layers of cotton or flannel, in a cool place of uniform temperature, and turned over at least every other day. If hens are required to hatch them, place a few hens' eggs under the hen after she has set a week; when they will not disown the young turkeys as they sometimes will when they are about as large as quails.

Feed the young turkeys with bread and milk a few days, then with curd made from lopped milk or buttermilk—into which stir a little canaille, or corn meal while it is hot—*A Farmer's Wife, in the Household*

Imported Eggs for Hatching.

The possibility of successfully transporting eggs over long distances by rail and water, for the purpose of hatching has been clearly demonstrated, and several enterprising members of the Ontario Poultry Association have recently proved the feasibility of importing eggs from England, with the view of raising choice poultry, very satisfactorily. We noticed some time ago the fortunate experience of Mr. Sheldon Stephens, of Montreal, with imported eggs of Dark Brahmas; and we learn that Mr. McLean Howard of this city has met with equally encouraging results. He imported, early in the spring, three dozen eggs purchased from Mr. Henry Bilden, of Bingley, Yorkshire, one of the most distinguished breeders of choice poultry in England. The lot consisted of one dozen Golden Spangled Hamburgs, and one dozen Silver Spangled Hamburgs, and one dozen Dark Brahmas. The eggs were laid, Mr. Bingley says, the week previous to transportation; and it is an important element of success that they should be fresh; they left Yorkshire on the 13th of April, and reached Toronto by express on the 1st of May. The Hamburgs were set at once, and the Brahmas during the week following. The Hamburgs hatched four of each variety, and the Brahmas eight; making sixteen in all. This result is the more remarkable as Mr. Howard, (and we hear the same complaint from other breeders) had been very unsuccessful in hatching the eggs of native fowl during the present season. The cost of the eggs was \$5 for the three dozen, and the express charges amounted to \$3 50; so that for \$8 50, Mr. Howard has now sixteen imported chickens of the choicest breeds. This is a much cheaper plan, provided one deals with a thoroughly reliable party, than importing the birds themselves. For some Gold Pencilled Hamburgs and Dico Andalusians sent out from England this spring, Mr. Howard paid \$10 a piece.

Golden Chicken Rules.

The following are some rules that it would be well to observe in rearing chickens: 1. Keep the chicks in a warm, clean, dry coop. 2. Don't let them run out in the morning until the sun has removed the dew from the grass. 3. Let them have plenty of food and fresh water. 4. The coop must be rat proof. 5. Don't let the chicks have access to slops or stagnant water. 6. See that they are housed when a storm is threatening.

Rules for keeping the hennery in proper order: 1. Clean out every day, and sprinkle a handful of lime. 2. Sprinkle ashes over the floor two or three times a week. 3. Frequently change the straw or hay forming the nests, and whitewash the nest boxes at every renewal, and twice a year thoroughly whitewash the whole interior of the house.

Rules for the management of setting hens: 1. Set the hen in a place where she will not be disturbed. 2. Give a large hen twelve or thirteen eggs, a medium-sized one ten or eleven, a small one eight or nine. 3. Don't let the hen come out of the setting room until she has hatched, but keep her supplied with gravel, food and water. 4. When the chicks are hatched leave them in the nest for the first eight or ten hours. 5. Don't meddle with the eggs during incubation; turning them once a day, and all such foolishness, is apt to prevent the eggs from hatching.—*Cor. Rural New Yorker.*

LARGE EGG.—Mr. J. M. Davis, of Richmond Hill, has shown us a curiosity, a hen's egg of extraordinary size, the produce of a hen of mixed Cochin and Brahma breed. The egg weighed 17 ounces; its circumference in the direction of the long diameter was 8 3/4 inches, and in the opposite direction 6 1/2 inches. This is perhaps the largest that we have ever seen.

DRY EARTH AS A DEODORIZER FOR POULTRY HOUSES.—The employment of dry, pulverized earth as a deodorizer for poultry houses appears, says the *London Field* to be worthy of more attention than it has hitherto received. The fact that from four to five hundred fowls can by this aid be kept in one building for months together, with less smell than is to be found in any ordinary farm house capable of accommodating a dozen chickens, is very conclusive as to its efficacy. In the building of the National Company, where the fact has been ascertained, seven or eight fowls are kept in each compartment, 12 feet by 3 feet, and yet there is no smell or trace of moisture. It should be stated that the droppings that fall from their perches during the night are removed from the runs each morning, and that the dry earth only receives the manure that falls during the day; this has its moisture absorbed so speedily by the earth that it at once becomes pulverized, mixes with the soil, and ceases to smell. So powerful is the deodorizing effect of the earth, that it does not require to be renewed in the runs for many weeks together.

Entomology.

ENTOMOLOGICAL SPECIMENS may be sent, for identification or for information respecting history and habits, to the office of the CANADA FARMER, or direct to the Entomological Editor, Rev. C. J. S. Bethune, Credit, Ontario. The postage should be pre-paid. The specimens should be sent in a pasteboard or other box, not loose, but packed with cotton wool, or some similar material. The name and address of the sender should also accompany the package, not necessarily for publication, but as an evidence of good faith and that we may know where to apply for further information if necessary.

Specimens Received.

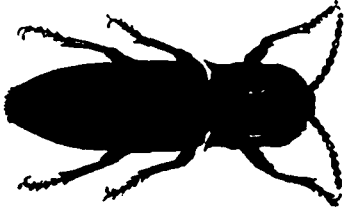
UNICORN BEETLE.—Mr. D. H. Doust, Yorkville, has sent us a specimen of a curious beetle that, as far as regards its one-horned head, bears a fanciful resemblance to the fabled unicorn of heraldry, an animal rendered so familiar to us by the Royal Arms of England. This beetle, though rather formidable in appearance, and to some perhaps repulsive, is yet to be classed among our useful friends, and not in the black catalogue of those that are to be ruthlessly destroyed. It is a Dung-beetle (*Copris anaglypticus*, Say), one of nature's scavengers, whose office it is to remove from the surface of the earth the masses of filthy excrement that daily fall upon it. This work it accomplishes by digging holes underneath a piece of dung, and burying in them balls of the manure, in which the eggs for the future brood are laid; thus it not only performs a useful work in manuring the ground, but it also carries out its grand instinctive duty of providing for the welfare of its offspring. The beetle is over half an inch long, and rather broad and thick in proportion. Its colour is entirely deep black, with the exception of some reddish hairs on the mouth and legs beneath. The top of the head is widened and flattened into a broad projecting plate, which in the male is armed with a single stiff black horn, projecting obliquely forwards. The female is destitute of this weapon, if such it may be called; but has its place marked out by a slight projection which looks as if the horn had been broken off short. The thorax is very much higher than the head, and armed in the male with three tubercles in front, which are almost obsolete in the female. The wing-covers are rounded, and marked with longitudinal impressed lines. This species is quite common in Canada, and often flies into houses, attracted by light, during the warm summer evenings. A very much larger and a very much smaller species are also occasionally, but very rarely found.

This insect, with many others, belongs to the family *Scarabæida*, which includes the famous Scarabæus, or Sacred-beetle of the Egyptians, of which so many models and

carvings, often of gigantic size, have been found. It was supposed to be a mystical representation of the resurrection of the soul, the motions of the earth and sun, eternity, &c., from its curious habits, which may be seen in a rather rare Canadian species (*Anthrenus laticus*) of rolling globular balls of dung, in which its eggs are laid, along the ground to some distance from the original mass, and then burying them.

EMPEROR MOTH COCOON.—Thanks to careful packing, we have received in excellent order a cocoon of the large-eyed Emperor Moth (*Teia polyphemus*, Hubner), from Mr. J. Le Boutillier, of Sidney, County of Hastings. A picture of the moth, which is one of our largest and handsomest species, and an account of its habits and transformations, may be found in the CANADA FARMER for June 15, 1866, p. 181, to which we must refer our correspondent. The moth will probably come out of its silken cocoon in a few days now; about the first of June is their usual time for appearing, but we have frequently had them much earlier, when the cocoons have been kept in a moderately heated room all winter.

THE EYED SNAPPING-BEETLE.—The same correspondent also sent us a specimen of the large eyed Spring-back or Snapping-beetle



(*Alaus oculatus*, Linn.) so called from the habit possessed by it, in common with all the *Elater* family, of throwing itself up into the air, when laid upon its back, by means of a peculiar spring on the under side of the thorax, which fits into a socket beneath the abdomen.

We have seen even small species throw themselves eighteen inches up into the air in this way. This is as if a man were to lie on his back, and by pressing his head and heels on the ground, jerk himself up two hundred feet into the air, and all for the sake of getting on his feet again! The species before us, which is not uncommon, is the largest we have in this country, being often an inch and a half or more in length. It is of a shining black colour, varied with whitish spots and streaks, which give it the appearance of a cinder. On the back of the thorax are two large eye-like spots, which give the insect a very peculiar and rather formidable appearance. The larvæ of all this family are called "wire-worms," and are sufficiently well-known, no doubt, to all our readers, from their destructive propensities. This species, however, infests decaying wood, often of old apple-trees, and cannot therefore be considered to do any particular damage

The Currant Worms Again.

To the Editor.

SIR,—In a recent issue, a correspondent who writes an article headed, "How to kill the Currant Worm," under the signature of "L," gravely charges me with giving "careless" or "indifferent advice" on the subject of the important matter of the destruction of this pest, in my report to the Fruit Growers' Association, intimating at the same time that I ought to and probably do understand the matter well. Since I cannot plead guilty to his charge, it becomes necessary for me to defend myself.

Your correspondent speaks of three worms which infest the currant bushes, "1st, the Borer; 2nd, the Measuring Worm; 3rd, a smaller worm hatched from the egg of a fly," by which he means the worm of the Gooseberry Sawfly (*Nematus ventricosus*.) It is when speaking of this latter that the disparaging statements, above referred to are made, and the following is advanced to substantiate their correctness: "Mr. Saunders says they (the worms) may be hand-picked from the bushes. Undoubtedly they may; so may farmers dig their wheat with a spade, but will they do it? Quite as likely as to hand-pick the worms from the currant bushes in their gardens." If "L," had ever read my report with any care, he would have seen that I did not allude to hand-picking at all when speaking of this insect, which is small, and would be very difficult to destroy by such a method. The case in which I suggested that remedy was that of the Measuring Worm, a larger and more easily handled creature, and in this instance it was associated with treatment with hellebore.

After referring to the desirability of a "cheap, expeditious, and effectual method of destroying these pests," "L" announces the fact that such we have in hellebore and water, as if this excellent remedy had never been mentioned before. It has been used extensively in England for many years on gooseberry bushes for this purpose, and for several years in Canada with unvarying success. On reference to my report—the innocent subject of his harmless banter—page 197, he will find the following when speaking of remedies for this same worm: "As soon as they (the worms) are observed at work, they should be checked, which may be readily done by mixing an ounce of powdered hellebore with a gallon or two of water, and sprinkling the bushes lightly with a watering pot, or the hellebore may be applied by means of the bellows before described." If "L" did not copy the receipt he advances with such an air of originality from my report, he might easily have done so had he read it with any ordinary care.

There are other of "L's" statements open to objection. He says that this Sawfly Worm differs from the Measuring Worm in this respect, that no amount of violence short of

killing will cause them to let go their hold," and considers the recommendation of our esteemed President, who advises brushing them off with a broom, as absurd. I do not know whether "L" has ever had any of these worms to deal with. He certainly has not observed them with much care. The Measuring Worm has three pairs of sharp claws or feet, and two pairs of thick fleshy legs, called by entomologists prolegs. Each of these latter is furnished with a large number of hooks, by means of which the worm holds fast most tenaciously to almost any substance. The prolegs of the Sawfly are without these hooks, and it holds fast almost exclusively by its front claws, so that it is *much more easily dislodged by jarring*. In my own garden, I have frequently strewed the ground with them by simply jarring the bushes with my foot, and I consider the use of the broom as well worthy of trial in the absence of hellebore.

It may not be inappropriate to reproduce here a short history of this insect, since its ravages will be near their height when this reaches your readers. The parent of the worm is a small four-winged fly about the size of a common house fly. It appears on the wing late in April or early in May, flying only during the day, and most active in the sunshine. Soon after, the female deposits her eggs on the thick veins on the under side of the leaves on the gooseberry or currant bush. The insect is provided with a double saw at the hinder extremity of her body, by which she saws little slits in the substance of the leaf, and into these the eggs are thrust. During the next few days the egg swells considerably, and then hatches into a small green worm, dotted with black, which at once begins to devour the leaves voraciously. When fully grown, it is nearly three quarters of an inch long, and of a uniform green colour. Shortly after it spins a small, silken, papery-looking cocoon, either above or a little below the surface of the ground, and within it changes to a chrysalis. Early in July the perfect insect escapes, and soon we have another supply of eggs, resulting in a second brood of worms, which enter the chrysalis state later in the season, in which condition they remain until the following spring. There are thus two regular broods, and besides these sundry stray individuals appear between times, so that one is obliged to keep a sharp look-out most of the season.

WM. SAUNDERS.

London, Ontario.

A Batch of Noxious Insects.

From J. McD., of Bayfield, Ontario, we have received a number of specimens, accompanied by a series of enquiries, which we shall endeavour to answer as briefly as possible. He signs himself "a subscriber," but we fear he does not read his paper, and so get the worth of his money, as he asks, for instance, how to destroy the common currant

worm, a piece of information which we are getting quite tired of repeating.

No. 1.—The large white grub, burrowing under sod, and also affecting potatoes, is that well-known pest, commonly called the "White Grub," the larva of the May-beetle (*Iachnosterna quercina*, Knoch). It destroys also strawberry beds, corn, various plants, vegetables, &c., in the grub state, which lasts about three years, and then, when it comes out as a beetle in the month of May, it often ruins trees by devouring their foliage. Many animals, such as the skunk, and various birds, as the crow, and insects such as the ground-beetles we lately gave an account of, feed upon these grubs, and destroy great numbers of them. As they live in the ground, it is difficult to apply an artificial remedy; but in the case of a badly affected meadow, hogs may be turned in to root it over, after which it should be broken up. When the beetles appear, which they do in swarms, they should be shaken from the trees and destroyed by crushing or scalding. (For a fuller account see CANADA FARMER, 1866, page 199.)

No. 2.—This hairy caterpillar, commonly called the "Woolly Bear," feeds upon all kinds of plants during the latter part of the summer and autumn. When severe frosts set in, it crawls away to a place of shelter, where it remains all winter. In the spring it comes out again, and eats any green thing it can get for a short time. After this feeding up, it again goes into concealment under loose bark, stones, &c., and forms a coarse hairy cocoon, finally turning into a pretty tawny-yellow moth (*Spilosoma Isabella*). It is never sufficiently numerous to become a very great pest.

No. 3.—The black-spotted green caterpillars on currant and gooseberry bushes are the notorious Saw-fly larvae. To destroy them, get an ounce of powdered white hellebore at a druggist's, mix it in a couple of gallons of water, in a watering-pot, and then water all the infected bushes. The good results will soon be apparent.

No. 4 is a true bug (belonging to the family *Scutelleridae*). Most of the members of this family are plant-feeders, and live by sucking the juices of trees, &c., through their long beak, which is folded beneath them when not in use. They, like most bugs, have a very disagreeable odour, which they impart to raspberries and other fruit when taken on them.

No. 5.—No specimen sent, but probably some kind of Cut-worm is referred to. For an account of this pest, see our recent article headed "Cut-worms."

No. 6 is the well-known Turnip-fly, or more properly, Flea beetle (*Hallica striolata*). Though so common and so very destructive, no reliable remedy is yet known for it. Whatever will make the young plants grow rapidly and strongly appears to be the best preventive.

The Apple-tree Bark-louse.

(*Aspidiotus Conchiformis*, Gmelin.)

T. A., writing from the County of Grenville, has sent us a couple of apple-twigs, completely covered with the scales of this injurious insect, and desires to learn a remedy for it, as it appears to have caused the death of some of his trees. The history of the insect may be briefly summed up as follows: About the end of August or beginning of September, the mother insect lays a quantity of very minute eggs, beneath a scale that she has already formed in some, as yet, unaccountable way. This work completed, she dies; but the eggs remain under the scale, which resembles an oyster-shell very much in appearance, all through the winter until the following spring. About the first week in June, or later according to the season, the eggs hatch and produce a number of excessively small plant-lice, which, on the first hot day after, leave the protection of the scale and spread over the branches of the tree, attacking especially the soft terminal twigs. For a few days they possess the power of moving about, but after they once select a spot on the tree, and begin to suck the sap there, they never move again, but remain as stationary and as much fixtures as if they were twigs themselves. After a time each one becomes covered—in what exact way is more than we can tell, though we have our opinion on the subject—with a scale, under which it lives, lays its eggs in due time, and finally dies. Such being the history of the insect, it is plain, and it has been proved by experiment, that the only time to apply remedies to it is during the short period that intervenes between the emergence of the young insect and the formation of its new scale. It can then be destroyed by rubbing the affected branches with a stiff brush, or by washing them with a strong solution of soap; but these remedies are of no use at all except at that particular time, namely, early in June. The scales, some of which, however, remain on the trees for more than one year after the enclosed eggs have all been hatched, should, as far as practicable, be scraped off the trees. This can be done at any time of the year, but early in the spring is the best time. These are the only artificial remedies that we can really recommend, where trees are already affected. In setting out a new orchard, all the young trees should be closely inspected, and be scraped wherever any of these scales are seen. They can thus be kept pretty free from the pest.

Happily, however, though our own remedies are few and not very satisfactory, nature furnishes us with much better ones, that require no trouble on our part. One is a very minute mite that devours immense quantities of the eggs and young of the Bark-louse. Another consists of the many varieties of Lady-birds (or Lady-bugs, as they are often

unpleasantly called), especially a shining black one, with a blood-red spot on each side, and about the size and shape of a split pea. This useful insect eats no end of these pests, and should always be encouraged, and never by any means destroyed.

Dog-tick.

Mr. Martin F. Tupper, of the Mount Elgin Industrial Institution, Muncey, Ontario, has sent us a live specimen of a large Tick that he took off his dog; there were three, he says, on the animal—another like the one before us, and the third smaller and of a more yellow colour, probably a male. As we had never before seen one of these creatures, we were glad to add the specimen to our collection. It belongs to the family *Ixodidae*, of the class *Arachnida*, which includes spiders, scorpions, mites, &c. This Dog-tick is three-fifths of an inch long, two-fifths broad, and so distended as to resemble a blown bladder; its general colour is drab, slightly mottled with yellowish. It is furnished with four pair of legs, the front pair of which terminate in a recurved hook or claw, with which the ticks fasten themselves so firmly to the skin of their victims that they can hardly be detached by force. It has no eyes; its mouth is furnished with a piercing and sucking apparatus.

In the *American Naturalist* for December, 1868, p. 539, there is a short notice, with illustrations, of a similar creature, specimens of which were taken off a young cow moose, brought through New York from Nova Scotia, on its way to Europe. The ticks, when removed from the animal, were placed in a bottle without food or water. "On the 1st of May they commenced to lay eggs, and continued to do so until the 25th of June, when they died. On the 3rd of July, the entire mass of eggs seemed to hatch out at once, the shell opening like a clam, and releasing a six-legged insect." The young has six enormously long legs, and the head separated from the hind body, whereas the adult has eight comparatively short legs, and the head sunken in the thorax, the whole body assuming a globular form.

In the March, 1869, number of the same periodical (p. 51) is given an interesting account by a correspondent of the habits of similar Ticks in Texas. He says, "they drop from the cattle in the woods, and more frequently along the cattle paths. How long before they appear as 'seed ticks' I do not know. It was a prevalent notion among the people that they burst open, nearly the whole interior being composed of the young. These, probably, soon after birth, ascend the tip of the nearest twig or culm of grass, where they form into a little mass, with their legs extended, ready to seize upon any passing animal. When taken off by one, they soon commence operations, and in three or four days, I should think, gorge themselves and fall off. They are then, except as to size, much like the full-grown gorged

insect. How long a time is required for them to become depleted, or to regain their flattened form, I do not know; but when ready for a new meal, or a new transformation (now called 'yearling ticks'), they again ascend bushes, but not in clusters; or they crawl over fallen leaves and attach themselves again to animals, as chance may offer. They again gorge themselves, and fall off as before, to become lean a second time. A third time they fasten to horses, cattle, hogs, dogs, men, and other animals. This seems to be their last time, and when full, they fall off and become converted into *seed-ticks*. This was the common belief, and may be more or less erroneous or defective."

The Gooseberry Fruit-worm.

(*Pempelia grossularior*, Packard.)

Gardeners are, no doubt, of opinion that their gooseberry bushes give them quite trouble enough without any more insects to fight against. What with mildew, Saw-fly Worms, and caterpillars, they have their hands quite full. But yet another foe has been brought to light, which, this time, affects the fruit itself, and now, if gardeners wish for a crop, they must not only keep the leaves clear of the worms and caterpillars referred to above, and prune carefully to lessen the danger of mildew, but they must also keep a close eye on the berries themselves, to see that this new pest does not rob them of more than a fair share.

To our esteemed friend, Mr. Saunders, of London, Ontario, is due the credit of first elucidating the history of this insect. The moth is described by Dr. Packard in his new work, the *Guide to the Study of Insects*, and a full account of it is given in our friend Mr. Riley's First Report, as State Entomologist of Missouri. From these sources we cull the following facts, as we have had as yet no personal acquaintance with the insect, our bushes being so far happily free from its attacks.

