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VOL. II. No. 6.

TORONTO, CANADA, JUNE 15, 1870.

NEW SERIES.

The Field.

Early Cut Hay.

The advantages of cutting the hay crop when in its prime state, as regards the nutritive value of the food it is to make, are now in a measure becoming known to intelligent farmers, who are not slow to avail themselves of the benefits of that knowledge, and we may reasonably hope to see the walls of prejudice, so long standing, now slowly but surely crumble away before the light of practical scientific observation.

For a while longer, perhaps, it may be necessary to cut some grass late, in order to supply the whims of city consumers, who can hardly be expected to be any judges of the quality of the food they supply to the animals; but the farmer need not any longer feel out woody fibre, in the form of ripe-cut grass, to his stock, in the vain expectation that they will thrive on it, and some inventive genius will in time construct a machine for grinding up cow-wood to sell for horse-feed to city folks.

But jesting aside, let us tell the farmers that it is a matter of very serious moment to them that they should have their grass cut at just the right time to ensure the largest percentage of nutritive value in the hay made from it. Now, a difference of even ten per cent. in the value of hay may seem a small one, yet that is not all, for we must consider that the less nutritive the more bulky and unpalatable to stock the hay becomes, and that its fattening qualities are thereby lessened in a much greater proportion than its actual loss of nutritive value would seem to imply.

It may seem superfluous, yet in order to prevent mistakes it is necessary to define that by the term "early cut hay" is not meant hay made from grass cut early, in an immature state, but hay made from grass that is cut just at its very prime, when it has attained its full growth, as indicated by the inflorescence or blossom, having passed the

prime, yet not advanced so far towards the completion of the formation of seed as to cause the ripening process (which commences at the base of the seed stalk) to have more than just begun. At this time the whole plant, of whatever kind it may be, clover, timothy, or any other grass, is fullest of saccharine juices, which in a very short time, their office of developing the seed (which is the aim and end of vegetation) having been completed, turn into woody fibre of so much less degree of nutritive value. If the grass is cut just at the right time, which can now be easily and quickly done by the aid of mowing machines, the hay so made is of the very best quality it is possible to obtain.

In Britain, where more attention is paid to obtaining the greatest amount of actual nutritive value of hay to the acre, this practice is almost universally adopted, and in our climate, where the weather is so much more favourable, and the sun more powerful for completing the process of drying out the grass, the practice of early cutting grass for hay is much more easy of accomplishment with successful results. Too early cutting is of no advantage, as unless the grass is sufficiently advanced, as we have previously said, there will be too much shrinkage in drying. Practically, then, the best time to cut for hay is when the blossoms are beginning to fade, and the stalks to harden at the bottom. The use of hay tedders is of great advantage just now, as in order to quickly dry the grass, without evaporating too much of the juice contained in it, the hay should be arid-dried by constant turning and scattering, rather than wilted by exposure to the hot sun. If this matter is properly attended to, one day's tedding will dry hay sufficiently to be put up in cocks, to remain till it sweats a little before being carried to the barn or stack. If this sweating process is properly managed, there will be no danger of the hay afterwards heating in the mow or stack to any injurious extent.

The great trouble with our farmers in hay-making is that they do not, in many cases, make hay at all, but leave nature to make

the hay for them, and instead of obtaining hay of a rich fragrant quality, full of partially dried saccharine juices, they get only burnt grass, out of which the sun, by rapid evaporation, has taken the greater part of the nutritive value.

The more the sap in the grass can be retained, after it has gone through a state of partial fermentation through sweating in the mow, so as to prevent too much heating when in bulk, the better will be the quality of the hay as food for stock.

Some grasses will keep well with less drying than others. Clover requires more time to dry than timothy, and timothy than red-top or mixed meadow grasses. Heating in the mow to a moderate degree does not injure the nutritive qualities of hay for feeding to stock, though it may injure its appearance to sell in the market.

We would strongly urge upon our farmers the advisability of having at least a portion of their hay, especially clover, cut and saved early for home consumption, and those who try the experiment will, like ourselves, be satisfied that it is both more palatable and of greater value for feeding out to stock than what has been cut late and self-cured, as it were, on the stalk, by the changing of its rich juices into hard woody fibre.

Importance of Roots.

We fear there is a tendency to underrate the value of the root crop, and consider that it costs too much in time and labour to be profitable. More than once the subject has been discussed in these columns, by writers who have evidently looked upon the dark side of the question, and so made it appear that the crop actually cost more than the intrinsic value of the roots when gathered into the root cellar.

The object of growing roots is two-fold; first, to grow food for stock of a green succulent nature, such as is evidently needed by them to keep up their health and secure their being in a constantly thriving condition while confined to the stable and yard during the

long winter season. The feeding of roots, even in very moderate quantity, to stock that are expected to turn hay and straw into manure, will prove of vastly more benefit to them in helping them to digest and assimilate their dry fodder, and also in giving them an appetite to eat, than is generally supposed; for it must be known that the more food we can get them to consume, where that food is not of too heating and stimulating a nature, the better they will thrive, and the more manure they will make.