As soon as gooseberries and currants (for it attacks the latter fruit also) are well formed, this worm begins to make its presence known by causing the berries which it infests to prematurely turn red or dull whitish. After eating the inside of one berry, leaving a hole for the passage of the excrement, it enters another, making a passage way of silken threads, until it draws together a bunch of currants, or two or three gooseberries, as the case may be. The berries thus attacked sometimes drop, but more generally the hollow shell mixed with the web shrivels up and hangs on the bush. When the worm is full grown, it measures three-quarters of an inch in length, is of a very pale shining green colour, with a slight yellowish tint. In some specimens the yellow is replaced by a reddish hue. The head is very small, pale brown and horny looking, and the first segment or ring behind the head has a pale brownish patch above. When

ready for its change, which is usually about the 15th to the 18th of June, it forms a little silken cocoon among leaves or rubbish on, or just below, the surface of the ground, where it becomes a chrysalis, and remains till the following spring. The moth, which is a small narrow-winged grey insect, with its four wings streaked and dotted with brown, and expanding about an inch, appears during the latter part of April, and deposits its eggs on the fruit, almost as soon as it is set. The young caterpillar is hatched in a few days, and then burrows at once into the fruit.

REMEDIES—The habits of the insect have not been known for a sufficient length of time to enable any satisfactory experiments to be made in the way of remedies. Mr. Saunders recommends dusting the bushes with fresh air-slaked lime about the time when the moth is laying her eggs, but he is unable to say yet whether this is effectual or not. One very important means, however, there can be no doubt about, and that is to gather and destroy all the affected fruit with the worms they contain. Mr. Riley advises letting fowls run among the bushes, after the fruit is gathered, to eat up the chrysalids

Cutworms.

Cutworms are those nasty, dirty, greasy-looking caterpillars that are such a plague to gardeners at this time of year, from their habit of cutting off at night, close to the surface of the ground, the young cabbage, cauliflower, tomato or other plants that he has just put out. They are by no means particular as to their diet, but will eat almost any nice tender plant that comes in their way. Like true thieves, they work only at night, and therefore are not often seen, but they can easily be found wherever their depredations are noticed. If the reader should be taking a morning stroll through his garden, to see how things are getting on, he will only too often observe that some of his young plants have been freshly severed from the root close to the ground. Let him then take a trowel, and carefully remove a few inches of the soil about the root, and he will find the culprit coiled up close to the scene of his work. When found, kill him at once. If any mercy is shown him, he will repay it by cutting off some more plants.

His depredations, moreover, do not stop here. As Mr. Riley, of St. Louis, has demonstrated, many species of cutworms are very destructive to fruit trees, especially the dwarf varieties. In the spring, before the leaves are expanded, these worms climb the trees at night and eat off the fruit buds, devouring the ordinary leaf buds when there are no more of the others left. At break of day they drop down from the trees, and conceal themselves in the earth till night comes round again. Hence, until recently, their devastations were put down to other insects, and to birds. They are more injurious on

sandy soil than on clay, as the former is softer to drop upon, and more easily penetrated for concealment. Their ravages can be checked by spreading hard packed clay on the ground for a few feet around the base of the tree; by preventing their climbing by a flange of bright tin fastened securely round the trunk; and by jarring off and destroying the worms at night. They cease their attentions to the tree when the leaves come out, and then devote themselves to the young plants, as already described.

There are a large number of species of these insects, all pretty much alike in their larval state. They turn into those common dull brown and greyish moths that are so numerous in summer evenings about one's lamp or candle, and which may often be found hiding in the morning about the shutters or in crevices of the windows. They have, providentially, many foes, especially birds, and various cannibal insects, which destroy immense numbers of them both in their winged and caterpillar state. Man can assist by killing them also wherever they are found.

Young plants may be protected, to a great extent, by wrapping round the stem, when setting out, a piece of dock-leaf or newspaper; it should come up above ground as far as the first leaves, and extend down to the beginning of the fibrous rootlets. We have found this a very excellent preventive, and one that can easily be applied.

HOW TO KILL THE CURRANT WORM—CORRECTION.—In the article on this subject which appeared in the May number of the CANADA FARMER, an error crept in so that our correspondent is made to advise that half an ounce of white hellebore powder be well mixed with three quarts of water. Instead of quarts read gallons, and the experimenter will find no difficulty in giving half a pint to each of forty-eight bushes.

INSECT DEPREDACTIONS.—Amongst our exchanges, and in communications from correspondents, we notice accounts of a new wheat pest. We doubt the novelty or even the rarity of the depredator. Instead of surmising, and "hoping that some one will throw light" on the matter, send specimens, and perhaps we can give some information about them.

HORSE-HAIR SNAKES.—The popular notion that these animals are animated horse-hairs is nothing but a superstition. Like every other living creature, including ourselves, they spring from an egg in the first instance. They are not true insects, but belong to the class of worms; and just as man has intestinal worms that live and thrive in his body, many insects are infested internally by these so-called horse-hair snakes. We have ourselves seen living specimens six inches long, that came out of the gigantic caterpillar of the *Cecropia* moth; and have often seen smaller ones come out of grasshoppers.—*American Entomologist*.

Correspondence.

Emigration and Misrepresentation.

To the Editor.

SIR—It may not be uninteresting to my brother-farmers to place before them my views and ideas on emigration, and its misrepresentation. I am the more induced to do this, from the strong impression, which is gaining ground through this country, and consequently, by reflection, through England, that the emigrants lately arrived under the charge of Mr. Currie and others have not been fairly dealt with, but have been deceived by too highly coloured accounts of Canada. Their own complaints are bitter enough for the philanthropists at home to hear, without having it believed in this country to be a fact "that any ordinary emigrant, especially a skilled mechanic, is quite out of his element here, and not wanted," and is unable to make a living; also, "that even labourers who hired here with farmers have been grossly deceived," by false representations from those gentlemen who have so kindly come forward with money and time, to assist those to emigrate to Canada who avowedly cannot live at home. The immigrant even complains that he cannot get his money after having earned it, and has been discharged without it. We all are aware that our laws afford instant relief in these cases. Also, that the remuneration was very small, only about \$10 a month, with board; and for board, the word was a misnomer, as he could not get even sugar in his tea. A gentleman who writes over the signature "Canadian Owl," in the *London Field*, goes further yet, and says that not even can any gentleman with £300 sterling (about \$1,600) get a living in Canada. All these accusations most seriously affect our farming community, and although distorted and exaggerated from the smallest foundations of truth, are very far from just, and not by any means the *whole truth*. These false representations are most injurious to us. We want cheaper labour and more of it. There are plenty of enterprises that are difficult to be made to pay, from this reason alone, but there is also an abundance of employment for labour, as capital is at present engaged. We will take the charges *seriatim*, and see what truth they really possess, and what portion of the *whole truth* is not mentioned. I employ about nine or ten men, with wages from \$22 to \$26 and \$38 a month, who board themselves. I have never got any efficient hands for less, that were used to the country. All my men but two board with some one of their fellow workmen who are married, and they pay for their board about \$2 a week. They never ask for or are allowed sugar in their tea; they all would consider it a superfluity, if not an extravagance. I have had many men at work, during a period extending over up-

wards of nine years, at my present avocation, and have had no complaint whatever worth mentioning about board - and I board more plainly than many others do.

As for people being grossly deceived by the gentlemen at home concerning the value of their labour in Canada, it is simply false. There has been no deception whatever. The regular price of labour by the day is one dollar, for an ordinary labouring man; and for mechanics, I will venture to say that if all the contractors and master-men in the cities here, and elsewhere, were to show their pay-lists, by which their labour is paid every two weeks, that in no instance would you find a good mechanic working for less than \$1 25 to \$1 50, and often \$1 75 to \$2, without board. I am quite well acquainted with what I assert, and challenge any one to prove the contrary. In the country, mechanics are not always required, except in some manufacturing villages, but in the country the active, civil labourer can always find work, at such rates as are paid for ordinary labour.

But even here *all* the truth is not told. Labour is governed by the great law of supply and demand. If you bring into any locality in the world a number of hands, unless where some great contract is just commencing, the first feeling in the employer's mind is, "Now there will be plenty of labour, and I can get it cheaper. Immigrants have arrived, and I can do better than I have done." The employer at once, naturally, offers employment at reduced rates, at which the immigrant is hugely disgusted. I have often had them say to me, "I did not come to Canada to work for the same or less than I got at home, but to get the high wages that you are giving to your other hands." Nine times out of ten the employer refuses this, on various pleas, sometimes on the ground of inefficiency, sometimes on the ground of the immigrant being a greenhorn; but most generally the true reason is that there is an opportunity to reduce the price of his labour by the quantity of the supply.

But what is the state of the immigrant soon after? We will suppose he takes the low price offered, and for a time suffers hardship. The pay list again soon shows that this is only temporary, that there are *no men employed at low rates for any length of time*, unless when wheat is 60c. a bushel, and pork 4c. a pound. Then men's labour is cheaper, and well it may be, as living is cheap also.

The immigrant soon finds his proper level. If a good mechanic, he soon can better himself at other shops; and if a good labourer, as soon as he learns to do the farm work done here as others do it, and as fast, he can do better where first hired or elsewhere, and he soon finds it out. There again, every farmer will prove I am speaking truth, as it is the universal rule. There is no doubt whatever that any man, gentle or simple mechanic or labourer, who has a wife and family, without money, will suffer in any

country on the face of the globe, until he gets into the ways of the new country, and acquires some capital, furniture, &c., necessarily wanted for their support; and these privations are doubled by having generally to travel about in search of employment with a family, often as many as six or more. The fault lies, not for one moment in the country, but in the fact that a man has incurred certain liabilities he is unable to meet.

I have often thought of a scheme to meet these great objections to families emigrating without means, where single men would find no difficulty, but I shall confine myself now to answering those objections and accusations made by others, without entering into the remedy adapted for the future.

In answer to "Canadian Owl," stating that "farming in Canada is no place for a gentleman," even if possessed of £300, or \$1,600 currency, I have only to say, to show the utter fallacy, and I had almost said misrepresentation, of such a remark, that I will take eight out of any ten gentlemen he may name, who have always lived in idleness and comparative ease, and offer them any one business that they may select from one end of King Street, Toronto, to the other, and they shall have even a moderate, small capital—and after a few years they will have lost every cent of it. And this rule applies to any city in the United States or elsewhere; and why is this the case? Because they know nothing about the business, and cannot for one moment contend with those who do, and live as they have been accustomed to live, "like gentlemen." I will freely leave this fact to the decision of any board of merchants or manufacturers, professionals or agents. They are all well posted in their business, and the "gentleman" knows nothing about it.

The same thing applies to an agricultural life, for a person of the class referred to, but with better prospects of not losing all his capital. He will suffer deprivation, and will find farming in Canada not what he has been accustomed to think it, that is to say, that he can work for a month in the spring, put in a good breadth of crop, and then take all the sporting pleasures he has been accustomed to until harvest; then another month's work, and sell the produce—and a winter's ease is the reward. Here again the fault is not in the country, but in the man. After the gentleman has farmed for two or three years, supposing he had money enough to buy his farm, he very often sells out to some one else, and goes to some other employment more congenial to his former life and tastes, and now he often succeeds—that is, if he has had strength of mind to keep out of debt at any cost. Self-denial has been his first great lesson, and his farm now by its sale affords the means of the capital required, and success is then by no means rare.

You may, as well send such a man to one quarter of the globe as another. He will

fail alike, until he has found by hard-earned experience that the first great means of success in Canada or elsewhere are self-denial, economy and self-endurance. And here the single laborer has an infinite advantage of all others in Canada. It is no self-denial to him; he knows no better, and all is "hope" from the first little bit of success; but until that first little bit of success comes, until he ceases to feel all strange and foreign to him that he encounters here, or elsewhere, he will feel desolate and disappointed; but it will soon end, and success is, I am certain, more easily attained here, and with less capital, than anywhere else.

C.

A Walk Over my Farm on the Queen's Birthday.

(To the Editor.)

SIR,—I thought a walk over the farm on the 24th of May quite as amusing and considerably more likely to be profitable than to harness up the horses, drive to the neighbouring town, see such sights as were to be seen, drink such drinks as were to be had, and return home at night tired and weary, as well as disappointed. Of course, if there were children or ladies to be taken for amusement or recreation, the case would be materially altered; but in my case there were not any such considerations to prevent my giving a day to thinking about my farm, and adapting means to ends. My crops were almost all in, and the day was splendid, so calling my faithful colley, off I went. Passing through a piece of woods, containing about 17 acres, that I left to shelter the homestead, I noticed the quantity of feed there was even at so early a date as the 24th of May. In many places the grass was twelve inches high. The woods have been pastured for some years, and are now very productive, almost as good as any ordinary pasture land; and that reminds me to call your attention to the advisability of fencing in pieces of wood land. The underbrush was cut out some years since, and I now feel the value of having done so. The shelter, shade, and pasture, amply remunerate for the outlay. We turn our cows in at night, when they are brought from the distant fields, and as a natural consequence, they are on hand early in the morning to be milked, before being again driven into the road that leads to the rear of the farm. I really think, if farmers generally would look a little ahead when destroying the forests, they would oftener leave a belt of woods to surround their homesteads. I have often noticed, on a cold bleak day in winter, the extraordinary difference between the sensations of cold within and without the belt of woods in question. Of course, thermometrically there is no difference, but to the feelings of comfort there is a most material advantage within. The woods we have left extend on three sides of a twelve acre field, in the centre of which the homestead is situ-

ated, the idea being ultimately to appropriate all the unoccupied land within the enclosure to plant with apple trees and as a garden. Frost does not affect the crop of any kind one half so much when sheltered from the north, west and east storms, as immediately on the opposite side of the woods. I have often seen it, and carefully noted the effect. The beauty of the woods all round the house, forming such a pleasant ramble for your little ones during the heat of the day in summer, is another great advantage. Labour being no great object, we have constructed a walk on one side of the clearing, facing the west, but still within the clearing. This walk gives opportunity for exercise to those of the household who want some active out-door walking, generally quite impossible to get without it. So, on the whole, I look on the woods as the most agreeable and almost the most profitable part of the farm. When we first left them standing, we found the mosquitoes an annoyance, but lately we gave a little time to cutting a ditch through some wet parts, and at a very trifling cost all stagnant water was entirely removed, and the mosquito nuisance greatly abated. There is also something worthy of note in this remark. Many people think digging a ditch through wet parts of woods a most serious undertaking. Such, indeed, was my own feeling, before I went at it from necessity. I had a considerable piece of land attached to the farm that was swampy and wet. An Irishman who worked for me undertook to dig about one and a half miles of drain through the wet places at 25c. a rod. It cost certainly some money, about, if I recollect right, \$120; but it drained and rendered fit for cultivation 150 acres of land, which, without drains, would have been comparatively useless, as it was intersected with swamps, covered with black ash timber, and during wet weather the water was often six inches deep, and sometimes much more. After ditching no more trouble existed. I ditched in the woods before chopping or clearing, and thus saved two dollars an acre in the clearing, the contract price of which was for the undrained portion \$16 an acre, and for the drained parts \$14; that is, reckoning the job in sections of ten acres, part of which was in the first instance cleared (and drained afterwards) at a cost of \$16 per acre, while that drained first, before chopping and clearing, was completed for \$14 an acre. Whilst on the subject, I would advise any one who contemplates bush draining not to dig too deep, as it founders in and is all labour lost. A ditch four feet wide by one and a half to two feet deep, the sides of which are sloped at an angle of about 30°, will do the work just as well, according to my experience, after the first year, as one of four feet wide and three feet to three and a half feet deep.

I find the space for which I can venture to trespass on your columns so fast disappearing, that the rest of my walk, and

what I saw and remarked, must be deferred to another article, written at some future time, when rest to the body may be obtained by using the mind. I have often thought that if farmers would think more, communicate their thoughts to others, and receive theirs in return, read and communicate with agricultural journals and newspapers, there would be one great step gained towards improving the rising generation in the woods, where of necessity communication with each other is not so readily obtained as in cities. I shall be happy to record occasionally my own personal experiences in farming, if agreeable to your readers.

C.

Crops in North Oxford.

To the Editor.

SIR,—Having travelled more or less in all the townships in North Oxford within the last four weeks, I am prepared to say that the hay crop will scarcely be an average of past years. The old meadows have a poor show, and new seeded are only good in spots. The cold more than the wet has been the cause of the lateness of the spring, crops which at the present time present anything but encouragement. And, to add to the trouble, spring grain has suffered more or less in every township from the ravages of black and white grubs, and also the wireworm. Many persons have gang-ploughed whole fields and re-seeded. Others have sown over in spots, and harrowed in. The general opinion is that the dampness of the season has something to do with their unusual activity; but I find them the most troublesome in loose soils, especially rotten sward, and seldom in firm compact land, irrespective of moisture. Farmers are getting alarmed at their increase, and are looking about for a remedy. Those in the neighbourhood of lime-kilns would do well to lime heavily; and where salt is cheap, that article might be used to advantage. The apple-tree caterpillar has done but little damage this year, but it is doubtful whether fruit will be abundant. The frost and chilly winds have proved injurious, especially with grapes. Early vegetables have got nipped occasionally, and corn looks sickly.

Now let me give you a glimpse of a brighter picture: First, fall wheat, though not heavy in the straw, is generally regular, and the indications of a fair yield are manifest. Flax looks remarkably well, and seems to have but one enemy, laziness—that is, it requires too much manual labour to become a favourite crop, unless labourers should become more plentiful.

There are two other branches of farming that must yet find more favour with farmers, simply because they pay, namely, grazing and cheesemaking. Of the first I will only say, from my observation, I find that those who systematically and perseveringly raise stock, ultimately increase their possessions, and

improve the appearance of their homesteads. The most profitable branch just now is cheese-making. I have visited several factories during the past week or two, and having had access to their figures, find that good cows are netting 33 1-3 cents per day, equal to two pounds of butter per day, at present prices, or 33 cents per pound for butter. In one factory the May milk gave, on the average, one pound of cheese to every 9 5-16 pounds of milk. The majority have sold their May cheese at 12 1/2c. per pound, but I look for lower prices in the future.

We hear a great deal about hard times, but the substantial improvements everywhere manifested, such as fine houses and carriages, improved implements, stock, draining, fencing, &c., furnish a palpable contradiction to the statement as far as farmers are concerned. How true it may be with merchants and others it is not my business to meddle with in this paper.

In an early number of the present volume a correspondent made enquiries respecting the white willow for fences. In answer I would say as far as my observations have extended, both in Canada and Michigan, it is a failure. It will never be useful or ornamental, either for fences or wind-breaks.

R. W. S.

Woodstock, June 21, 1869.

Patrick Bell.

To the Editor.

SIR.—Twice lately I have read a notice of the late Dr. Bell and his reaping machine. In both accounts the birth of the invention was placed in the twenties. Yours in the CANADA FARMER of the 15th June, says: "It is now more than forty years since he brought out his first reaping machine." The other account said "in 1826." I had in England, a complete set of an old Agricultural Magazine, in which there were drawings of Mr. Bell's Machine as seen when at work. The volume the cuts were in bore the date "1815." I hope some of your elder readers have also seen that Magazine, and will confirm my statement. I also hope that you will take pains to place the truth on record. It is of more consequence than appears at once. Ten or twelve years may at some future time enable an imitator to supplant the inventor. The man who invented the reaping machine was a greater benefactor to his race than he who first produced a spinning machine. In either case, in every case, the least that we ought to attempt is to give honor where honor is due. All the reaping machines that have been made are founded upon Bell's.

W. R. CARTER.

NOTE BY EDITOR.—We took the dates in the notice referred to from the English journals. We have great pleasure, however, in inserting Mr. Carter's communication, though it seems he writes only from recollection, not having the old magazine of 1815 in his possession at the present time.

SALT FOR MANURE.—"V. C." will find his enquiries answered in the number of the CANADA FARMER for May. Due caution should, of course, be used in the application of salt to land as a manure. It is quite possible to use so much as to injure the soil and subsequent crops. Land salt can be had at the Stapleton Salt Works, Clinton, for 95 cents per barrel.

COST OF WIRE FOR FENCE.—A correspondent asks the price of the wire used in making fence. The wire is sold at the hardware stores at \$3 25 for a bundle of 63 pounds, or a little over five cents a pound. Perhaps in buying a quantity some reduction would be allowed. Of No. 7 wire, an English hundred weight, 112 pounds, would extend over 428 yards, and of No. 8, 112 pounds would reach 509 yards.

YELLOW CLOVER.—A correspondent sends specimens of a small yellow clover, of which he wishes to know the name. It is *Trifolium agrarium*, a common annual of no great importance to the agriculturist.

ADVERTISEMENTS FOR THE CANADA FARMER should in every case be sent in to the office of publication not later than the 7th of each month. Particular attention to this notice is requested, as advertisements received after the above date will be too late for insertion.

The Canada Farmer.

TORONTO, CANADA, JULY 15, 1869.

The Season and the Crops.

The past month of June has been an unusual one even for our somewhat fickle climate. Rain was much needed at the beginning of the month; it came, and has since been coming, till we have had so much of it that we now almost wish there had been none.

The amount of rain we have received this month is 4.40 inches, or 1.66 more than the average, and within 1.20 of the amount that fell in 1857, when the summer proved so unusually wet. On one day, the 26th, 9-10ths of an inch of rain fell. There has been rain on nineteen days out of the thirty in June, leaving but eleven dry days. At the same time the temperature has kept at a comparatively low point, being three degrees colder than the average—so that the crops have not benefited so much as they otherwise would have done from the rainfall. Grass especially, which bloomed short, is not making much headway yet, and old meadows look very short of grass.

The highest temperature was "81° 4" on the 29th, the lowest 36° 4" on the

6th. There have been seventeen days that were clear, or partially so; but rain in the shape of showers fell on some of them; thirteen cloudy days, and nineteen days on which more or less rain fell. The prevailing winds have been westerly; but there has been a considerable number of days on which the wind was east, or south-east. The two last days of the month have been warm, but very foggy and damp in the mornings, from rain during the night; and it is to be feared that such weather will not help the fall wheat crop just at its most critical period. Rust is especially liable to attack wheat at such a time, and such weather as we are now having might do much to destroy the hopes of the husbandman, now centred in the fall wheat crop, of which the prospect is, by all accounts, a good one, and only favourable weather is needed to bring it to a successful issue.

On the evening of the 27th, a remarkably terrific tornado of wind, accompanied by a hail-storm, passed across the counties of Middlesex and Oxford, doing an immense amount of damage to buildings and crops, the loss in Oxford township alone being estimated at a quarter of a million of dollars. Hailstones were picked up as large as a turkey egg, and weighing half-a-pound.

In Great Britain and Europe, by last advices, the weather has been more favourable, and several hot days successively have so much improved the appearance of the wheat crop that prices are again on the decline.

Such changeable, and we might say unseasonable weather, as we have had this spring, seldom occurs in Canada; yet, on the whole, we can find room for congratulation in the present appearance of the crops, and the prospect of another abundant harvest. But it is undeniable that the grain and hay crops will be late in arriving at maturity.

Slight frosts occurred on the 7th June, but did no damage of consequence near the lakes. During the second and third week of June we travelled through several counties bordering on the line of the G. W. R., and were glad to notice the great improvement in the crops due to the copious rains that have fallen since the 30th May. Fall wheat generally looked well, and was then heading out; but the want of warmth has been the great drawback, especially on strong soils; and we feared that should the cold weather continue long (and it was so cold on the 15th June, that we needed a fire in the room), the grain might suffer seriously. Wheat becomes especially liable to the

attacks of insect enemies when it is late in blooming, or a considerable amount of time elapses between the period of bloom and the ripening of the grain. A large breadth of spring grain had been put in, but we were unable to tell by casual observation at the period if there was a preponderance of any one kind beyond the usual average. A considerable breadth of roots had been already sown, but there was yet time to prepare land and sow turnips. Should the hay crop prove a short one, which is not at all unlikely, farmers who have much stock would do well not only to grow more turnips, but also some corn or Hungarian grass, to make fodder for early winter feed. Fruit trees are pretty well filled, except apples, which in some sections will scarcely produce enough for a show. Horned stock came out to grass in poor condition generally, and have but just begun to recuperate. Their numbers have, however, been considerably reduced by the large sales made during the winter and spring to American buyers, who are still our best customers for stock, as well as for our wool, which being of a class they cannot procure to any extent at home, now finds a ready sale at remunerative and advancing prices, 36s. in bills having been paid at Guelph for a large lot of Leicester wool, that gave a very high average yield per head to the flock from which it came. It would be a wise policy to sell wool while the demand exists, for when their orders are filled, American buyers will cease competing with our own woollen manufacturers for the season's clip.

Our American exchanges generally report crops looking promising, though the weather has been cold and backward, with pretty severe frosts in some places as late as the last of May.

But, if we have some reason to complain of the weather, our friends across the Atlantic have more. Recent English agricultural journals give unfavourable accounts of the weather, and its effects on the crops in Britain. On May 30th, in and around London, England, the temperature went from one to two degrees below freezing, and the general want of warmth, and excess of wet, has put back the harvest, it is reported, for fully a month later than usual, and prices of flour and grain are in consequence on the rise, an advance in wheat of fully 1s. to 2s. per quarter having been established. Prices are stiffening all over Europe. France has had bad weather, as also has Russia. In Germany and Southern Europe the prospects for wheat are good; but they never have much grain to spare

for export, and we are inclined to think that those who now have wheat on hand can lose nothing by holding on till after harvest, as the lowest prices have been touched. But unless the rise is great, present stocks in speculators' hands must be got rid of before any brisk demand for grain will arise on this side of the Atlantic.

Road Making.

The success of the agriculturist is so much dependent on his ability to take advantage of the market at all seasons of the year, whenever the price of his productions may attain the highest figure—and there is always a time when each crop he raises can be most advantageously marketed—that it is a matter of considerable importance to him to have good roads on which he can convey his produce to the best market at all times.

The law makes provision for this by compelling each and all to contribute his quota towards the general good of the country by performing a certain amount of work on the roads as statute labour, proportioned to his means and his stake in the welfare of the community. Unfortunately, however, the subject of road making is very little understood, and although the township councils appoint each year a person to each road division to see that the roads in it are put and kept in a proper state of repair, they seldom take the trouble to select men who are qualified for the undertaking; and if by chance a good pathmaster is appointed, his tenure of office seldom lasts for more than one year, and so all the good he may do in the way of making the beginning of a good road is often rendered nugatory by the want of unanimity of purpose in continuing the work on the part of his successors in office. It is too often the case that pathmasters are appointed from personal considerations rather than those of their fitness for the duties they are to undertake, and, as might be expected, what is everybody's business soon becomes nobody's care, and to tell the truth, the work, which ought to be made a source of pride in well-doing, to the farmer, is too often either shirked altogether, or entered into without any further object than to do as little as possible in the time required for performing it. It would be impossible in a short article to give at length the principles which should govern the art of road making, so as to make the most of the labour, time and materials to be employed in the work. Where gravel can be had within a moderate distance, it would be well to use it as much as possible, first making the roadbed dry, by ditching at the sides, and somewhat elevated where the gravel is laid on, leaving the top rounded off towards the sides.

In all cases, much can be done towards making the road passable at all seasons of the year, by digging deep ditches at each side. The usual plan of just scraping out a

little earth at the sides, leaving a shallow watercourse of a few inches in depth, is but little better than labour thrown away. To give good drainage to the road where the soil is heavy or liable to wear, the ditches should be dug from three to four, or even five feet deep, and a good outlet and fall given to the water, which should not be allowed to accumulate and remain stagnant to water-soak the soil of the road bed.

It is only deep drainage that will ensure all water that is in the road-bed being drawn off, and thus the road being always dry in a short time after rains, instead of, as now, being worked into a quagmire in the fall and spring by the tramping of teams on a water-soaked soil. The great objection made to deep ditches is that cattle or other stock will be apt to fall in, and be unable to get out; but then, cattle, horses, or hogs ought to have no business on the public highway, and sheep, which are the only stock that can be tolerated without much risk of injury to the roads, are not apt to fall into the ditch, or, if the sides are made slightly sloping, can easily get out again.

In cutting down hills, the proper way is to take the earth from the top and put it at the level of the bottom, thus lengthening the ascent, while at the same time it is made more easy and gradual. Hollows between two hills are easily filled up by cutting down from the top of both; and in all cases where water courses run across roads, a good stone or planked culvert should be made, high and wide enough to allow of water passing at flood times without washing out the road.

In many parts of the country, the main travelled roads are already either macadamised, or gravelled, by the county councils, or by private companies, and the work of making the concessions and side-roads leading into them passable for heavy loads, at all times of the year, is not one that need prove a very heavy tax on the owners of farms lying a few lots or miles from the main thoroughfares. A good road once made costs but little labour to keep in repair, while a badly made road is not only an eyesore to the traveller, but is a constant source of annoyance and costly repairs to every resident of the neighbourhood.

In all the older settled countries of Europe good hard roads, nicely kept, and planted with shade trees, are to be found in every direction, while here the farmers who own their land, and might at a moderate expense, once for all, make a good road in front of their own properties, are content to be the most heavily self-taxed class in the community, simply for want of energy enough to combine together to grapple with the evil of bad roads, and end it at once by the expenditure of a little extra cost and labour on their own part.

The French Minister of Agriculture is still receiving the most satisfactory report of the crops throughout France. A more than average harvest is hoped for.

Agriculture in New Brunswick.

By the last annual report of the Board of Agriculture for the Province of New Brunswick, it appears that the progress of this important interest in the sister Province has kept pace, on the whole, with the increase of the population, and the development of other national industries. There is a wide field, however, open for future achievements, and we can only regard the practice of scientific agriculture as just starting on its course of improvement among our maritime neighbours. The Government seem to be taking a lively interest in the subject. Assistance is given by grants of public money to agricultural societies. Of these there are thirty-four receiving such aid throughout the Province, and they appear, to judge by their published reports, to be carrying on their work energetically and efficiently.

The Board of Agriculture are inaugurating amongst other measures, the establishment of a Provincial breeding farm, with the view of importing and raising stock of the best breeds, and thus increasing and improving the stock of the country. It is estimated that the first year's cost of such a farm would be \$18,780, and the subsequent annual expenses \$1,509. This scheme, liberally and judiciously carried out, will no doubt prove of great service to the country.

Hitherto, the Province has not raised sufficient in the way of breadstuffs for its home consumption, and New Brunswick merchants have been large importers of all the varieties of grain, and even of butter, cheese and lard. There are two principal reasons assigned for this deficiency in the agricultural produce of the Province. In the first place, lumbering operations have engrossed too large a proportion of labour and capital; and in the second place, the system of husbandry generally pursued has been of too rude a character to produce the best results. There can be no doubt that the climate and capabilities of a large portion of the soil are such as, under a truly economical and scientific method of farming, would produce ample supplies of food for the population of the country. The crops raised are mainly the same as our own. Indian corn is grown successfully in a few counties. Roots, and potatoes especially, are extensively cultivated, and with large yields.

The crop reports for the past year give results which may be considered, we are told, above the usual average for the Province.

The Board of Agriculture very strongly recommend that correct statistics be collected of the agricultural operations of each year; and for this purpose suggest that the collector of taxes in each section be the person authorised by the Government to obtain the necessary information. We are not sure whether that official, unpopular as he often is, would not be, from his peculiar position, far better qualified than the secretaries of agricultural societies, or any others, to secure the desired returns.

Editorial Notes.

A good deal of unnecessary trouble is given by the want of determination and decision on the part of farmers towards the labourers they employ. In too many cases, under a mistaken idea of kindness towards the feelings of others, there is a great laxness of expression used by the employer towards his man. Let it be distinctly understood that unless the farmer exercises proper authority over all that are under him, he cannot expect his work to be thoroughly done. A man is hired to work and it is presupposed as part of his contract, that he is to do, not only whatever work he is able to accomplish, but to do it in a workmanlike manner and in a given space of time. It is all very fine and philanthropic to show seeming kindness to labourers in the choice of their work and use of time by giving ambiguous orders in soft words, like "I think you had better" do this or that, as the case may be. It is the workman's business to do just what his master requires, and he is paid to do it, therefore the master should be prompt and decided in giving his orders; and not only so, but he should also know exactly how much labour can be performed in a given time, and allow of no dilatoriness about it. A good deal of the failures to make root crops profitable, we are convinced, arises from the want of system on the part of farmers, in making the most of the labourers they employ as well perhaps, as placing them on a footing of too much equality with their masters. Many valuable hours, that might be profitably turned to account, are lost in early mornings, on wet days, or while repairs of machinery are going on, from want of telling the men firmly and decidedly to hoe the corn or roots, instead of allowing them to be seen loafing idly about, till the work they are expecting to be put at is ready for them. Those workmen who are worth employing will not take offence if they are given their instructions decidedly and definitely.

There are two ways in which land may be ameliorated and brought into good tilth and condition for grain crops, and then seeded down to grass. The first is by growing roots with the help of manure, to restore fertility and get rid of weeds, which can be done to most advantage on fields already well worked and smoothed down by the action of the plough. The other is by summer fallowing. The latter is often objected to as entailing a loss of one year's crop, but this is more in theory than in practice, for there are fields on many farms that have remained in a state of rough pasturage, yielding but little grass for years, full of old stump roots, cradle knolls, wild grasses and weeds of every description, that can only be got rid of, and the land brought into a proper system of rotation, by first giving them a thorough summer fallowing, followed by fall wheat or barley, as the crop on which to seed down with clover or grass seeds.

There has been a vast amount of talk indulged in of late in American agricultural papers in regard to the relative advantages of deep or shallow ploughing. The truth is that so much depends on the nature of the soil, the rotation pursued, both now and formerly, the presence or absence of certain inorganic elements in the soil that can be rendered organic, or assimilated into food for plants, by chemical and mechanical action combined, that no certain rule can be laid down that will apply to all cases alike. A course of procedure that succeeds with one farmer, or in one place, as given by Dr. Trimble, of New Jersey, might be quite inapplicable to the circumstances of another farmer or section of country. The individual characteristics of the cultivator himself also have much to do in the matter, and the only safe rule to follow is that of actual experience, remembering that the object of all good farmers should be to keep up the fertility of the soil, while yet obtaining remunerative returns from it.

A good deal is being said just now in a few of our exchanges about hilling potatoes or corn, and it is maintained by some that better crops can be obtained without hilling than with it. As regards corn, we do not know enough to venture an opinion, but are convinced that the potatoes, unless it be the Early Rose, or some of the other dollar a pound hot-house sorts, will give far the best crop when properly hilled. Aye, there's the rub, and to find out how that is to be done, set an Irishman, fresh from the "ould sod," to hill the potatoes, and give him leave to do it at the right times, which he ought to know. We did so twenty years ago, and have not forgotten how to practice since the lesson then learnt from him.

Great complaints are made by farmers of the constant annoyance caused by the use of round screw bolts in agricultural implements, and machinery worked by horsepower. They easily get loose, and are difficult to tighten, where nuts are used. The bolts will keep working round and outwards, and wearing out their sockets. Let the implement makers use square bolts, and the trouble will be avoided.

In Holland, that country of canals and high farming, fences are rarely seen, and the value of the manure is too great to allow of its being wasted by pasturing cattle and horses in summer.

Instead of pasturing the stock, they are kept in the stables all the year round, and fed on the soiling system during the summer. In this way a very much larger number of cows can be kept on a limited area. When they are turned into a good crop of clover they will trample down and destroy a vastly greater proportion than they eat, which destruction and loss are entirely saved by adopting the eciling plan.

THE AMERICAN AGRICULTURIST, published by Orange Judd & Co., New York, now comes to us with regularity. It may be styled the dandy paper of the Agricultural press. Its illustrations are prettily got up, the poultry engravings being marvels of beauty in the wood cutter's art. It will not seemingly lack patronage for want of blowing its own trumpet. Our old time friend, Joseph Harris, furnishes its most useful and readable articles, and in "Walks and Talks" he aims to show how well good farming pays, and to bring the science of agriculture into favour, by giving his experience of its practical application on his own farm near Rochester. The paper would be greatly improved were it sent out with the pages cut, as the material on which it is printed is so thin as to be easily torn in such rough cutting as a working farmer would be likely to give it.

GOOD HEALTH.—This is the title of a new monthly journal, published by Alexander Moore, of Boston, the second number of which, for July, has just reached us, and to judge by its well chosen and varied contents gives promise of a very useful and interesting periodical. It is devoted mainly to the dissemination of popular information on matters relating to physiology and health, but contains also a number of articles of more general character, so that all readers may find something attractive in its pages. The illustrations and typography are in the best style; and altogether the number before us forms a very instructive and readable magazine. A work of this kind properly conducted, and in competent hands, is much required as an antidote to the baneful influence of empirical advertisements.

STOCK SALE.—We direct attention to the advertisement of Mr. Pickereil of Harristown, Illinois, who will sell by auction at his residence, on the 4th of August, a number of fine pure bred animals, comprising Shorthorn cattle, young horses, Southdown sheep, and Berkshire hogs. Mr. Pickereil's stock is well known in the United States, as well as among our own breeders, from whom indeed he has purchased some of his choicest animals. In the January number of the CANADA FARMER will be found a brief notice of Mr. Pickereil's Shorthorns with a portrait of one of his bulls.

FALL SHOWS.—As the time of holding the Fall Exhibitions is drawing near, we should feel obliged if the secretaries of Agricultural Societies, or other correctly informed persons, would apprise us of the time and place of holding the various shows in their neighbourhoods, that we may publish as complete a list as possible. We would also direct the attention of the secretaries and managing directors of the societies to the advertisement of the Glone Printing Company, who are prepared to print Prize Lists, Placards, and Handbills, in any desired style, and on the most moderate terms.

Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

Meeting of the Fruit Growers of Western New York.

This Society held its usual summer meeting on Wednesday, the 23rd June, at the city hall, in the city of Rochester.

There was a very good attendance of members, upwards of a hundred being present during the discussions. Among those not residents of Rochester and vicinity, we noticed the world-renowned pomologist, Charles Downing, Esq., of Newburgh, and J. J. Thomas, Esq., of Union Springs, the able author of the *Fruit Culturist*.

This Society, a few years ago, enlarged its field of discussion by adding to the fruits all horticultural products. There was consequently upon the table a fine display of flowers, especially of roses, peonias and pansies. The display of fruit was not as large as usual, owing to the unusual lateness in ripening. Messrs. Ellwanger & Barry exhibited twenty-one varieties of strawberry, of which the most conspicuous and attractive were Wilson, Triomphe de Gand, J.inda and Nicanor. Of this last-named sort there was a plant in a pot, showing its very great productiveness. Messrs. Ellwanger & Barry also contributed a very fine collection of roses, including such choice varieties as Senator Vaise, John Hopper, Marshal Vaillant, and Madam Charles Crapelet; and a large collection of sweet scented peonias of great size and beauty.

Mr. Joseph Keech, of Waterloo, exhibited seven varieties of his seedling strawberries. Mr. Keech has been engaged for more than twelve years in raising strawberries from the seed, and out of over 2,500 seedlings, he has selected seventy which he is now testing, and some of these he considers to be of great promise. One of the seven which he exhibited at the meeting, he had named "America," and said that it was very early, and very productive, and that he had been using it on his table for the last twelve days. It was a very large and showy fruit, of good flavor; indeed all the seedlings he exhibited were of very fine appearance.

Jacob Moore, of Rochester, also exhibited some seedling strawberries of his own raising, which were very large and fine, one of which he claimed to be as early as the Early Scarlet.

The President, James Vick, Esq., of Rochester, placed upon the table a choice collection of flowers, embracing peonias, yerbenas, pentstemons, carnations and pansies. The pansies were chiefly of a new school of striped sorts, which set at defiance all the established rules of English pansy growers, but which were very attractive on account of their novel appearance.

Considerable attention was paid to the specimens of flowering shrubs, and of shrubs and trees of variegated foliage, which were exhibited by Messrs. Ellwanger and Barry.

The Business Committee presented the following list of subjects for discussion.

1. Is there any new material, or compound, or mechanical means, which is a practical and efficient remedy for insects destructive to vegetation, in gardens and orchards?
2. What new Strawberries promise well?
3. What new Raspberries promise well?
4. What new Blackberries promise well?
5. What new Currants promise well?
6. What new Gooseberries promise well?
7. What are the best twelve sorts of flowering shrubs for general planting?
8. What are the best six sorts of Evergreen Shrubs?
9. What are the best six sorts of Climbing Shrubs?
10. What are the best Hedge Plants for protection?
11. What are the best Hedge Plants for ornament?
12. What are the six best sorts of Climbing Roses?
13. What are the best twelve sorts of Hybrid Perpetual Roses?
14. What new Evergreens can be recommended for general planting?

The following question was handed to the committee:

15. Is it wise in the Society to recommend any strawberry for general cultivation which is not a self-fertiliser?

The discussion on the first question resulted in showing that white hellebore was a very valuable and efficient destroyer of the worm of the Gooseberry Sawfly and several other insects; that Cresylic soap, dissolved in hot water at the rate of one pound of soap to ten gallons of water, and whale-oil soap in solution, were valuable agents in lessening the ravages of slugs, thrips and various leaf-eating insects; that common gypsum or plaster of Paris, sprinkled freely on young cabbage plants, radishes, melons, cucumbers, etc., would so protect them from the turnip-fly or flea-beetle, that these insects were unable to injure them. Some had found a dusting of coal ashes

and others of wood ashes, to be very beneficial in repelling or destroying insects.

Some one had invented a very sure insecticide, and read a report from some who had tried it, in which it was very highly commended; but some present had not found it so efficacious. There seems to be no one agent that will kill all insects, and there is great need of watchfulness, and prompt use of such means as may reasonably be supposed to be of service, in order to keep the legion of insect pests under subjection. Every day's experience only demonstrates the greater need of a wider diffusion of knowledge on the natural history of insects, their modes of life and individual habits, among our farmers and gardeners; and the lamentable ignorance and confusion of names that exist even among the most intelligent of our cultivators.

No definite result was reached with regard to the new strawberries. Every one seemed to have his favourite, more especially those who had some wonderful seedling of their own growing.

On the discussion of the third question, Mr. Johnson of Palmyra spoke very highly of the Davison's thornless Black-cap Raspberry, especially as to its hardiness and productiveness; and stated that the Philadelphia was the most successful variety they had for productiveness and hardiness under all circumstances. The Mammoth Cluster he believed to be the best Black-cap grown.

The Clarke was mentioned as being quite hardy and productive.

The fourth question resulted in an unanimous expression of satisfaction with the Kittatinny by those who had given it a trial. It had proved to be hardy, productive and good.

No new currants were named. Some new gooseberries were being raised by Mr. J. Moore, hybrids or crosses between the Houghton and English varieties, which promised to be an advance on present American sorts, and to be free from mildew.

On a ballot upon the seventh question it was found that the following flowering shrubs had received the highest number of votes, namely:—

- Deutzia Gracilis.
- Deutzia Crenata, flore pleno, (double).
- Spirea Lanceolata, flore pleno, (double).
- Spirea Prunifolia, flore pleno, (double).
- Weigelia Rosea.
- Pyrus Japonica, or Japan Quince.
- Prunus Trilobata, (double).
- Purple Fringe, or Rhus cotinus.
- White Fringe, or Chionanthus.

Double Rose Flowering Thorn
Persian Lilac.
Snowball.

Tartarian Honeysuckle.
Dwarf Double-flowering Almond
Syringa or Philadelphus Coronarius.

No definite decision was given to the 8th and 9th questions.

In reply to the 10th question, Mr. P. Barry favoured the Honey Locust, in which view he was sustained by Mr. Maxwell of Geneva.

There were many things named as suitable for making ornamental hedges. Among the most prominent were the Arbor Vitæ for an American hedge, both the American and the Siberian varieties; and the Althea, Japan Quince, and Deutzia Gracilis, among deciduous shrubs.

The six climbing roses named were:—
Queen of the Prairie, rosy red.
Queen of the Belgians, pure white.

Dundee Rambler, white tinged with red.

Baltimore Belle, pale blush.
Belle of America.

Belle of Washington, deep rose.

The following hybrid perpetual roses were named as among the most desirable:—

William Griffith, rosy lilac.

Senateur Vaisse, bright red.

Pius the Ninth, purplish red.

Madame Julie Daran, vermilion red.

Madam Charles Crapelet, rosy crimson.

Madam Charles Wood, brilliant red.

Prince Camille de Rohan, velvety maroon.

La Brillante, transparent carmine.

John Hopper, deep rose, crimson centre.

General Jacqueminot, crimson scarlet.

Baronne Prevost, deep rose, very large.

Beauty of Waltham, rosy crimson.

In reply to the 14th question, Mr. Barry spoke very favourably of Lawson's Cypress, and Libocedrus decurrens.

Lawson's Cypress is a native of California, and there attains a height of a hundred feet. Its habit is particularly graceful, the branches curving upwards at first, but towards the extremities drooping like ostrich plumes. The foliage has a charming feathery lightness, of a beautiful bluish green.

Libocedrus decurrens is also from California, brought from the upper waters of the Sacramento. It attains a height of 140 feet, rising from 80 to 100 feet without a limb. Its appearance is very beautiful, but in the State of Pennsylvania, near Philadelphia, the leader and sometimes the side shoots have been winter killed.

Invitation was given to the members to visit the Century Plant on the grounds of

Messrs. Frost & Co., which is now throwing up its flower stalk, that has already attained a height of over twelve feet. The flowers have not yet expanded, but they may be expected to make their appearance in the course of the next month. This plant is the striped-leaved or variegated American Aloe or Century Plant, purchased in 1809 by Hon. John Greig, of Canadaigua, at Prince's Garden, Long Island, and becoming large and unwieldy, it was sent to Messrs. Frost & Co., with whom it has since remained, in 1856. It is supposed to be now about seventy years old. It showed indications of flowering on the 25th of April, 1869, since which time its daily average growth has been about three inches. The flower stem measures four inches in diameter, and bears a great resemblance to a gigantic asparagus bud; but branches will be thrown out at the top, upon which the flowers will be borne, which, taken singly, bear considerable resemblance to that of the lily. An American aloe that flowered in Devonshire, England, in 1820, attained a height of 27 feet, and bore on its branches 10,000 flowers. Canadians visiting Rochester this summer will be much gratified in seeing this magnificent plant.

Gardening for Farmers.

Gardening for farmers, and gardening for gentlemen who keep a gardener, are quite different avocations. The gentleman thinks that a good supply of vegetables in their season is quite beneath his notice, and if his garden productions are not several weeks in advance of those of others, is quite disappointed. Hence the cost of the garden of a gentleman, where hot-house grapes, peaches, dwarf apples and pears are grown. The most of these I would advise farmers to avoid until circumstances of affluence warrant such an outlay; not that a farmer should not have all garden luxuries out of season as well as any rich man, always provided he is forehanded enough to afford it, but the men to whom I now address myself are those who, like myself, are farming one, or perhaps two hundred acres of land—who do not feel above their business, and to whom a good productive garden, a pretty homestead, shaded with common, inexpensive shade trees, a good orchard and fruit garden, supplied with red and black currants, raspberries, blackberries, and perhaps strawberries, cherry trees and plum trees, and certainly plenty of open air grapes—to these men I would say, all these luxuries are quite within your reach. You want no experience difficult to obtain; and if anything should occur by which you are at fault (if you subscribe to an agricultural paper, and every one ought to do so), you can always command the experience of the thousands

of subscribers to your paper, by simply writing a letter, stating your difficulties, to the editor, who will generally obtain all the information you require on the subject by publishing your letter of enquiry. The liberality of the journals devoted to agricultural interests, in this respect, is certainly great. No trouble to supply information is grudged to subscribers. All that is wanted is to write short, plain letters, to the point, and pay postage. The enquiry, if worthy of publication, is almost always published for the vast number of subscribers to read, and generally some one amongst them will feel sufficiently interested in the subject to reply. I may be pardoned if I give a hint to farmers who reply to "write plainly," to confine themselves "to the point," and to "pay postage."

We will now proceed to speak of the way to making a farmer's garden out of a portion of the fields adjoining the homestead. If the land be wet, the first thing to do, after staking it out square and true, is to drain it. If tiles are readily to be obtained, they, of course, are best; but generally they are too expensive and difficult to be got. In this latter case, proceed to run the plough quite round the outer edge of the plot, as staked out and determined on as a site for the garden, being careful to go perfectly straight and true. Throw out a furrow both ways, and leave a trench about twelve inches deep and two feet wide. Spread away the earth thrown out, and lay down your garden line, and dig out the remainder of the trench to at least three feet deep, by say four feet wide, sloping the sides so that the drain is only about nine inches wide at the bottom, spreading away all earth so thrown out at once. Mind, directly: do not leave it, or it will never be spread, and will be an eyesore so long as you live.

Your garden is now well defined and drained. Nothing more is to be done, as the ditch in question will effectually drain one or two acres, especially if a cross-drain or two be cut, if found necessary. Two acres will not be too large, as I propose to include in this place all early turnips, carrots, and potatoes, as well as small fruits. The orchard will, of course, have been made according to former directions—in "Orchard Culture for the Million."

You now proceed to mark off at each end of the oblong-shaped garden a piece of about fifteen feet. This portion is intended to turn out on with the team, as I propose to cultivate the garden altogether with the plough and cultivator. No farmer can calculate his garden by manual labour, so as to pay, and I propose to show that it will pay, and pay well. You must now draw with the plough, at regular and true distances, parallel lines, lengthwise of the garden, and say sixteen feet apart, leaving then a walk of four feet at each sixteen feet, so that the garden will be formed into a succession of beds sixteen

feet wide, with walks four feet wide between the beds. These walks are to be formed by commencing with the plough in the centre of each walk, and throwing up a ridge of two furrows each side; and when the two furrows are drawn, come round again in the centre of each interval, and throw up the centre bed into a crowning ridge, of course leaving quite a deep furrow close to the edge of the walk. This ridge will eventually harrow down a great deal, and the furrow will also fill in somewhat. We now commence and sow each walk to Dutch and Alsike clover, so as to leave a dry grass walk for ever after. We next turn our attention to the main portion of the garden, and, of course, as soon as possible, get up a sufficient board or straight fence, made of posts and bars or boards. This is to be erected just without the ditch, say with a space of four feet between it and the ditch, and well seeded with clover, not near enough for the fence to interfere with the ditch, but it is important that the ditch be enclosed within the garden, so that all inroads by cattle will be entirely avoided: and when grass is growing all about the sides, there will no longer be any danger of foundering. All round the outer edge of the ditch there ought to be planted a row of white willow. It forms a beautiful hedge, bears trimming well, is very ornamental, makes an excellent shelter against heavy wind storms, and can be got for little or nothing. The grass walks will, of course, be mown once or twice during the season, and will pay for so doing in the useful and convenient feed it will afford for all sorts of purposes where green feed is required. If a very nice walk is required, of course, they can be mown once a month, and the pleasure of their neat appearance will amply repay any one for so doing. I myself can cut one quarter of all the walks before breakfast any morning, by getting up an hour earlier, and still get into the field before seven o'clock. If any man's heart is in his garden, plenty of odd hours will be found to keep the walks in order.

We now come to the preparing of the soil for a crop. I mean the sixteen feet intervals between the walks. Now do not suppose you are going to grow garden stuff as it ought to be grown the first year—"not a bit of it." You must fallow and manure. You must first manure with a heavy coat of well-rotted manure, and plough it deeply in. Run the plough again as deeply as possible into the subsoil, in the bottom of the furrow. I have subsoiled land in this way, fourteen to sixteen inches deep, often. There will not be much of the sub-soil reach the surface; but some will, and the rest will fall back. Never mind this. Down with the plough as deep as you possibly can. As soon as you have finished ploughing this way (and you must have commenced in the centre of the sixteen foot interval and thrown that also into a circular ridge), you will have quite a trench at the edge of each walk. You may

then leave the land alone for a month or two. You now again cart on the manure a second time, and cover the whole land over with a second heavy coat of it, and plough it well under. You will now have a furrow up through the centre of each interval, as you finish ploughing in the manure the second time.

Leave your garden now until next spring, and then commence ploughing as usual, up the middle of each interval, throwing up the land into a rounding ridge with quite a furrow at the side of each walk. Harrow and sow in any way you choose. You will ever afterwards have a good crop, if all be done in season.

Each autumn, after the crop is removed, give a couple of days to hauling on more manure and ploughing it well under. Let it lie all winter, and sow as usual the spring following. The fall manuring is far superior to that in the spring, as manure rots to a great extent before frosts sets in, and before spring sowing is necessary. If this course is followed your garden will produce five times as much as if made in an ordinary undrained manner, your vegetables will be easily raised, and cultivated for the most part with horse-power, you will have an abundance of all kinds, and will require and must have a large root house or cellar to contain the crop. I have no hesitation in saying that two acres of garden, well drained and cultivated, will furnish vegetables of all kinds for a family of twenty; but nothing can be done without abundance of manure, and deep subsoiling.

If you have not a good outfall for the manure, dig them all the same, even if there is absolutely none, as they will drain the land well, although somewhat later. C.

Russian Horticultural Exhibition and Botanical Congress.

The St Petersburg International Horticultural Exhibition and Botanical Congress has struggled with a succession of difficulties until it has at last achieved a crowning success.

The Exhibition itself, as a floral display, had the additional disadvantage of being placed in a locale with insufficient light, and that only received from windows along the sides. We have often been struck with the good effect of the Continental Shows when held in riding schools, and have thought them very little behind tents in quality of light, and much superior to them in everything else, but this is only when the place is lighted from the roof, or near the eaves. When, as in the present case, the light is from a succession of windows along the walls, the result is by no means so happy. The masses of azaleas and roses, which were quite sufficient in quantity to have illumined the whole place, fail to do so from want of light.

The first survey over, however, and attention once directed to the details, what cannot

fail to strike every one is the love for plants which must animate the people to have enabled them to furnish from Russian stores such an immense quantity of magnificent tropical plants, and to produce such admirable specimens of horticultural skill in various species of known difficulty of cultivation. It was plain from the first, although the names of the exhibitors were not placed until after the juries had finished their labours, that the multitude of palms and large tropical plants could never have been supplied by foreign exhibitors. They were mainly supplied by neighbouring gentlemen; and what is still more remarkable, on visiting the different gentlemen's residences in the neighbourhood, to which the members of Congress were invited, the hot-houses of each and all were found to be of an extent, and supplied with an amount of material, far surpassing in quantity anything of which they had the slightest idea, or which would be found in similar places in England, and especially overflowing with large and well-grown specimens of palms and other tropical arboreal vegetation.

Considering the climate, or, indeed, not considering the climate at all, the cultivation of the roses in the exhibition was beyond all praise. They were not one whit behind—if they could be better we should almost say that they were before—the wonderfully fine display of roses exhibited by our first growers at South Kensington a few weeks ago. Of Russian exhibits, a collection of a couple of hundred hardy flowers, many of them Russian or Siberian wild flowers, and most of them well known in the old herbaraceous gardens; also a collection of alpine and polar plants in flower, a collection of twenty-four species of iris, and again a collection of hardy orchidaceous plants, chiefly from Siberia, were especially noteworthy. These were all from the Botanic Garden.

The foreign exhibits were easy of recognition, consisting chiefly either of splendid orchids or fine foliaged plants, among which were many of the aroid character, on which the public taste seems latterly to have been running, or of tree ferns, fine azaleas, &c. Besides these, a few absolute novelties, chiefly supplied by Mr. Linden, added a special interest to the collection. Altogether, the union of Russian and Western stores made an exhibition wonderful in extent and admirable in detail, which will long dwell in the memory of every one who saw it.

The exhibitor laureate of this Exhibition was Mr. Linden. He not only carried off more prizes than any one else, but also gained the Emperor's special prize, given to the foreign exhibitor who should have most contributed to the beauty and embellishment of the exhibition. A similar prize, given by the Empress to the Russian exhibitors, was awarded to M. Lorgus, who, besides an immense quantity of fine plants, had largely contributed to the success of the show by his

roses. Of Englishmen, Mr. Warner and Mr. Veitch were both medallists; the former had sent a collection of fine orchids in flower—a collection which was considered the cream of the Exhibition. We feel sure that if the Russian public had been polled in the first days of the Exhibition, the Emperor's prize would have gone to him. In the latter days the flowers were beginning to fade, and we greatly fear that he will lose some of his most valuable plants. With the juries, however, M. Verschaffelt, of Ghent, ran Mr. Linden closest for the Emperor's medal, he having contributed a great number of plants especially adapted for the embellishment of the show. His azaleas added more brightness and colour to the Exhibition than the whole of the rest of it put together.

The success of the Exhibition and Congress is mainly due to the exertions of Dr. Regel, and the President of the Russian Horticultural Society—Admiral Greig (Scotsman by descent). They appear to have been supported gallantly and in the right spirit by those who had the power to help, namely, by the Emperor and his higher officers. In their eyes this meeting has obviously a wider significance than a great flower show, and another aim than the promotion of horticulture. It is the civilization and advancement of the Russian people which they have at heart, and to promote which they use this as one of many means.

Whatever may have been the moving impulse, the Congress and Exhibition has received the most gratifying proofs of the Emperor's interest and protection. The more eminent members of the Congress have been personally presented to him; the whole Congress entertained at an Imperial banquet in his country palace, driven over his grounds, and entertained at other palaces, which they were also invited to visit.

The same spirit has animated every Russian with whom they came in contact—an anxiety to please, to study the comfort and happiness of their guests, to make sure that they see everything of interest, has been universal. We are glad that it will not be our turn for a while to have the International Exhibition in London, for we feel sure that so long as the remembrance of this remains it will be difficult to prevent it being a comparative failure.—(Farmer) Scottish.

The Coleus.

Few groups of plants have so rapidly emerged from comparative obscurity into prominence and notoriety as that of the Coleus. Twenty years ago, almost the only representative was the well known Coleus fruticosus—the "Nettle-leaved Geranium" of our grandmother's windows, a plant admirably adapted for the position it has from time immemorial been called to fill, that of a cottage window adorning. It cannot lay claim to any merit for beauty either in leaf or flower; it has, however, an iron constitu-

tion, and is always green and healthy-looking, but nothing more.

The first of the family with ornamental or coloured leaves introduced to us was Coleus Blumei. This has produced two sports—Pectinata, a little more cut in the leaf; and Telfordi or Aurea, a bright-coloured yellow, but weakly-constituted variety. Then appeared Coleus Verschaffeltii, a plant which, from the very day of its introduction, has gone on steadily advancing in favour. In ribbon flower borders it stands unrivalled in producing effect of colour, such glorious masses of glowing crimson purple. As a specimen pot plant it is also greatly appreciated for either summer or winter use. From this several sports have been secured, first, C. Murmorata, having the leaves slightly marbled with green, not very persistent, however; C. Aureo-marginata, having the leaves slightly edged with pale yellow, tolerably distinct, and rather pleasing; and quite lately another, named Beauty of St. John's Wood, which, however, I have not yet seen.

The next was Coleus Gibsoni, a robust-growing sort, somewhat resembling in appearance our old window favourite, with the addition of a little purple on its leaves. Coleus Veitchii is one of the latest, a sort of intermediate between Verschaffeltii and Gibsoni, pleasing when grown as a pot-plant, but too tender for bedding purposes. Coleus nigricans, a dark leaved sort, of straggling habit, is almost worthless.

Such, then, was our stock of Coleuses until last season, when the hybrids appeared. The advance was so great and so little expected, that the country was, as it were, taken by storm with them; and on their being sold, they were very speedily to be found in every garden in the country.

In the Horticultural Society's collection of 1868, the most unique, in my opinion, is C. Bausei; it is, however, as a pot plant under glass that it tells to most advantage. There its dark plum-colour comes out the clearest and brightest, and the green beading of its very regularly toothed leaves is just enough to set it off and make it charming. In the open ground, judging from the past season, it becomes rather dingy and ineffective in colour. C. Saundersii is the next best for pot culture; while for bedding out, the best I believe to be C. Ruckeri, which becomes almost quite black, and C. Scotii, which is very dark, intermixed with green streaks. The others, of which much was hoped, as C. Berkeleyi and Marshallii, are rather too dingy in their hue to suit for bedding-out purposes. None of the whole batch are, I believe, equal to our old favourite Verschaffeltii for bedding; there is a warmth and a depth of colour about this, to which the others cannot lay claim.

What are we, however, to expect from the many lovely gems, and the second batch of seedlings raised at Cuiswick, and now being distributed by several of our leading nursery-

men? Here there is colour, and to spare—colour more bright, more deep and rich than the greatest enthusiast could ever have imagined to belong to foliage. We look for such colours only in flowers. What may not be done with these fine plants when once they are amongst us? For the decoration of our conservatories, and even windows in winter, flowers, as far as regards colour, may almost be dispensed with. For specimen plants in small pots for the dinner table they are, or will be, invaluable—red and crimson being the colours that tell to most advantage on a white cloth by gas-light. Amongst so many good ones, it is, indeed, difficult to say which bear the palm. For depth of colour I incline to Princess Royal. Queen Victoria is exceedingly pleasing and very effective. Then, for nobility of aspect, I name Albert Victor and its partner Baroness Rothschild. Duke of Edinburgh is striking and unique; and, in contrast to all these, comes Princess Beatrice, a dwarf habited, pale yellow sort. To name more would but be to confound, and that is unpleasant. If there is not already, as the French so quaintly have it, an *embarras de richesse* amongst Coleuses, we shall have it shortly. They will be as numerous as the now numberless varieties of Zonal Pelargoniums. Besides the scores which are already in the nurserymen's hands, they have again at Chiswick a third batch of hybrids from the hybrids, amongst which are many striking novelties, distinct in character from all; and many other growers are similarly engaged in raising new Coleuses.

The Coleuses—all the varieties—are plants of very easy cultivation. The seed, which resembles that of the *Amaranthus*, is produced pretty freely from plants in pots under glass. It may be sown as soon as gathered, or kept for months. A little gentle heat is necessary, between 50° and 60°, or higher. The young seedlings must be treated like any other seedling plants, keeping them when potted off in a moist temperature of 60°, rising to 70° or 80° during the day; potting on liberally as required, using half peat and yellow loam, with a little manure, and sand. They are easily propagated from cuttings: indeed, a good propagator, from a single healthy plant, may in six weeks produce many hundred rooted plants. The best time for their general propagation is the spring. If required for bedding out, they must be gradually hardened off, first by increasing the air, then by pulling off the lights entirely, if in pits, and exposing them on fine days and nights; care must be taken, however, to have the plants of a fair size first, as much of the ultimate success depends on this, and on their being properly hardened off. If intended for pot work for summer decoration, they may again be potted and made to grow freely, which they will do in a cool greenhouse, pinching them to the required form, of which the pyramidal is decidedly the prettiest. If intended for winter decoration, the cuttings should be put in later, say in July; and treated as just de-

scribed, they will be found of immense value. Nothing can be more effective than some plants we have had of these new Coleuses during the past winter. They are excellent for grouping amongst other plants, and their smaller branches also come in useful for mixing with cut flowers at a season when flowers are scarce. All through December and January I anticipate their being greatly in repute for this service. *Coleus Verschaffeltii*, *Veitchii*, &c., require a rather high stove temperature to keep them in respectable trim during the winter, and this is a drawback: but many of the new hybrids, such as *C. Bausei*, *Marshallii*, *Berkeleyi* and *Saundersii*. I have found to do exceedingly well in a temperature which might be called intermediate, averaging at night between 45° and 50° only.

To these foliaged varieties I may just add one thorough gem—one worth cultivating for its flowers, which are deep blue, and produced in great abundance in October and November—and this is *Coleus lanuginosus*, a plant requiring exactly the same treatment as *Salvia splendens*, for which it forms a pleasing companion.—C. B., in the *Gardeners' Chronicle*.

Notes on Bedding Plants.

"I write down my experiences," says an old author, "that men may see how life looks to one who has plucked its joys and tasted its sorrows, and has lived to be devoutly thankful for the experience of both." In some such way might one speak also of the experiences of bedding-out. I write mine down, narrating a success here, detailing a failure there, that others who bed-out may take heart again, or perhaps lose it altogether over something they have hitherto "looked on with longing eyes."

Bedding plants are numerous and varied enough for the most fastidious gardener—what to select is the grand desideratum. Here is a *Heliotrope* that all bedders-out who use the *Heliotrope* would do well to secure—the name *Surpasse Guiseoi*, the colour pale lavender, the trusses simply immense—big enough for the breast of a drawing-room "jarvie," the habit strong, bushy, and free-blooming.

Iresine aureo-reticulata has succeeded with no one, even with what would have been thought to aid it—a dry hot summer. Whether nursed in the sub-tropical department, or braving the vicissitudes of the more exposed flower garden, it has failed to tempt any one to praise it. It is a plant not to be despised, nevertheless, for it has its uses: one is, to be grown as a specimen in a warm house, and here, at this season of the year, it makes a good display among foliaged plants, the leaves being large and of a lustrous bronzy green hue, while the net-like marking of gold comes out very clear and striking.

Generally, the Golden Feather *Pyrethrum*

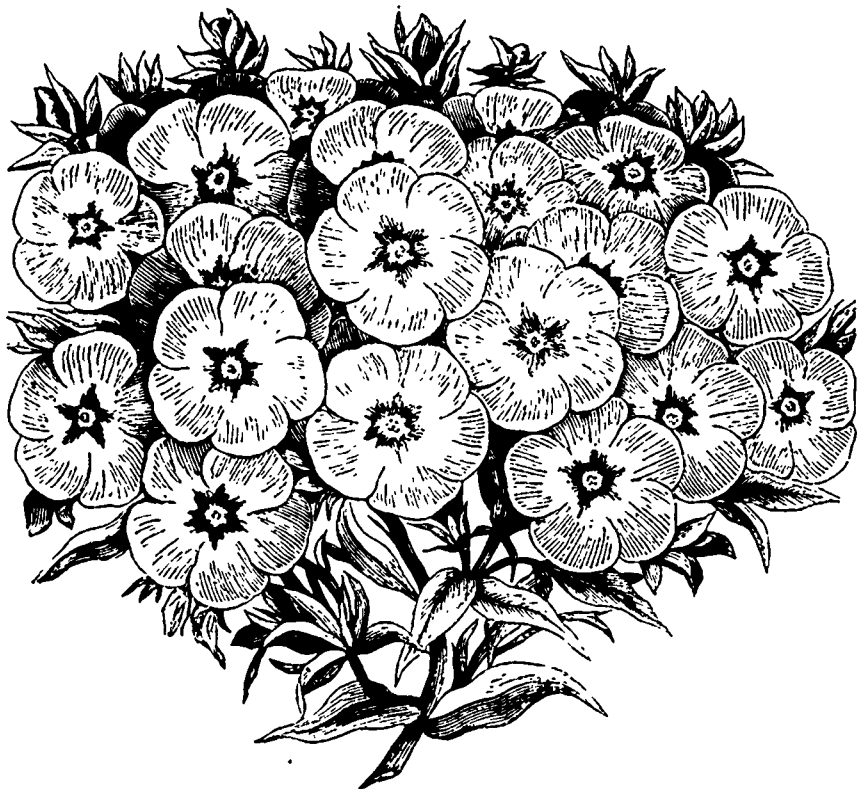
is held to be a decided acquisition for bedding purposes, though some condemn it. Even these admit its effectiveness, but object to its proneness to flower, and the labour incurred in keeping the buds picked off. Particularly is this proneness to flower characteristic of autumn-struck plants, as they commence blooming, naturally enough, early in the summer. Seedling plants raised in the spring should be used, as they do not flower till quite late in the season, when it is to a great extent a matter of indifference. Failing raising plants from seed, use spring-struck cuttings. Is this plant hardy enough to stand the winter, and so be made useful in the spring garden? A wet season is more fatal to the golden *Pyrethrum* than a dry hard winter. Excessive damp causes it to speedily decay, and if it were massed for effect most inharmonious gaps would ensue. The spring garden needs the hue of yellow much less than the summer flower garden, as of flowers it has the yellow *Crocus*, *Alyssum saxatile*, *Oxyura chrysanthemoides*, a most useful early flowering yellow annual, richly deserving to be much more generally grown than it is; *Limnanthes Douglasii*, *Lasthenia californica*, and the invaluable yellow *Pansy*. *Viola lutea* does not bloom early enough to make an effective display. Of yellow-foliaged plants there are *Sedum acre aureum*, "draped with gold," and invaluable for spring work and rockeries, if only properly appreciated; the golden-blotched double *Daisy*, a perfect gem; several variegated forms of the *Arabis*, &c.

Coming back from this digression, it may well be asked if any of the new variegated *Pelargoniums*, or those of the golden-leaved and gold and bronze sections, can be recommended for bedding purposes. In all my experiences of bedding out during the last summer no variegated zonal *Pelargonium* that I saw could compare with *Mrs. Pollock* for effect. Everywhere it was good, finely-marked, and vigorous. Places hitherto considered too moist to grow it in reflected its "sweet leaves playing with the sunbeam," and the "diffusive spirit of the beautiful" hovered over many a bed of this plant, in its gay beauty so striking as to transcend even the most sanguine hopes of those who had reaped varying experiences in using it. Alas! there was no spot "too moist" to be found anywhere above ground in July and August; many a frizzled horticulturist sighed for it, and "sought but never found." Two varieties only of all the new kinds of variegated zonals that I saw being tried last season came near *Mrs. Pollock* for effectiveness; those were *Perkins & Sons' Queen Victoria*, and *Lady Craven*, and of the two I like the last best. They alike possess one great quality for bedding purposes—constitution. In a few instances beds of *Lady Cullum* were to be seen, a capital plant, making short stocky growth, but dull in appearance, showing too much of the dark zone.

Of the golden-leaved section, Crystal Palace Gem ranks high as an effective and durable bedder. The leaves are shaded with a darker colouring, giving them a blotched appearance, but not in a manner to detract from its usefulness. It is a decided improvement on both Golden Chain and Cloth of Gold, and stands exposure admirably. It is said to have originated at the Crystal Palace as a sport from the old Lady Middleton or Trentham Rose, and though dwarf in habit, blooms as profusely. It withstands rain and sun alike, and maintains its character with undeviating constancy right up to the expiration of the bedding season.

Of the somewhat numerous gold and bronze zonal section, Kentish Hero, one of Messrs. Downie, Laird & Laing's new varieties, and the Rev. W. F. Radclyffe, one of Messrs. Windebank & Kingsbury's seedlings, are worthy the highest praise, while they are distinct enough for the last-named to be used as an edging to the former. In a remarkable degree has Kentish Hero a strong and vigorous constitution, and last autumn it was in one case allowed to remain out of doors until the cold rains came, and it nevertheless retained its original brightness almost unimpaired. To these can be added Ebor, a really fine and useful bedder; and Beauty, having excellent habit, compact growth, and bright leaves. Of the many new kinds tried at Chiswick, some, in spite of an adverse season, were very promising as bedders; but to speak definitely of their usefulness in this respect, they require to be seen bedded-out in the usual manner. Of the white-edged variegated Pelargoniums, Mrs. C. J. Perry, a variety of dwarf and bushy growth, the leaves deeply tinged with white, cannot be too highly recommended. As an edging to large beds it is invaluable, as the compact and even growth of the plant gives a good surface of white—the leaves "rise white as wings," like a snowy mantle. Castlemilk is another capital kind, the leaves edged with a pale cream, the habit good; but for its distinctness, for its peculiar wiry habit, and for the contrast between the dark green of the body of the leaves and its edging of white, I give the palm to Albion's Cliffs. A note should be made of each of these varieties by bedders-out, who may be sighing for something new and something good as well. The new variegated ivy-leaved variety L' Elegante makes a capital edging plant, and stands exposure well. In some exposed positions of the north, and till quite late in the season, it was very effective, used as an edging for beds. In such a relation it should be pegged down, to preserve the symmetry of the line.—*Gardeners' Chronicle*.

CALLIOPSIS.—A very useful and showy class of hardy annuals of almost every shade of yellow, orange, and rich brown, finely marked, two feet and more in height; appear best when grown in a mass. The dwarf class are only a foot in height, and are very desirable.—*Vick's Guide*.



Phlox Drummondii.

No annual exceeds the Phlox for a brilliant and constant show. Seed may be sown in the open ground in May, or in a cold-frame or hot-bed earlier in the season; and in either case, from June, during the whole summer and autumn, they make a most brilliant bed of showy yet delicate flowers. A good bed of Phloxes is a sight that dazzles the eye with its brilliancy. Every one who cultivates only half-a-dozen annuals should have Phlox Drummondii. Some varieties are of extremely delicate colouring, while others are brilliant and dazzling, and when mixed in a bed, show an almost endless variety of colours. The Phlox, in a good rich soil, will grow more than 18 inches in height, but as there is not sufficient strength in the main stem, it will not stand entirely erect. A foot apart is quite near enough to set the plants, unless the soil is very poor. If too thick, they suffer from mildew. The Phlox makes a very good border or low summer hedge. The finest effect, however, is produced by planting each colour in separate beds or in ribbon fashion, its constant bloom making it very desirable for these purposes.—*Vick's Floral Guide*.

REPORTING LILIUMS.—They are best repotted every year. It should be done as soon as the stems decay, but in potting do not disturb the roots more than can be helped.

Canadian Wines.

We have to acknowledge the receipt of a case of Canadian wines from Mr. Henry Bauer, of Hamilton, containing a sample of the several varieties made by him from grapes grown in Canada. They are all fine table wines, and compare well with any of the table wines of Europe or America that have come under our notice.

The wine made from the Clinton grape, mixed with about one-third of Oporto, is a very beautiful red wine, in flavour much resembling the red wines of Hungary, with an alcoholic strength of about twelve per cent. We believe this is destined to become a very popular red wine. It has a beautiful rich colour, and a fine bouquet.

Those made from the Delaware, and from the Delaware mixed with the Diana, are very fine, amber coloured wines, fully equal to the best qualities of Rhine wine. To our taste this is the best Delaware wine we have seen, and we have tasted some of the best productions of the Ohio vineyards. Their strength is from 9 to 12 per cent. of spirit.

There are also wines made from the Catawba and Isabella, which are quite equal to those usually made from these grapes, but we do not dwell upon them, for they are not equal in quality to the wines made from the Delaware, the Delaware and Diana combined, the Clinton, and the Clinton mixed with Oporto. Nor are the Catawba and Isabella varieties of grape as well adapted to the climate of our Province as the Delaware, Clinton and Oporto.

And, what is very encouraging in the production of these wines, they are offered for

sale, and can be afforded at a much less price than European wines of the same quality, besides being, what to the consumer is a consideration of the very highest importance — *the pure product of the vine.*

While we are writing these words, there is placed in our hands a report made by Dr. Croft, Professor of Chemistry in University College, Toronto, of his analysis of the wines and brandy made at Clair House, Cooksville, by Mr. De Courtenay. In this report he gives his analysis of two varieties of wines, a white and a red wine. Of the white wine he says, it is quite sound, being free from acetic acid, and a pure and wholesome summer wine, with a pleasant, faintly subacid taste, containing 8.9-10 per cent. of absolute alcohol, and 1.25-1.0 of solid matter, in which only a trace of sugar could be detected. He says of the red wine, that it has an exceedingly pleasant taste, and is a perfectly sound and excellent wine, contains 13.4-10 per cent. of absolute alcohol, and is therefore, he believes, stronger than most, if not all varieties of claret.

The brandy, he says, contains 46.4-10 per cent. of absolute alcohol and 1.23-1.00 of solid matter, consisting almost entirely of sugar, and appears to be a perfectly pure, unadulterated article, and adds that he could discover no fusil oil in it.

With such wines and brandy, made in our own Province, from our own grapes, pure, unadulterated, as is seen from the report of a chemist of the highest standing, he must be strangely wedded to the mixtures of spirits, dye stuffs and poisons, that pass under the name of imported wines and brandies, who will continue to use them. Yet, strange as it may seem, there are many whose tastes have become so vitiated by the use of these deleterious mixtures, that a pure and wholesome wine is no longer palatable, and they turn again to the cup of poison as the washed sow goes back to her wallowing in the mire. But there are those among us who will rejoice at the opportunity now presented of obtaining a pure article, and foremost among these will be our physicians, who have been often sorely troubled for want of a brandy and a wine that could be prescribed with safety.

Gypsum for Foliage.

A correspondent of the *Rural New Yorker* writes: — "To-day, as my pears were just out of bloom, the leaf well grown, and so my strawberries, my lawn once clipped, I have been srewing gypsum over the foliage, taking a time when it was a little cloudy, and just a trifle wet. In a practice of over thirty years, I have always found my sowing of gypsum alone to produce the best results when applied upon the young growing foliage. I use it with salt in the early spring and winter months, and also with a further combination of bone meal or dust, but after that is done I find it pays to sprinkle it over the young and tender foliage.

Its effects are plainly seen when alternate trees or rows are dressed with it. According to the size of my trees I use varying quantities — say for a tree two years planted, three feet high and as many in breadth of limbs, I use a good fair handful, or say nearly half a pint; for bearing dwarf trees of six to eight feet high and as many broad, I use a pint or even more, according to the condition of the tree. If it is overloaded with blossom buds, I use more than for a tree vigorous in growth and having few blossom buds. I shall give my trees an other little sprinkling of about half the quantity in about two weeks, or just when my grapes get into full leaf and are just ready to open their blossoms. I don't wait until the blossoms are open; or if I neglect my work, so as not to dress them before they bloom, then I wait until they are out of bloom. If I do as I should, make my sowing on my grape foliage just before they bloom, then I go again over them when the grapes are about as large as buck shot.

I know this practice is not down in the vine-growing books, or spoken of by writers on vine growing; but it is a good practice, and if any one doubts, let him try it, the cost is not great.

The Pelargonium Congress.

This meeting was held on the 22nd of May, at South Kensington, was attended by many distinguished growers, and the prize essays by Mr. Grieve and Mr. Jonathan Smith were read. From the essay by Mr. Grieve, published in the *Gardeners' Chronicle*, on the history, future changes, points of merit, and cultivation of the ornamental-foliaged Pelargoniums (better known as Geraniums), we gather that up to the year 1855 no golden-margined Pelargoniums existed, except the well-known Golden Chain. This was crossed upon Cottage Maid, a heavily-zoned, green-leaved sort, producing Golden Tom Thumb, and Golden Cerise Unique. These crossed upon Emperor of the French, a strong-growing zonal seedling, produced Golden Pheasant, and from the union of this with Emperor of the French sprang the celebrated and now well-known Mrs. Pollock and Sunset. The writer of the essay is of the opinion that the limits of beautiful variegation have not yet been reached, and that a field of operation is yet open in the crossing of the best variegated varieties with strong, vigorous, well habited green zonals, in which the zone is well defined.

In the course of the discussion which ensued, the opinion seemed to prevail that the employment of manure water in the cultivation of variegated Pelargoniums was to be avoided; that the plants

throve best if kept slowly moving in a temperature of 50° to 55°, until March, and in the first or second week of March shifted into larger pots, making what is termed a large shift, using for potting the top spit of a turf pasturo, laid up from six to nine months, chopped roughly, and used in a coarse state.

We may mention in this connection that we gather from a communication from D., of Deal, in the (Eng.) *Journal of Horticulture*, that the first prize for a single Golden Tricolor was awarded to "Peter Grieve," exhibited by Messrs. E. G. Henderson & Son; the second prize to Carter's "Prince of Wales," and Turner's "Mrs. Headly," plants so much alike that "D" thinks it would puzzle the owners to tell their own if the labels were changed; and the third prize was given to "Achievement," sent out by Mr. Turner, of Slough, this spring. There were, he says, a large number of others, all very beautiful, but these seemed to be in advance of the rest.

New and Rare Plants.

We extract from E. G. Henderson & Son's catalogue of bedding and soft wooded plants for 1869, the following descriptions of New Plants for 1869.

CALITHAUM SPATHULATA—This very remarkable plant is one of a small group of bulbs related to *Panacratium*, and in its general features is one of the most unique in its tribe. Its remarkably thick and large dark green leaves, constricted towards the base with a partially channelled surface, and widening upwards to a broad spatulate outline, impress an ordinary observer by their very distinct character. The species constituting this group are very rare in plant collections. The flowers are described as unique as they are rare, being produced on tall scapes, two to four or five feet in length, the individual blossoms large and singularly beautiful, of a bright self-emerald green colour, the coronet or flower cup in each almost colossal in size, surpassing all others in its allied group.

COBERGIA CHACABOVENSIS—A rare Chilean bulb of *Amaryllis* like habit, with long linear lanceolate glaucous green leaves, partially channelled throughout their length; scape or stem six flowered, with cylindrical trumpet-like pendent blossoms, three to four inches in length, creamy yellow outwardly, and red tinted inwardly. The terminal border or limb of each flower is a pale bluish colour, merging into short, cream-white lobes.

ELISEA RUGENS—A rare and highly interesting warm greenhouse bulb, the flower-stem one to two feet in height, with erect broad narcissus-like leaves and elegant white narrow lobed *Panacratium*-like flowers, of

which the limb is reflexed and two of its lobes, with the cup and filaments, are gracefully declined, whilst the cup, which is cylindrical in outline, shows a recurved margin, resembling a pure white amaryllis. The unique features of the flowers, which expand in succession, varying in structure from many others in the allied group, impart a special interest to this species, which merits a place in all select collections of bulbs.

ANTIGONON LEPTON.—A beautiful hot-house or warm conservatory plant, of climbing habit, distinguished by its angular stems, heart-shaped leaves and numerous racemes of rose-coloured flowers, showing a still richer tint in the centre. The profusion of its bloom and the outline of the petals are such as to give the resemblance of roses at a distance, hence one of its Mexican names, Mountain Rose.

LOPHOSPERMUM SPECTABILE: PUNICATUM.—A very interesting summer flowered half hardy climber, of free vigorous growth and neat habit, producing a long succession of bright rose-coloured flowers, elegantly marbled or spotted white. This variety is a great improvement upon the plant formerly known in gardens by the same name. It is well adapted for wall culture or trellis work in warm aspects during the summer or autumn months, yielding a continuance of bloom when the majority of wall climbers are fading or past.

International Fruit Competition.

To the Editor.

SIR.—I observe in the CANADA FARMER for May, that you have drawn attention to the fact of prizes being offered by the Committee of the Edinburgh International Fruit and Flower show for collections of fruit from British North America, viz. "a medal for the finest collection of pears, and another for the finest collection of apples."

You very pertinently ask "What is there to hinder the Province of Ontario from carrying off these medals?" I would answer, nothing.

If the Commissioner of Agriculture will only take the matter in hand, the medals will come to Ontario. Our local representative in England should be a person who could take a collection of fruit thus sent to him, and attend to its arrangement and display at the various shows and Societies' exhibitions, and also keep for public inspection a sort of museum of Agricultural and Horticultural productions of the Province. A display of grains and seeds, casts or models of roots, dried specimens of plants and so forth, when put forward by a competent person, will do more for this part of the country than all the advertising in the world. Our representative should also be able to buy suitable varieties of grains and seeds, new kinds of fruits and vegetables, new agricultural and horticultural implements, for trial in Canada, and should know what to buy;

and in order to be able to do so, must have had practical experience in the Province, or he would be very apt to send what was not wanted.

If the Commissioner of Agriculture will guarantee the funds, I have no doubt the Fruit Growers' Association will attend to the getting up of a creditable collection of both apples and pears, for the Edinburgh Show and also recommend a person to take charge of and exhibit it.

The date of the show is too early to give us a fair chance, as most of the fruit will be very immature, but at all events we stand on the same footing as all the other Provinces.

In January, 1868, I exhibited a small lot of Canadian apples, at a meeting of the Fruit Committee of the Royal Horticultural Society at Kensington; for the display I was awarded a "special certificate." I had also a collection of edible nuts of native growth, which elicited much attention and numerous inquiries, and I have since sent two emblems to public establishments in Great Britain at the request of the Directors. I hope also next week to send off a lot of native plants to one of the Royal Gardens. This of course I have to do at my own expense, as this Government will not even pay the carriage.

The apples before mentioned were all grown on our own farm in this district, and although not so good as they might have been, were universally admired and commended, particularly on account of their fine colour.

If the natural capabilities of the Province of Ontario are thus brought before the British public by the means before mentioned, very much will be done to induce an influx of the agricultural classes to this part of Canada, where they are much needed, and for whom there is plenty of room.

Yours, &c,

W. T. GOLDSMITH.

Utilizing Cranberry Marshes.

To the Editor.

SIR.—Can you or any of your correspondents give me any information regarding the manner of utilizing the native beds of the Cranberry? From Eastwood's Manual on Cranberry Culture, I learn that in some parts of the States great attention is being paid to the cultivation of the Cranberry as an article of commerce.

Although he gives a description of the different varieties, the manner of preparing the ground, care, &c., he gives no account of the natural beds being cultivated, as I understand in some parts they are. There is in this vicinity a Cranberry marsh of over 300 acres, and I find by the description given by Eastwood, that the celebrated Bell and Cherry Cranberry grows naturally here, fully equal if not surpassing in size the drawings he has given of the cultivated fruit, many specimens being as large as a common red cherry.

If it pays to go to great expense in preparing grounds, and he asserts it does, why would it not pay better to protect the natural beds where the plants are of good variety? For certainly where they grow in a state of nature, they cannot fail to succeed by cultivation.

Any information on this subject will be thankfully received by

A CONSTANT READER.

Newark, Ont.

NOTE BY EDITOR.—Where it is practicable, the erection of dams, so as to enable the proprietor to flood the Cranberries, at pleasure, would be very useful, for by this means he can protect them from untimely frosts, drown out the Cranberry worm, and protect the plants during the winter. Some of our Cranberry marshes would need considerable labour expended on them in removing the various shrubs and other growth that generally occupy a considerable part of the space that would be more profitably devoted entirely to the Cranberry. We do not know of any efforts having been made in Canada to bring the Cranberry marshes under cultivation, but the same general principles which govern the planting and growing of the Cranberry, as laid down in the treatises on the subject, will govern also in the effort to reclaim our marshes and bring them under any regular system of management. What is required most of all is a little enterprise, joined with a little sound common sense, and Cranberry culture can be as successfully and profitably carried on in Canada as anywhere.

The New Seedling Coleuses.

(RAISED BY MR. BAUSE.)

These new varieties are of indescribably rich tints of bronzy crimson, with a peculiarly lustrous glow which gives the effect of shot silk—the shot colour being in some cases of a brighter crimson, and in others of a Magenta purple, while the margin is of a decided greenish yellow, differing in width in the different kinds, and forming a bead-like edging. That which has been named Queen Victoria, and which has passed into the hands of the Messrs. Lee, of Hammer-smith, is the brightest in colour of the whole series; while in the same style, but differing in tint as well as in breadth, either of blotch or margin, are others named Princess Royal, Princess of Wales, Duke of Edinburgh, and Her Majesty.

The same batch of seedlings yielded in Albert Victor an equally desirable acquisition, having tricolor foliage. This is of a very bold habit of growth, the golden margin broader than in most of the other sorts, and the bronzy red centre stained with large blotches of a deeper purplish red. Prince of Wales resembles it in the blotching, but has scarcely any yellow at the edge. To these have to be added some forms of the C. Gibsoni race, obtained at the same time, and equally in advance of all previous varieties of that

type; they are of a yellowish green, more or less veined and blotched, but the colour is a bright purplish red, instead of the heavy, almost black, purple of the older forms. These latter have been named Prince Arthur and Princess Beatrice.

We have certainly acquired in these golden varieties of Colens some of the most beautiful leaved plants of which our gardens can boast. Whether they will be available for the out-door garden remains to be seen. The question will, however, soon be set at rest, as they will be distributed in quantity in time for the next summer's planting, and from their vigorous growth they may be expected to succeed at least as well as those previously grown.—*Florist and Pomologist.*

Double-Flowered Geraniums.

These beautiful plants are worthy of a place in every choice collection. They are rare as yet, but they will soon win their way by their exquisite beauty. Among the best we name.

LE VESUVE—Scarlet, dwarf habit, flowering abundantly and throwing its flowers well up above the foliage, truss flat, not globular, blossoms large, very double and finely proportioned.

MADAME LEMOINE—Very double rosy pink blossoms, truss large, strong vigorous habit, the best of its colour.

MARIE LEMOINE—Truss large, blossoms perfect, very dwarf habit and free bloomer.

V. LEMOINE—Immense trusses, colour dazzling scarlet, dwarf habit, short branched, very free flowering.

CAMELLIA-FLORA—Its bloom trusses are the largest in the group, proportionately well expanded, with well formed blossoms, opening to nearly the size of half a crown, in colour of the richest rose.

MAD. ROSE CHARMEX—A counterpart in growth of Tom Thumb and equally prolific in flowering; flowers double, a brilliant scarlet.

A New Vegetable.

At a meeting of the Horticultural Society of Geneva, held December 16, 1868, Mr. Berges read a paper on the culture of the "Scolime d'Espagne." This vegetable, it appears, is cultivated largely in many parts of Spain, and there is highly esteemed both for its quality and as a profitable vegetable. The portion used for the table is the root which resembles an ordinary-sized white carrot. When cooked in the same manner as the potato, and served with a little melted butter, it has the flavour of well-blanchéd sea-kale. The mode of culture is the same as for carrots, except that the "Scolime" must not be sown before the middle of June else it runs up into flower, and the root is tough and worthless. It requires about four months to come to maturity, and might answer a good purpose as a second crop. It is said to be perfectly hardy, and to keep well, so as to be in use at any time from October to March.

Twelfth Session of the American Pomological Society.

This session will be held in the city of Philadelphia, on the 15th day of September, 1869, commencing at eleven o'clock, a.m., and continuing for three days. The Exhibition of the Pennsylvania Horticultural Society will take place at the same time.

All Horticultural, Pomological, Agricultural and other kindred institutions, in the British Provinces, are invited to send delegations as large as they may deem expedient, and are requested to contribute specimens of the fruits of their respective districts.

Packages of fruit, with the name of the contributor, may be addressed "American Pomological Society, care of Thomas A. Andrews, Horticultural Hall, Philadelphia, Pa."

Arrangements have been made with several hotels in Philadelphia for a reduction in price of board, and negotiations are in progress with the railways for a reduction of fare, of which due notice will be given. Shall not Ontario be represented at this meeting?

Radish.

The radish must make a rapid growth to be fit for use. It will then be crisp and tender, and of mild flavour. If grown slowly, it will be hard, fibrous, and disagreeably pungent. For early use, seed should be sown in the hot-bed, in drills four or five inches apart and half an inch deep. Thin out the young plants so that they will stand two inches apart in the rows. Give plenty of light and air, or they will become drawn—that is, slender—and worthless. For out-door beds, select a warm, sunny location, with a sandy soil. A little new earth from the woods, as a top-dressing, before the seeds are sown, will be of great service. A top-dressing of soot, or even coal ashes, will be of much benefit as we have found by long experience. The great point is to get the plants to grow rapidly after the seed leaf appears above ground, so as to be out of the way of the black beetle that proves so troublesome when they are young, puncturing every leaf. Sow soot, ashes or dust, over them frequently, as the beetle dislikes gritty food. The Winter Radishes should be sown in July or August, about the time of turnip sowing. Treatment the same. They may be kept in a cool cellar and covered with earth for winter use. Put them in cold water for an hour before using. An ounce of Radish seed will sow ten feet square; six or seven pounds are necessary for an acre.—*Vick's Guide.*

Strawberries are to be shipped from Southern Illinois this season to New York and Boston, freight six cents per quart.

GRAFTING WAX.—Excellent grafting wax is made of three parts beeswax, three parts rosin, and two parts of tallow.

SELECT TRICOLOR PELARGONIUMS.—Lucy Grieve, Miss Burdett Coutts, Howarth Ashton, Florence, Lizzie, Sophia Dumaresque, Italia Unita, and L'Empereur, presuming you have Mrs. Pollock and Lady Callum.

How to Grow Good Fruit.—In order to grow good fruit, we need only repeat in a general way, that trees require as much food as a crop of corn or potatoes; but it is very important to keep the feeding roots at the surface, and therefore that the very best way to manure fruit trees is by surface dressing.—*Gardeners' Monthly.*

COMPOST FOR VARIETATED PELARGONIUMS.—Two parts loam from rotted turf, and one part old dry cow dung or well rotted manure, will grow them well, adding sand liberally. The plants, if for the summer and autumn decoration of the greenhouse, should be potted in March, and in May or June, young plants being frequently repotted from time to time as the pots become filled with roots.

SILVER-LEAVED MEADOW GRASS.—Peter Henderson's Catalogue speaks of this as one of the prettiest grasses in cultivation, perennial in habit, forming a dense and compact growth, rendering it one of the most unique and graceful plants for vases or hanging baskets, the clearly defined lines of white and green on each blade or leaf giving it a peculiarly glittering effect.

REMEDY FOR ROSE SLUGS.—A correspondent of the *Country Gentleman* recommends whale oil soap as a remedy. He says:—Make suds with a piece of soap as large as a hen's egg to a gallon of water, and sprinkle the bushes thoroughly by any means at hand. A garden syringe, or in the absence of such a convenience, a small brush broom, can be used with good results. By making the application at intervals of six or eight hours, most of the worms will get a drenching while feeding on the upper side of the leaves. It may be necessary to repeat for two or three days. A second hatching should be treated in the same way, and if thoroughly attended to for one or two seasons, you will find your roses free from this pest. This is a sure remedy.

STRAWBERRY FERTILIZER.—A Lancaster, Pa. correspondent of the *Small Fruit Recorder* says: "An experiment made last year by myself may not come amiss at this time with those who grow strawberries. I procured a half hogshead, filled it with rain water, and put into it one quarter pound of ammonia, and one-quarter pound of common nitre. When the strawberry plants were blossoming out, I gave them a sprinkling of the solution at evening, twice a week, until the fruit was nearly full size. The result was double the amount of fruit on those where the liquid was applied to what was obtained from those vines right along side of those, where none of the liquid was applied. Let all give it a trial."

THE CLARK RASPBERRY.—B. N. McKinstry, Kankakee Co., Ill., writes the *Rural World*:—"I fruited it on a small scale last summer, and call it a far better berry than the Philadelphia, and as yet it appears equally hardy and productive. I do not like to speak positively of any fruit on a short acquaintance; but, if it behaves as well this year as last, I shall consider it 'the coming berry.'"

THE AUVERGON GRAPE. raised by Chas. Arnold of Paris, Co. of Brant, is a seedling of the Clinton crossed with Golden Chasselas. It is white. The leaves are dark green, very deeply lobed, having sharp pointed serratures. The unripe wood is very dark purple - nearly black. The Chasselas flavor is perceptible. It ripens with the Delaware, and is hardy. The bunch is fully nine inches long.

SALPINGLOSSIS.—A very fine and too much neglected half-hardy annual. The colours are varied and of peculiar richness, the texture resembling the richest velvet, and beautifully pencilled. About eighteen inches in height, dwarf one foot. Set about six inches apart, they make a magnificent bed. Seed may be sown under glass, but will do well out of doors, especially in a light sandy soil.

HARDINESS OF BLACKBERRIES.—D. B. Wier, Lacon, Ill., writes to the *Rural World* as follows:—"My plants grown from root cuttings, both of Missouri Mammoth and Kittatiny, though on very rich soil and the growth late, have passed the winter in better condition than plants planted out last spring for fruit. On examining my plants of two years (those planted a year ago last spring), I find the Missouri Mammoth and Kittatiny fresh to the tip; Lawton with three-fourths of the bush dead and seasoned; Wilson's Early, half of its spray dead and seasoned, the balance badly discoloured."

AGRICULTURIST STRAWBERRY.—At a late meeting of the Fruit Growers' Club, Mr. Carpenter said that on clay soil on Long Island the Agriculturist has done remarkably well; but in New Jersey, on similar soil, it has done badly; on his farm, on all kinds of soil, it has done admirably, and is wonderfully productive and of good quality. Its quality varies on different soils and in different localities. It proves almost worthless in some localities. One gentleman said he could hardly raise a berry of it fit to eat in Southern Wisconsin, while in New Jersey, where he is now, they do very well, except that they do not multiply plants fast. He thinks it requires a moist atmosphere. President Snodgrass said it did well on moist soils. Mr. Carpenter says all strawberries require moisture, though not necessarily a moist soil.

ROBINSON'S TRICOLOR PELARGONIUM. (Star of India).—Among the varieties which we have seen this season, the Star of India seems to us to be one of the best. The colouring of the foliage is good, and the habit of the plant excellent. It partakes more of the character of Sunset than of Mrs. Pollock, the edges of the leaves being deeply cut, and the surface considerably more

smooth, while the colouring is richer than either; the bright crimson flame which breaks in and through the deep maroon band being exceedingly rich. The golden edge of the leaves is very decided, and the green in the centre light and distinct. We have found in the cultivation of this very beautiful class of plants that they delight in a rich friable soil, in plenty of light and air, the sun seeming to bring out the brilliancy of their leaf colouring.—*Floral Magazine.*

CARROT.—The carrot should always be furnished with a good, deep, rich soil, and as free from stones and lumps as possible. It is waste of time and labour to try to grow roots of any kind on a poor or unprepared soil. Seed should be got in early, so as to have the benefit of a portion of the spring rains. Sow in drills about an inch deep; the drills about a foot apart; and at thinning, the plants should be left at from four to five inches apart in the rows, according to kind. The Short Horn may be allowed to grow very thickly, almost in clusters. To keep the roots nice for table use, place them in sand in the cellar; but for feeding, they will keep well in a cellar, without covering, or buried in the ground. An ounce of seed will sow about one hundred feet of drill, and two pounds is the usual quantity per acre.—*Vick's Guide.*

THE NAOMI RASPBERRY.—F. R. Elliott, Esq., in expressing his opinion of this raspberry in the *Ohio Farmer*—and his opinion is worthy of attention, says—"I have no hesitation in saying that whoever purchases a true Naomi will have no cause to regret the outlay. The cane for many years has proved, on the Lake Shore, Ohio, perfectly hardy, even to the tops. The fruit is about the same size as Franconia, equally or perhaps more firm, not quite as acid, but richer and of better flavour."

ARE CUCUMBERS HURTFUL?—Some people are afraid to eat cucumbers, as they are supposed to induce cholera and other summer complaints. They may have this tendency with some people, but as a general thing we believe the charge wholly unfounded. A pragmatical doctor is credited with having given the following directions for preparing the cucumber:—"Peel and slice them thin; let them stand in cold water one hour; turn the water off, saturate them well with vinegar, pepper liberally, and then throw them into the swill tub." Now we have always used cucumbers liberally during their season, cholera or no cholera, and never suffered any inconvenience in consequence. On the contrary, when well soaked in vinegar, with the application of salt and pepper, we believe the cucumber to be a healthful article of food, as it certainly is a grateful one to most palates, though it must be confessed its percentage of flesh-forming materials is extremely limited. It is conceded to be a good anti-scorbutic, and as a pickle, is without a peer in common estimation.

Apiary.

Dividing Bees, or Making Artificial Swarms.

There are several ways in which bees may be divided and artificial swarms made, with comparative success. The object should be, however, to make artificial swarms that are in every way equal to natural swarms, leaving the parent stock also in equally good condition. To do this we must keep as close to nature as possible; in other words, we must act in perfect harmony with the nature and habits of the bees. It would, then, be well to enquire what is the true condition of the parent stock after a first swarm has been cast, and of the first swarm after it has been hived. It is well understood that the old queen goes with the first swarm, and a very large proportion of the bees, that is, worker bees, as the drones always remain in the parent hive until the second swarm issues, which always contains a young queen. It is well understood, also, that the first swarm seldom issues until queen cells are commenced, and young queens are being developed. It will be seen, then, that after a first swarm has gone off, the parent stock has but few bees and no queen. The hive is, however, full of combs, with young bees, in all stages from the larva to the full grown bee, issuing from the cell, and young queens, which in about nine days will leave the cells. Such, then, is the natural condition of the parent stock, after a first swarm has issued in a natural way. The first swarm, after being hived, is in the following condition. It has an empty hive—a hive without combs or honey; but it has a laying queen and a large number of bees. It has to fill the hive with combs, honey, and young bees. Now, how shall we divide so as to secure the same conditions to both stocks? If we could do this, and make our swarms a few days earlier than they would swarm if left to themselves, and save the trouble of watching for swarms to come off, and the loss of bees going to the woods, it would be very desirable. I will now give my method of making swarms, and the reader may see how near I keep to nature. I wait until I see some signs of swarming or near to swarming time, generally about the time queen cells are being started. I then go to the hive I wish to divide, and search for the queen by looking over each card of comb carefully. As soon as I have discovered her, I put the card of comb on which I find her in a new empty hive, from which I have removed one frame. I then put the frame in the old hive, in place of the card of comb I removed. I now remove the old hive away to some distance to one side, and put it on a new stand. I then put the new hive, in which I have put the queen, on the stand where the old hive stood. The result is that the bees will rush out of the old hive, and return in large numbers to the old

stand, and enter the new hive, where they find their queen, but an empty hive. It will now be seen that the old hive or stock will lose a large proportion of bees, and the old queen, the same as in the case of a first swarm going off; but it will contain all the combs, honey, and young bees, save what are contained in the one card removed. If queen cells were not already started, they will at once start them, and a queen will be developed in ten or twelve days, only a day or two longer than when a swarm issues naturally. The swarm in the new hive will be in just the same condition as a first swarm would be, except that they have one card of comb instead of an entirely empty hive; and the next day even this card of comb may be removed, first shaking off all the bees and queen, and replaced in the old hive again, leaving the swarm to build all new combs, as in natural swarming. It will be seen at a glance that nothing can be nearer nature than the plan I give. "But," says one, "it is difficult for me to find the queen, and I should like some method that I could practise safely without searching for the queen." Here it is then. When you wish to make a swarm, remove the stock you wish to divide a few feet, and take an empty hive and set it on the stand where the stock stood. Now remove each card carefully, shaking off or winging off the bees back into the hive, and place them in the empty hive. By the time you have placed them all in there will probably be enough return to nourish the brood. If not, let it remain a short time, while you put frames into the old hive from which you have just removed the combs, and as soon as a sufficient number of bees have returned to nourish the brood, remove the hive to a new stand, and place the old hive back on its stand again. In this case, care must be taken that the hive containing the combs and brood has bees in sufficient number to nourish the brood. I consider it the better way to find the queen, as in the first method given.

J. H. THOMAS.

Brooklin, Ont.

Mitchell's Combined Hive and Bee-house.

(To the Editor.)

Sir,—I have been waiting for some person more able than I to answer the enquiries of "A Young Apiarian," concerning Mitchell's Hive; but seeing no answer, and considering it worthy of one, I will give my own opinion of some of its advantages.

The hive is enclosed in a house; it requires no stool or bench, and there being a hollow wall all round the bees, and door to shut them up in winter, it requires no protection from heat in summer or cold in winter.

The bottom being an inclined plane of half pitch, it is kept perfectly clean, leaving no dead bees, comb dust, or filth for the miller to deposit her eggs in. It is so protected by the house and outside door that it

may be opened in winter sufficiently to be self-cleaning, thus keeping the bees dry and healthy.

The comb frames are so constructed that only a small corner of the comb and honey comes near the entrance, enabling a weak swarm to protect themselves from robbing bees and millers.

It has movable ends, that is, the end in the inside of the hive lifts out, giving room of three and a half inches to examine every comb without lifting them out of the hive. They also give room to lift them when the comb is built wavy or crooked.

The bottom is hung so as to close entirely or open to any size, thus giving the bees entrance room or ventilation, as circumstances require.

I find that I can manage bees more easily in this hive than in any hive that I have tried, Thomas's not excepted. By lowering the bottom board to its utmost extent, and taking off the cap, light is thrown through the hive, so that you can see the combs as well as though they were lifted out. Although last winter was hard on bees, and a great many died, I have not heard of one stock being lost in this hive. If required, I will write again, and give its superiority in respect to its honey boxes, outside door, robbers' stop, alighting board, ventilation, artificial swarming, &c.

H. H. P.

Woodstock, Ontario.

Bee-hives.

To the Editor.

Sir,—Observing in the GLOBE for June 18th, a reply by H. H. P., of Woodstock, to the enquires of "a young apiarian" concerning Mitchell's Hive, in which he gives his opinion of the advantages of that hive over other movable comb hives, I cannot help thinking that the whole affair was an advertising manoeuvre, to get Mitchell's hive before the public. Be that as it may, I wish to call the attention of bee-keepers to some of the advantages claimed for Mitchell's hive by H. H. P.

Being somewhat of a bee-fancier, I take great interest in any real improvement in the management of bees, and wish therefore to consider well all the advantages claimed for one hive over another. At the Provincial Fair last year, I had an opportunity of examining Mitchell's hive, and comparing its merits with the Thomas hive, which has gained such a wide-spread reputation, and I must say that I fail to see any of the advantages claimed by H. H. P.

He says: "The hive is enclosed in a house: it requires no stool or bench, and there being a hollow wall all round the bees, and door to shut them up in winter, it requires no protection from heat in summer or cold in winter." It appears that he means by a "house" an outside case of boards around the main hive; but what advantage is this over the Thomas

hive? None at all; for that hive not only is encased, having a hollow wall around the base, but the air is confined, making it even warmer than the Mitchell hive. Even Langstroth's compound is enclosed in far more of a house than Mitchell's. But does this hollow wall make either of the hives require no other protection from cold in winter? Such an idea is simply absurd. Will two layers of boards, with the space of one or two inches between them, keep out the frost during our long cold winters? It is a hint led by all leading apiarists that bees should be wintered where they will not freeze, and even Thomas admits that bees in his double-boarded hive should be wintered in a house. What advantage, then, has the Mitchell hive in this respect? None at all. But "it requires no stool or bench." Why? because the stool or bench is a part of the hive, and must be carried wherever the hive is carried. This, instead of being an advantage, is a very objectionable feature. A double-walled hive is heavy, to say the least of it; but to have it attached to a case of boards beneath it, from ten to fourteen inches high, like the Mitchell hive, is very objectionable indeed. Not only is such a hive inconvenient to handle, but there is material enough beneath the main hive to nearly or quite make two good bee-stands.

Again, says H. H. P.: "The bottom being an inclined plane of half-pitch, it is kept perfectly clean, leaving no dead bees, comb dust, or filth for the miller to deposit her eggs in. It is so protected by the house and outside door that it may be opened in winter sufficiently to be self-cleaning, thus keeping the bees dry and healthy." What advantage is this, pray, over the Thomas hive, as the bottom board of that hive is also on an inclined plane? And who does not know that bees will clean the bottom board of their hive, even if on a level?

Again, he says: "The comb frames are so constructed that only a small corner of the comb and honey comes near the entrance, enabling a weak swarm to protect themselves from robbing bees and millers." Well, I must confess this is a new idea. I have long understood that a small or contracted entrance enabled a weak stock to defend itself from robbers; but that a weak stock is better able to defend itself because a small corner only of comb and honey comes near the entrance, is simply laughable. H. H. P. fails to mention the fact that the peculiar construction of Mitchell's frames renders them more difficult to manufacture than the Thomas frame, and does not give sufficient breeding space for the queen, which is a very serious objection.

Again, H. H. P. remarks: "It has movable ends, that is, the end in the inside of the hive lifts out, giving room of three and a half inches to examine every comb without lifting them out of the hive. They also give room to lift them when the comb is built wavy or crooked." Now, what advantage is there in movable ends? Is not a frame as easily removed as a movable end? I am ready to take either the Thomas or Langstroth hive, and re-

move a frame as easily as H. H. P. can remove the movable end in Mitchell's hive. What advantage, then, is there in a movable end? None at all, but a very great disadvantage, in waste of lumber, and trouble of making; besides, it occupies space, making the hive unnecessarily large and weighty. But, he says, when the ends are removed it gives room to examine every comb without lifting them out of the hive. What an ideal! just as if combs could be examined without lifting them out of the hive because there is a space of three and a half inches between the combs and the wall of the hive! A mere tyro in bee-keeping knows perfectly well that frame hives are made for the express purpose of removing the combs from the hive for examination. It is utterly impossible to examine combs properly in any hive, Mitchell's not excepted, even if there were twice three inches and a half of space.

Once more he says: "By lowering the bottom board to its utmost extent, and taking off the cap, light is thrown through the hive, so that you can see the combs as well as though they were lifted out." Why does H. H. P. claim this as an advantage? for if he has ever seen a Thomas hive, he must be aware that it has the same advantage of lowering the bottom board and throwing light through the hive; but it is simply absurd to say that light may be thrown through a hive with bees in it, so that the combs can be examined as well as though they were lifted out. I am surprised that any person claiming to have any knowledge of frame hives should make such a statement. If H. H. P. has not heard of a stock of bees being lost in the Mitchell hive, last winter, then there, must have been very few stocks in that hive or his knowledge must be very limited. He who discovers a hive in which bees will not die, immortalizes his name. Bees may die in any hive, I care not what its form or construction, and especially if wintered out of doors. I would enquire how long H. H. P. has managed bees in the Thomas hive, and how many frame hives has he used? Don't be too fast; perhaps after a year or two you may find bees as easily managed in almost any frame hive as in the Mitchell hive, and far more easily in the Thomas hive, which certainly contains all the advantages claimed for the Mitchell hive, besides other advantages which are covered by a patent.

BEE-FANCIER.

Toronto, June 27th.

Does it Pay to Keep Bees?

To the Editor.

SIR,—Having often been asked the question, "Does it pay to keep bees, or is it safe to invest money in an apiary?" I have always answered the question by saying that it does pay and is safe to invest money in them, if the party investing thoroughly understands their nature and habits, and is willing to give them the proper amount of care and provide them with suitable hives. I now propose

giving a short account of my success in bee-keeping:—

Some fifteen years ago I purchased two colonies, not with the intention of making money out of them, but for the purpose of providing myself and family with a luxury in the shape of nice pure white honey; but I soon became convinced that they could with proper management be made to yield a profit, besides supplying my table with a wholesome luxury. As there were at that time no movable comb hives, I had to labour under a considerable disadvantage, as well as loss. Very often some hives would refuse to swarm until the season for collecting honey was nearly over. Consequently the young swarms could not gather enough to winter on, and as I had not the movable comb hives, which would have enabled me to build them up from those that had plenty and some to spare, I had to destroy them, which was a loss. Then, again, other hives would refuse to swarm altogether, which, of course, was a loss of all increase from such hives. Again, some colonies would swarm, and the young swarm would take a bee-line for the woods, and there was a loss again. Other hives would get infested with millers and worms, which sooner or later would destroy them. After all the losses, however, I made a fair profit by selling honey, and occasionally a hive of bees. But, since the introduction of the movable comb hive and Italian bees I have made more than double the profit, for there has been no loss of young swarms going to the woods, or of colonies refusing to swarm, as I have practised artificial swarming, which does away with all loss in that direction. If millers get into a colony, I remove the cards and clean them out, and save my stock. I also remove cards from full stocks that have them to spare, and strengthen the weak ones, instead of destroying, as heretofore. And further, the Italian bees defend themselves much better from the millers, and are better workers than the common bees, consequently they store more honey in boxes for their owners.

I commenced in the spring of 1867 with twelve Italian stocks, worth then about \$200. Last week I sold the increase of stock for \$500, and during the two years I have realized \$400 in honey, wax and queens sold; allowing \$200 for cost of hives and time in attending to them, which will more than cover it, leaves \$700, or \$350 profit each year—not a bad interest on \$200 invested for two years.

A word to parties intending to start an apiary. Get, if possible, a location where white clover is plenty; or better yet, induce your neighbour to sow Alsike Clover, which is one of the best crops a farmer can grow, either for seed or for hay, or both, and for bees it is ahead of anything I ever saw. Provide yourself with good movable comb hives, and the Italian bees. An apiary started with such advantages, and with proper attention, I am satisfied, will prove a profitable investment.

H. M. THOMAS.

Brooklin, Ontario.

Bee Humbugs.

Since the year 1864, when an interest was awakened in bee-keeping by the introduction of movable comb hives, numerous attempts have been made to palm off upon bee keepers worthless hives and sundry humbugs.

As with other branches of business, so with bee culture; it has its proficient, amateurs, novices, and pretenders. Generally, it is with the two last-mentioned classes that worthless hives and various humbugs originate. The novice is often suddenly attacked with that disease known as "bee on the brain," and ignorantly but innocently fancies he has mastered the whole science of bee culture, and is therefore prepared to astonish the world by producing a bee-hive which will supplant all its predecessors. Now, with many, to think is to act. Hence, yearly, there are introduced to the public several "best hives in the world," which, however, prove to be either bungling attempts at an imitation of some good hive, or a worthless throwing together of timber, embracing in its construction not one scientific principle, but often many features directly opposed to the nature and wants of the bees. Their fanciful shape, novel construction, and the many advantages they are said to possess, often cause a number of them to be sold to unsuspecting bee keepers, who are not educated in the science of bee culture. The country is full of such worthless trash, and parties often pay more than they would require to do for really good hives, the reputation of which has been established for years—hives constructed by those well acquainted with bee culture, and hence prepared to construct a hive adapted in every feature to their wants.

The other class, whom I have styled pretenders, are generally unscrupulous persons, who do not hesitate at anything by which they can bring the "dimes" to their pockets. It is with this class that "bee humbugs" generally originate. Having a small smattering of knowledge, they make great pretensions, and tell wonderful stories about bees; what strange things they have known bees to do; how one swarm went away because the owner quarrelled with his wife; another because a child was buried and the owner failed to whisper it in the hive, while a third was so particular that it would not stay in the hive because there was a rusty nail in sight. In this way they arouse the curiosity of the uneducated bee keeper, who is soon ready to swallow all they have to say. They then come forward with their pretensions to superior knowledge. They can do this or that with bees. They have some wonderful secrets, and for a "V" (five dollars) they can tell you how to take the bees out of a box hive, take away their honey, put them back again, and they will be all right "in the spring." They have also got a curious compound, a peculiar drug with which they can charm the bees so that they will not sting,

"only 50 cents a bottle." and the recipe to make it only another "V." Thus the honest and unsuspecting bee keeper is victimized, while the false pretender "feathers his nest."

The following, which has called forth this article, is an extract from a letter just received from B. Barry, Esq., of Lambton Co. He writes:—

"During the past season, in Bosanquet, the management of bees has been taught in a secret school, and one of the things taught is the art of drawing bees from a tree a distance of two miles, even though they may not know where they are located. As one of the students is preparing to sally out upon the public, I thought I would write to you for your opinion, which you will please give in the WEEKLY GLOBE or CANADA FARMER."

A person possessed of such power as this would be likely to surround himself with a large number of swarms in a very short time, if he performed his operations in some neighbourhoods, where hundreds of swarms are kept within a circle of two miles. He would certainly be an exceedingly dangerous person to have about, unless strictly honest, as he might draw off and steal all the bees. Perhaps his secret incantations have no attraction for bees that live in a hive; and I may add, nor for bees that live in a tree. Allow me to say to my bee-keeping brothers that all bee drugs or bee charms are bee humbugs. If any person is pretending to teach or to do what is stated above, he is either a knave or a fool, perhaps both.

To say the least, all such persons should be arrested for obtaining money under false pretences. If beekeepers would be safe, let them take a reliable agricultural journal, where they will find such impositions exposed; and purchase hives which the experience of years has proved to be good.

J. H. THOMAS.

Brooklin, Ont.

ANTS ABOUT BEE-HIVES.—A correspondent enquires "if ants do any damage to bees, and what is an effectual remedy against them?" We do not think ants will do any great damage to bees if stocks are in good condition. A colony almost totally depopulated might be overrun with them and destroyed, or a community of ants might locate under or even in the top of a hive, not so much for the purpose of destroying the bees as for securing comfortable quarters. They would, no doubt, become very troublesome to the bees, and destroy numbers. In such instances the communities should be broken up and destroyed, or stocks may be removed to other stands by moving a little each day. Large numbers of ants are often caught in a sponge which has been well saturated in thin syrup, then by dipping the sponge into boiling water they are destroyed

J. H. T.

Poetry.

The Seasons.

BY WILLIAM O. BROWN.

When Spring has strewn the land with flowers,
And birds fill all the air with mirth,
And hearts beat high in Childhood's hours,—
How beautiful is Earth!

When Summer comes with waving grain,
And fills with wealth the lap of worth,
And Youth walks strong in Manhood's train,—
How glorious is Earth!

When Autumn and the yellow leaf
Talk sad of death as Spring of birth,
And Manhood sighs o'er life so brief,—
How sorrowful is Earth!

When Winter weaves his snowy shroud,
And winds moan round the lonely hearth,
Where Age sits with his white head bowed—
How desolate is Earth!

But let the Seasons come and go,
With blight and bloom, with death and birth,
Ere long we sing by streams that flow
Too beautiful is Earth!
Leonardville, Wis, May, 1869.

Beauty.

Beautiful faces, they that wear
The light of a pleasant spirit there,
It matters little if dark or fair.

Beautiful hands are they that do
The work of the noble, good and true,
Busy for them the long day through,

Beautiful feet are they that go
Swiftly to lighten another's woe,
Through summer's heat or the winter's snow.

Beautiful children, if rich or poor,
Who walk the pathways sweet and pure,
That lead to the mansions strong and sure.

Across the River.

When for me the silent oar
Parts the silent river,
As I stand upon the shore
Of the strange Forever,
Shall I miss the loved and known?
Shall I vainly seek mine own?

Can the bonds that make us here,
Know ourselves immortal,
Drop away like foliage here,
At life's inner portal?
What is holiest below
Must forever live and grow.

He who on our earthly path
Bids us help each other,
Who his well-Beloved hath
Made our Elder Brother,
Will but clasp the chain of love
Closer, when we meet above.

Therefore do not dread to go
O'er the Silent River;
Death, thy haunting oar I know;
Bear me, thou Life-giver,
Through the waters to the shore,
Where mine own have gone before.

Household.

GIVE FOR READY USE.—To any quantity of glue use common whiskey instead of water. Put both together in a bottle, cork it tight, and set it away for three or four days, when it will be fit for use without the application of heat. Glue thus prepared will keep for years, and is at all times fit for use, except in very cold weather, when it should be set in warm water before using. To obviate the difficulty of the stopper getting tight by the glue drying in the mouth of the vessel, use a tin vessel with the cover fitting tight on the outside, to prevent the escape of the spirits by evaporation. A strong solution of isinglass made in the same manner, is a very excellent cement for leather.

MODE OF DIVIDING GLASS.—The following plan to break a bottle or glass across its circumference, so as to form a battery, cup or vessel for other purposes, may be of some service to your readers. I have performed the operation successfully for many years.—place the bottle in a vessel of water, to the height where it is designed to break it; also fill the bottle to the same level. Now pour coal oil inside and out on the water; cut a ring of paper fitting the bottle; saturate with alcohol or benzine so that it touches the oil. Pour also some inside the bottle. Set on fire: the cold water prevents the glass from heating below its surface, while the expansion caused by the heat will break the vessel on the water line.—*Er.*

TO MAKE SCREWS HOLD.—Where screws are driven into soft wood, subjected to considerable strain, they are very likely to work loose, and many times it is very difficult to make them hold. In such cases we have always found the use of glue profitable. Prepare the glue thick, immerse a stick about half the size of the screw and put it into the hole, then immerse and drive the screw home as quickly as possible. When there is some article of furniture to be repaired and no glue is to be had handily, insert the stick, then fill the rest of the cavity with pulverized rosin, then heat the screw sufficient to melt the rosin as it is driven in. Chairs, tables, lounges, etc., are continually getting out of order in every house, and the time to repair the break is when first noticed. If neglected, the matter grows still worse, and finally results in the laying by of the article of furniture as worthless. Where screws are driven into wood for temporary purposes, they can be removed much easier by dipping them in oil before inserting. When buying screws, notice what you are getting, for there are poor, as well as good kinds. See that the heads are sound and well cut, that there are no flaws in the body or thread part, and that they have good gimlet points. A screw of one make will drive into oak as easy as others into pine, and endure having twice the force brought against them.—*Ohio Farmer.*

Agricultural Intelligence.

Provincial Agricultural and Arts Association.

MEETING OF THE COUNCIL.

A regular meeting of the Council of the Provincial Agricultural and Arts Association was convened in the Agricultural Hall, corner of Yonge and Queen streets, at 11 o'clock a. m. June 29th, the President, Mr. E. Mallory, of Napance, in the chair.

The minutes of the previous meeting were read and confirmed and several communications were read by the Secretary:—

A deputation from London, consisting of Messrs. Johnson, Durand, and Mayor Granger, were next introduced to the Council, and proceeded to lay before the members thereof a statement of the condition of the Exhibition Buildings in that city, which they represented as having suffered severely from the occupancy of the troops, in view of which, the deputation hoped that the Government would make some reparation. The deputation also submitted a statement of their finances to the meeting, from which it appeared that the Local Committee had only \$2,500 in hand wherewith to defray the expenses of the Fair, which had been estimated at \$3,000, and they therefore asked the assistance of the Council.

Mr. J. C. RYKERT moved, seconded by Mr. G. McDONNELL. "That in the opinion of the Council, it would be unwise to grant any sum of money to the city of London to aid them in erecting suitable buildings for the accommodation of the Exhibition, in view of the fact that a guarantee was given to the annual meeting that all the necessary accommodations would be provided." Carried.

Mr. RYKERT also moved, seconded by Mr. GRAHAM. "That this Council will be prepared to accept temporary buildings from the Local Committee, provided they afford the necessary accommodation." Carried.

On motion of Mr. RYKERT, a Committee consisting of Messrs. White Shipley and Edwards, was appointed, with instructions to superintend the internal repairs of the Palace at London, at the expense of the Association.

Copies of these resolutions were then handed to the London deputation.

Mr. DURAND, one of the deputation, explained that at the time of the annual meeting, the delegates came down in good faith to guarantee the necessary accommodation, with the impression that \$4,000 would be the highest figure required, and they felt certain that the county would render valuable assistance, but the County Council had put them off with the paltry grant of \$500. Again, the unfortunate circumstances connected with the workings of the old Association had tended to prejudice the minds of the people against the Local Committee, and had obstructed their efforts to obtain funds for defraying the expenses of the Exhibition.

Dr BEATTY moved, seconded by Mr. COWAN, that Prof. Buckland be requested to submit for discussion at the next meeting, a scheme for the public trial of agricultural implements.—Carried.

The appointment of judges was proceeded with, and occupied the entire evening. After the list had been completed, the Board adjourned.

Provincial Exhibition for 1869.

The following is the programme of the Provincial Exhibition:—

1. Monday, Sept. 20th, will be devoted to the final receiving of articles for exhibition, and their proper arrangement. None but officers and members of the Association, judges, exhibitors, and necessary attendants, will be admitted.

2. Tuesday, 21st.—The judges in all the classes will meet in their respective Committee Rooms at 10 a. m., and will make arrangements to commence their duties. On receiving their class books, they will be also furnished with the blank prize tickets, which they shall fill up and affix in each section so soon as they shall have finally determined their awards. The first prize tickets will be red; the second, blue; the third, yellow; the fourth, white; extras, green; the "highly commended" and "commended" tickets, white. On completing the class, the judges will report to the secretary. The main Exhibition building will be closed all this day, for the purpose of affording the judges an opportunity for discharging their duties properly. Non-members admitted to the grounds on payment of 25 cents each time. The annual meeting of the Fruit Growers' Association will take place at 7 p. m.

3. Wednesday, 22nd.—The judges of the various classes will complete their awards as early in the day as possible. All the buildings and grounds will be open to visitors. Admission the same as on Tuesday. The annual meeting of the Mechanics' Institute Association will take place this evening at 8 o'clock.

4. Thursday, 23rd.—Admission tickets, 25 cents. The prize animals will be exhibited in the ring at 2 p. m. The annual meeting of the Directors of the Provincial Agricultural Association, for the purpose of electing auditors, deciding upon the place of holding the next Exhibition, and other business, will take place at 7 p. m., at the Court House, London.

The President will deliver his address at the annual meeting.

5. Friday, 24th.—Admission the same as on previous days. At 2 p. m. the Exhibition will be considered officially closed, after which no one will be admitted into the Crystal Palace, and exhibitors may commence to take away their property.

6. Saturday, 25th.—The Treasurer will commence paying the premiums at 9 a. m. Exhibitors will remove all their property from the grounds and buildings. The gates will be kept closed as long as necessary, and none will be admitted except those who can show that they have business to attend to.

COMMITTEES.—On horses—Messrs. Skead, McDonnell and Shipley. Cattle—Messrs. Christie, Gibbons and White. Sheep and Pigs—Messrs. Cowan, Wilson and Shipley. Implements and Poultry—Messrs. Gibbons, Walton and White. Judges and Delegates—Messrs. Mallory, Rykert and Christie. Arts Department—Messrs. Beatty, Rykert and Buckland. Horticultural and Agricultural Products—Messrs. Mills, Buckland and Rykert. Dairy Products—Messrs. McDonnell, Wilson and Skead.

At the second Teviotdale fair, over sixty head of cattle were on the ground. The greater part of them changed hands. Milch cows seemed to be in good demand. Farmers are holding on to their stock until they get a little fat on the grass. On account of the hard winter they are not in fit condition for market.

Free Grant Regulations.

GOVERNMENT HOUSE, TORONTO,
Thursday, the 27th day of May, 1869. }

His Excellency the Lieutenant-Governor in Council was pleased to make the following orders and regulations, under the "Free Grants and Homestead Act of 1868," and "The Public Lands Act of 1860," and it is hereby ordered under said Act as follows:—

1. The quantity of land to be located to any person as a Free Grant, under "The Free Grants and Homestead Act of 1868," subsequently to the 23rd day of January, 1869, shall be 100 acres; but in case it shall be made to appear to the satisfaction of the Commissioner of Crown Lands, that any person located, or to be located as aforesaid, has not by reason of rock, lakes, or swamp, 100 acres that can be made available for farming purposes, the quantity located to such person may be increased in the discretion of the Commissioner of Crown Lands, to any number of acres, not exceeding in the whole 200 acres, so as to make 100 acres of such farming land; and the male head of a family located, or to be located, under said Act, since the said 23rd day of January, 1869, having children under eighteen years of age residing with him, may be located for in all 200 acres.

2. Any locatee under said last mentioned Act, being the male head of a family as aforesaid, shall be allowed to purchase an additional 100 acres at 50 cents per acre cash, at the time of such location, subject to the same reservations and conditions, and the performance of the same settlement duties as are provided in respect of Free Grant locations by the 9th and 10th sections of the said Act, except that actual residence and building on the land purchased will not be required.

3. Squatters upon land situate within any Township, or part of a Township, appropriated by Order in Council for Free Grants, and who had settled or improved upon such lands before the passing of the said Free Grants Act, shall be allowed to purchase said lands (not exceeding in quantity 200 acres to any one person), at 50 cents an acre cash, such sale to be subject to the same conditions and reservations as are provided by the 9th and 10th sections of said Act in respect of Free Grant locations.

4. The right is reserved to the Crown to construct on any land located under said Act, or sold as hereinbefore provided, any colonization road, or any road in lieu of a partly deviation from any Government allowance for road; also the right to take from such land any wood, gravel, or other material required for the construction or improvement of any such road, without making any compensation for the land or materials so taken, or for any injury occasioned by the construction of such road; and such rights may be exercised by the Commissioner of Crown Lands, or any one authorized by him for that purpose.

5. Holders of Timber Licenses, their servants, and agents, are to have the right to haul their timber or logs over the uncleared portion of any land located as a Free Grant, or purchased as before provided, and to make such roads thereon as may be necessary for that purpose, doing no unnecessary damage, and to use all slides, portages, roads, or other works previously constructed or existing on any land so located or sold, and the right of access to, and free use of all streams and lakes theretofore used, or that may be

necessary for the passage of timber or logs; and all land necessary for such works is reserved.

6. All Pine Trees growing or being upon any land hereafter located as a Free Grant, under the said Act, or sold under the preceding regulations, shall be subject to any timber license in force at the time of such location or sale, or granted within five years subsequently thereto, and may, at any time before the issue of the patent for such land, be cut and removed under the authority of any such timber license while lawfully in force.

JAS. ROSS,
Clerk of the Executive Council.

GOVERNMENT HOUSE, TORONTO, }
Thursday, the 27th day of May, 1869. }

PINE TIMBER REGULATIONS.

His Excellency the Lieutenant-Governor in Council was pleased to make the following Order or Regulation, under "The Public Lands Act of 1860," and it is hereby ordered, under said Act, as follows:—

All Pine Trees growing or being upon any Public Land hereafter to be sold, and which at the time of such sale, or previously, was included in any Timber License, shall be considered as reserved from such sale; and such land shall be subject to any Timber License, covering or including such land, in force at the time of such sale, or granted within three years from the date of such sale; and such trees may be cut and removed from such land, under the authority of any such Timber License while lawfully in force; but the purchaser at such sale, or those claiming under him or her, may cut and use such trees as may be necessary for the purpose of building, fencing and fuel on the land so purchased, and may also cut and dispose of all trees required to be removed in actually clearing said land for cultivation, but no pine trees, except for the necessary building, fencing and fuel as aforesaid, shall be cut beyond the limit of such actual clearing before the issuing of the patent for such land, and all pine trees so cut and disposed of, (except for the necessary building, fencing and fuel as aforesaid), shall be subject to the payment of the same dues as are at the time payable by the holders of licenses to cut timber or saw logs.

All trees remaining on the land at the time the Patent issues, shall pass to the Patentee.

Provided, however, that this order shall not apply to any land to be sold as mining land, under "The General Mining Act of 1869," nor to land to be sold to any Free Grant locatee, under the regulations or Order in Council, bearing date this day.

JAS. ROSS,
Clerk of the Executive Council.

The Illinois State Fair is this year to be held at Decatur, on the 27th September to October 2nd inclusive.

At the last Haniston fair, there were only about 30 head of cattle on the ground. Farmers did not care to sell.

The admirers of the Ayshire cattle at Milton, Vermont, have challenged an advocate of the Durhams in Burlington to test the milk-producing qualities of the respective kinds, in June, the cows to be fed in the same pasture, for a wager of five hundred dollars a side.

The New York State Fair is appointed to be held in Elmira, during the week commencing on the 13th of September.

The *Utica Herald* says, if the statements of aggrieved farmers are to be believed, in no State is swindling in commercial fertilizers carried on to so great an extent as in New York.

A TEN THOUSAND DOLLAR PREMIUM.—The Virginia Agricultural Society, of which Mr. Madison is the President, have eclipsed the world, and exceeded all other examples in any age or country. They have, it is said, undertaken to pay, four years hence, ten thousand dollars for the best farm in that State, not less than five hundred acres; five thousand for the next, two thousand for the third best, the latter not less than two hundred and one hundred acres.—*New Hampshire Patriot*.

Mr. W. A. Gibbs, the winner of the prize essay on drying corn in wet weather, has lately, it is stated, introduced improvements in the construction of his air-stove, so that without a steam-engine the desiccating process can be easily carried on by the help of common horse works driving a fan. Grass can be converted into hay without sunshine by his desiccator, which dries grain in the sun, and desiccates beet and mangel.

UNITED STATES CROPS.—The Agricultural Department has issued the report for the months of May and June. The returns show a high average condition of wheat, and indicate good prospects of an abundant crop. The largest increase is in barley in the States west of the Mississippi, particularly in California, while a slight enlargement of area is reported in the Ohio valley, in New York, and elsewhere. The latest reports as to cotton are more favourable. Good weather is producing a wonderful change in the prospect and in many cases a few hot days have made a great improvement. Sorghum will be cultivated more extensively than for many years. The yield of small fruit is unusually abundant.

Markets.

Toronto Markets.

"CANADA FARMER" Office, July 12th, 1869.

FLOUR AND MEAL.

The market has been dull, with very little change in prices. The following are the quotations:—

Flour—No. 1 Super, \$4 55. Do. Extra, \$4 75
Corn Meal—\$3 50 to \$3 75.
Oat Meal—\$5 75 to \$6.

GRAIN.

Wheat—The market is somewhat firmer; but there is little doing. There seems but little demand for fall wheat, and scarcely any difference in the prices of fall and spring varieties. On the street the prices are: Fall, 95c. to \$1; Spring, 95c. to 98c.
Oats—Market quiet, but firm, at 55c. to 58c.
Barley—The season being over, nothing doing.
Peas—Nothing doing—prices nominal; 73c. to 75c.

HAY AND STRAW.

Hay—Not much coming in. Selling at from \$12 to \$15.
Straw—Very little in market. Selling at from \$6 to \$8.

PROVISIONS.

The following are the wholesale prices:—
Butter—Dairy, new, per lb., 15c. to 14 1/2c.
Cheese—In lots (new) 10c. to 12c.; do. Reesor's Stilton and Queen's Arms, 17c.
Hams—14c. to 14 1/2c.

Lard—in casks, 17c. to 17 1/2c.; do. in kegs, 10 1/2c. to 17c.
Beef Hams, or Speed Beef—13c. to 17c.

WOOL.

The market has not been quite as firm during the past week, and prices have slightly declined. The receipts are fair. The current prices now are 30c. to 31c.

THE CATTLE MARKET.

Beeces—The market has been well supplied during the week, chiefly with first and second-class cattle. Extra cattle have been scarce. The prices have ranged from \$5 to \$7.50 per 100 lb., according to quality.

Sheep—Scarce, and in demand, from \$2.50 to \$5 each.
Lambs—In good supply—prices declining. Selling at from \$1.50 to \$2.75 each.
Calves—From \$3 to \$7.

PROVINCIAL MARKETS.

London.—The weather is all now that could be desired, and crops are progressing favourably in all directions. No complaints as yet of the midge pest. Grain—White Wheat, 90c. to 95c.; Red Fall Wheat, 92c. to 94 1/2c.; Spring Wheat, 90c. 94c.; Peas, 60c. to 65c.; Oats, 49c. to 50c.; Rye, 75c. to 80c. Produce—Hay, per ton, \$12 to \$14; Straw, per load, \$2 to \$3; Potatoes, per bush., 40c. to 55c.

Hamilton.—Wheat still continues in good receipt and moderate demand. Oats—Light receipt, dull and unchanged. Other grains nominally unchanged. Butter is scarce, and brought as high as 18c. to 20c. from farmers' wagons. Eggs scarce. There is no change in the price, receipt, or demand for wool. White Wheat, per bush., \$1 to \$1 04; spring, 95c. to \$1; Peas, 60c. to 70c.; Oats, 54c. to 55c.; Barley, 75c.; Buckwheat, 68c. to 70c.; Clover Seed, \$8 to \$8 25; Timothy Seed, \$2.50 to \$3.

Winnipeg.—Fall Wheat per bush., 93c. to 94c. Spring Wheat per bush., 92c. to 93c. Oats per bush., 53c. to 56c. Peas per bush., 70c. to 75c. Barley per bush., 70c. to 80c. Wool, 31c. to 32c. Hides, per 100 lbs., \$4 to \$4 50. Beef, do., \$7 to \$8. Pork, do., \$7 to \$9. Straw per load, \$3 to \$4. Hay per ton, \$12 to \$16. Eggs per dozen, 12c. to 13c. Butter per lb., 15c. to 14c. Apples per bush., \$1 to \$1 12. Potatoes per bag, 60c. to 70c. Sheepskins, 80c. to \$1 25.

Galt, 6th July.—Fall Wheat, per bush., 90c. to 93c.; Spring Wheat, do. 75c. to 90c. Barley do. 60c. to 70c. Oats, do. 45c. to 50c. Peas, do., 70c. to 75c. Potatoes, do., 45c. to 50c.

Montreal Markets, June 9.—Flour—Extra, \$4 55 to \$4 60; Fancy, \$4 40 to \$4 45; Welland Canal Superfine, \$4 37; Superfine No 1 Canada wheat, \$4 30 to \$4 50; No 1 Western, \$4 35 to \$4 40; No 2 Western, \$3 90 to \$4. Bag Flour, 100 lbs.—\$2 10 to \$2 12 1/2c. Wheat, Canada Fall, \$1 09 to \$1 10; Spring, \$1 08 to \$1 09. Oats, per 32 lbs., 41c. to 43c. Butter, dairy, 15c. to 16c.; store-packed, 14c. to 15c. Ashes, pots, \$4 45 to \$5 50; pearls, \$5 62 1/2 to \$5 65. Pork, Mess, \$27 to \$27 50; prime mess \$21; Prime \$19 30. Peas, per 60 lbs., 82c. to 84c. Rye Flour, \$3.

Barrie, June 4.—Fall Wheat, 75c. to 80c. Spring Wheat, 75c. to 80c. Barley, 85c. to 90c. Peas, 60c. to 70c. Oats, 45c. to 50c. Potatoes, 75c. to 80c. Pork per 100 lbs., \$7 to \$8. Beef per 100 lbs., \$7 to \$8. Butter per lb., 15c. to 17c. Eggs per dozen, 10c. to 12c. Hides per 100 lbs., \$4 50. Hay per ton, \$14 to \$16. Calfskins, per lb., 8c.

Advertisements.

THE MEXICAN

EVER-BEARING STRAWBERRY.

This new variety of Strawberry, now attracting so much attention, was brought in a hand-satchel from Jalapa, Mexico, in the fall of the year 1858. But one of the plants survived the journey. From this one plant the present extensive plantation of Messrs J. P. WHITING & CO., has been propagated. Four years ago, Mr Fencion Scranton, of Dundee, Meares County, Michigan, had a patch about two rods square, when Mr. S. B. French, (who is a practical nurseryman) first saw them, and immediately made a contract with Mr. Scranton to propagate the plant for the purpose of introducing it to the public. J.P. WHITING & CO., now have a large plantation of thrifty plants, which are offered to the public for the first time, with full confidence that they will be found all that is required in a good strawberry, either for the home garden, the market garden, or the more extensive plantation.

ITS HARDINESS.

The plant came from the mountain range in the State of Vera Cruz, Mexico in the immediate vicinity of Jalapa, which is some five thousand feet above the level of the sea, and a few miles west and north from the City of Vera Cruz. Many of the mountains in this region are perpetually covered with snow. This will account for the extreme hardiness of the plant, and shows why it has succeeded so well in this Northern State. It does not wither or kill, but entirely unlike most, if not all famous varieties of the strawberry, while the Mexican shows green and thrifty fruit stalks and leaves when the snow goes off in the spring, the others show scarcely any signs of life.

ITS PROLIFIC QUALITIES.

The single plant, or root, forms a stool, similar to the galle, the potato onion, and plants of that nature. While the parent crown is flowering and bearing fruit, new crowns are being formed, sending forth new fruit stalks, which, in their turn, blossom and bear fruit. These stools or crowns often cover a surface of from twelve to fifteen inches in diameter. The stools may be readily separated, as the roots are nearly tubercles. They may also be propagated by runners, which form stools and bear fruit the same season.

THE FRUIT.

The plant is bisexual, very perfect in its blossoms, and each blossom perfects a berry. The size of the fruit is rather above the average, being neither small, nor yet a mammoth. The fruit stalks stand erect, are of a great length, and staunch enough to support its burden of fruit without permitting it to droop into the dirt. The flavour is rich and aromatic in a remarkable degree. The superior excellence of this variety was first discovered to Mr. French by the grateful fragrance of the fruit. The flesh is solid, melting but firm, and as a berry for transportation it has no superior. Its form is an irregular conical; its colour a bright scarlet; the calyx parts readily from the fruit; in this respect it is nearly as free as the raspberry.

A CONTINUOUS BEARER.

It does not bear fruit periodically, or monthly, but continuously. Ripe berries have been picked as early as the twenty-eighth day of May, and continuously from that time until the eighth of November. It would be regarded as very productive if it yielded but one crop (like other plants) during the season but in bearing continuously, it has decided advantages over all other known varieties.

Soil seems to make but little difference with the plant. It has been successfully cultivated on sandy land, on gravelly loam, and on nearly pure clay land; the better the soil the more thrifty the plant, and the more abundant and better the fruit.

It may be transplanted at any season with satisfactory results. When a bed is once set, there is no need of disturbing it for years. The stools are constantly enlarging and will cover the ground completely, without interfering with the productivity of the plant.

TESTIMONIALS.

A large number of persons, whose testimony is unimpeachable, have expressed the most favourable opinion respecting this remarkable fruit. A few only of these need be cited. The

EDITOR OF THE WESTERN RURAL,
in its issue of April 15, says:—

"One of our editors recently visited Dundee and Petersburg, Michigan, where the Mexican Ever-bearing Strawberry has been propagated for a number of years, for the purpose of eliciting information in regard to it. His enquiries, as far as practicable, were directed to disinterested parties. The fruit has been grown by a number of persons, some of them residing at Dundee and others at Petersburg, merely for family use. The testimony of every one conversant with this fruit coincides as to its characteristics. They agree that it is a vigorous grower, hardy, forms new crowns throughout the season, sends out a large number of runners, that it is a prolific bearer, and bears continuously throughout the season from early June until the snow falls or frost cuts the vines.

Its continuous fruiting habit was corroborated by every person we questioned about it, and among them a prominent gentleman at Petersburg, whom we have known for a number of years, who has no interest in it, and who would not, under any circumstances, misrepresent it. The fruit is represented by these parties to be of good size, sub-acid, fine flavour, flesh firm, seed prominent. We found hills where trusses of decayed fruit, as they stood when the frost came last Fall, attested to its late bearing habit.

MR. SAWTELL'S TESTIMONY.

A well known and prominent Canadian horticulturist, Mr. R. W. Sawtell, Secretary of the North Riding Agricultural Society of Woodstock, Canada, recently visited Dundee, Michigan, for the purpose of investigating the history of the Mexican Ever-bearing Strawberry, and obtaining information in regard to it, and, by request, furnished the result of his investigations for publication. He states that when he first saw the plants and testimonials exhibited by the agent, he, with others, looked upon it as a doubtful affair. Subsequent examination and observation, however, led him to a different conclusion. He says that having ascertained the standing and position of the proprietors, he was satisfied that they were not parties to any conscious fraud.

Referring to his personal inspection of the plants, Mr. Sawtell says: "On removing the snow, I found very many berries, of all sizes, as they had been, when the frost destroyed them last fall; also, blossoms on the vines. In the hot beds of Mr. Whiting, at Detroit, they were in full bloom, from the root to the top of the fruit stalk, six or seven inches high. It has a small leaf and blossom, which does not indicate large fruit, but nearly all who have seen them in the garden state that the fruit is of medium size and delicious. I have been thus minute to show you on what grounds I am satisfied that there is no humbug and I will add, what I learned from strangers, that such men of wealth, position in society, intelligence and long citizenship, cannot possibly be parties to a scheme that would victimize thousands, and which can speedily be brought to the test—as the habit of the plant is to blossom as soon as it fairly takes root, and the runners also bear fruit the same season. If I am then deceived in this instance I shall scarcely ever have confidence in any one again."

HON. G. W. CLINTON'S CERTIFICATE.

Mr. Gilman, of Detroit, in a communication to the *Western Rural*, writes:—"A few days ago, the plant was placed by me, at the request of J. P. Whiting, Esq., before the Society of Natural Sciences, Buffalo, of which I have the honour of being a Corresponding Member. After a thorough examination, the President of the Society, Hon. G. W. Clinton, so well known to science in both the old and new worlds, in consultation with D. F. Day, Esq., the acute and critical botanist, pronounced it a new species, and named it for me, as having been "the first to indicate its claims to specific rank," giving it the botanical name of *FRAGARIA GILMANI*.

Hon. G. W. Clinton, writing to Mr. Gilman, observes:—"The evidence of its excellence and productivity is conclusive, and leaves no doubt in my mind that it will be eagerly sought by all judicious horticulturists, and prove the chief among the favourite strawberries of our land. The young plant you have given me is beautiful exceedingly. In aspect it differs from any and every strawberry I ever saw, and I believe it to be hitherto undescribed. Certainly it is not described in any book to which I have access."

OPINION OF DR. J. M. BIGELOW.

Mr. Gilman adds:—"Further testimony might well be considered unnecessary, yet we will add that Dr. J. M. Bigelow, the celebrated botanist of the North-east Boundary Survey, and of the Pacific R. R. Expedition, arrived at conclusions similar to the above, and, in a letter to me (in reply to mine, giving him description of plant, etc.) after regretting his not having the ripe fruit to establish the position of the rhachis, expresses himself thus:—

"The most remarkable and distinctive feature of your plant is the racemose form of the scape, the eye being so constant that Dr. Gray makes it a generic distinction. Your plant will therefore obliterate that characteristic distinction. In this respect your strawberry is different from all others that I have seen. The question whether your plant is a hybrid, is difficult to determine; but the appearance of the growing plant would seem to indicate that it is a true species and not a variety.

Experienced horticulturists, having already testified to its merits as a valuable fruit, the circle of evidence is therefore complete by the addition of these scientific opinions.

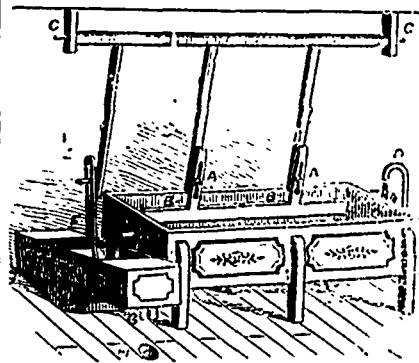
The plant is for sale by J. P. Whiting & Co., and cannot be obtained anywhere in Canada or the United States except from them or their Agents. Persons desiring the best Strawberry, in every particular, to be found in the country should purchase the

MEXICAN EVER-BEARING.

Agents are being rapidly appointed in each county throughout Canada; but orders can be addressed to the undersigned, who is General Agent for the Strawberry throughout the Dominion of Canada. Circulars giving full particulars as to mode of planting, culture, price, &c. will be sent on application (post paid) to the undersigned.

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TO BEE-KEEPERS.

THE FIFTH VOLUME OF THE AMERICAN BEE JOURNAL, published at Washington, and devoted entirely to Bee Culture, commences with the present month. Every bee keeper should take it. Price \$1.50, Canadian currency. Single copies are often worth the price charged for the volume. J. H. Thomas, Agent for the Dominion.

J. H. THOMAS, Apiarian, Brooklin, Ontario.

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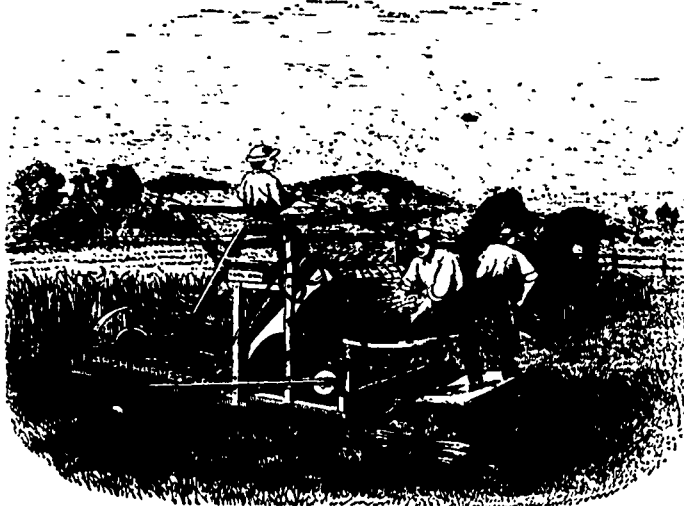
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Contents of this Number.

THE FIELD:	PAGE
Harvesting Grain, Binding and Carrying Grain	241
Reducing the Expense of the Turnip Crop	242
How to Grow Turnips	243
Economy and Improvement	245
Wheat and Clover	245
Rotary Engine for Farmer's Use	246
The Turnip Fly, Items of Agricultural Experience, Hungarian Grass	247
Turnip Field Cleaners, Buckwheat, Items	248
THE DAIRY:	
Dairy Utensils, Butter Making, Cows for the Dairy	249
Rearing Calves, Milk Agitator	250
VETERINARY DEPARTMENT:	
Hots in Horses; Worms in Horses	250
STOCK DEPARTMENT:	
Notes on Canadian Herds, Sale of Short Horn Bulls	251
Prize Leicester Ram (with illustration)	252
Foot Rot in Sheep	252
NATURAL HISTORY:	
The Woodpecker (with illustration)	253
POULTRY YARD:	
Clear and Addled Eggs	254
How to Raise Turkeys; Imported Eggs for Hatching; Golden Chicken Rules; Dry Earth as a Deteriorizer for Poultry Houses	255
ENTOMOLOGY:	
Specimens Received	255
Current Worms; a Batch of Noxious Insects	256
Apple Tree Bark Louse; Hog Tick	257
The Gooseberry Fruit Worm; Cut Worms	258
CORRESPONDENCE:	
Emigration and Misrepresentation	259
A Walk over my Farm on the Queen's Birthday; Crops in North Oxford	260
LPatrick Bell; Salt for Manure; Cost of Wire Fence	261
EDITORIAL:	
The Season and the Crops	261
Road Making	262
Agriculture in New Brunswick; Editorial Notes	263
HORTICULTURE:	
Meeting of Fruit Growers of Western New York	264
Gardening for Farmers	264
Russian Horticultural Exhibition	266
The Coleus	267
Notes on Bedding Plants	268
Phlox Drummondii (with cut), Canadian Vines	269
Gypsum for Foliage, New and Rare Plants	270
International Fruit Competition; Utilizing Cranberry Marshes; New Seedling Coleuses	271
Double Flowered Geraniums, A New Vegetable, Twelfth Session of the American Pomological Society; Radish; Items	272
APIARY:	
Artificial Swarming	273
Mitchell's Combined Hive and Bee-House; Bee Hives	274
Does it Pay to Keep Bees? Lee Humbugs	275
POETRY:	
The Seasons, Beauty; Across the River	276
HOUSEHOLD:	
Glue for Ready Use; Mode of Dividing Glass; to make Screws Hold	276
AGRICULTURAL INTELLIGENCE:	
Provincial Association—Meeting of Council; Provincial Exhibition; Free Grant Regulations; Pine Timber Regulations; Items	278
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