Second, it is desirable in all cases not only to keep up, but to improve the productive capabilities of the soil, and in no cheaper and better way can this be done, than by growing roots on it. Roots require manure and good cultivation, while at the same time they may be grown so late in the season, after the rush of spring grain seeding is over, that they are without question the most desirable crop to which barn-yard manure can be applied, and that too in a state that would prove positively injurious to most other crops. The benefit of the manure thus given tells on the succeeding grain and grass crops for several years afterwards, and where a proper system of rotation of crops is followed, the growing of roots must form the beginning and end of good farming, the first and last course in every rotation. Land left in such good condition that grain

At the same time we think the cost of labour on the root crop might be considerably reduced without proportionately reducing the value of the crop. The system of culture followed is, in many instances, too slavishly copied from that of the farmer of Britain, where labour is so cheap that hand-hoeing can be almost exclusively employed, and consequently the plants grown much closer together and of a more moderate size. Hand-hoeing is slow and laborious work, and should be avoided as much as possible; in fact, one thoroughly good hand-hoeing at the time of thinning out the crop ought to be all of that kind of labour required. But in order to cheapen the cost of labour in a root crop, we must have the rows wide enough apart to enable the soil to be constantly stirred by means of horse-power implements, and what is more, we need to have implements of such construction that the work of stirring the soil and keeping down weeds can be done expeditiously and thoroughly at the least possible cost for implements and labour. We believe that under proper management the ruta baga crop need not and does not cost nearly so much to raise as is supposed or claimed by some writers, and that its value is greater, to the wide-awake farmer, than its actual selling price. Suppose we have a crop of 800 bushels of ruta bagas per acre, which should be the average of a good crop, we have 48,000 pounds of cattle food. Agricultural chemistry will have it that four-fifths, or even more, of this is nothing but water; even with this allowance, there is still 9,600 pounds, or very nearly five tons, of cattle food of the most solid and nutritious kind to the acre, and the

land left in such good condition that grain and grass can be grown for four or five years afterwards without needing any heavy application of manure, while at the same time the soil has been cleaned of foul weeds and made mellow.

Artificial Surface Ponds.

It is a matter of great convenience to the farmer, and adds much to the value of his farm, if he has a stream of water, however small, running through his land; and if it runs near the centre of the farm, the fields may be laid out in such a manner, that whenever stock are confined in any one of them, they can have free access to water without the labour and trouble of driving them two or three times a day to the yard, or a distant corner to enable them to obtain water to drink. In many cases, however, from neglect and want of observation, these little streams—rills they may be called—have their courses so overgrown with rushes and weeds, and their banks so broken into by the trampling of stock, that they become practically useless, either for drainage or a supply of water in summer. This should be remedied by having their courses cleared of all obstructions, at least once a year, the best time for doing which is in June, between seed-time and haying, when work is slack. At some point in each field, a small basin, with gently sloping sides, can be made, and a load or two of gravel dumped in to make a firm bottom for the cattle to drink at, and stock will soon get accustomed to go to drink at that place where the water is deepest and clearest. On farms that have not the advantage of running water, spots may often be found where springs lie under the surface, often in the side of a hill or in small damp hollows filled with aquatic plants, and commonly known as frog ponds. By making an artificial basin in such spots and covering the bottom with gravel, one may often obtain a supply of water for stock. Should there be springs in a hill-side, it will be advisable to try and collect them together into a point by little open drains, and from that point convey the water through a pipe to some point below, where a small basin can be made to collect the water, and the overflow be carried away to the roadside ditch or some point where it will not saturate the surrounding soil with moisture. When a pond already exists on the farm, and it is apt to become stagnant and filled with weeds and rubbish, the water is sure to be unwholesome for stock, especially milk cows, and great pains should be taken to have it cleaned out, and the bottom coated with gravel, and if a spring can be led into it, and an outlet made, the water will be less likely to get stagnant.

The increase in the manufacture of beet sugar in Europe for the previous year over that of the year, is about 100,000 tons. The product already exceeds that of Cuban sugar cane. France exported 70,000 tons of beet sugar during 1869.

Culture of Indian Corn.

The roots of corn extend to a considerable distance near the surface, hence the necessity of having the soil for this crop made mellow near the top, and kept clean and free from weeds by constant culture, until the plants have acquired a strong growth and hold of the soil, after which they should rather be left undisturbed; otherwise the spreading rootlets will be cut off, just at the time when they are most needed to help the development of the blossoms to seed. No soil that is cold and compact, or liable to retain moisture for any length of time, will produce good corn. A good clover ley, or even an old sod, if not too full of grubs and cut worms, if properly turned over, so as to give a bed of mellow surface soil four or five inches deep, will raise good corn.

When coarse barnyard manure is applied, it should be spread on the soil and ploughed under; but if fine well-rotted manure can be had, it is most profitably employed in the hill. Too close planting should be avoided; the hills ought not to be a less distance apart than three feet each way, while three by three and a half or even four is often better. In selecting seed, it is requisite to obtain that which is not only sound and good, with small cobs in proportion to the bulk of the ears, but also that which is earliest in ripening. A good farmer will always make a practice of selecting the earliest ripening ears in the fall when on the stalk, and this carried on from year to year will ultimately result in producing an earlier maturity of the crop. To ensure a quick germination, it is well to soak the corn and roll it in plaster before planting. In planting the seed, allow at least eight kernels in each hill, spread out, to ensure enough plants, as the saying is:—"Two for the cutworm, two for the crow, and four will be left for the farmer to grow." When the corn is well up and strong, pull out what may have been left over four in each hill. Some prefer having but three, but if the soil is good and rich, four are not too many to succeed well. These directions have reference to the varieties of corn usually planted in Canada; for the large Western corn such a seeding would be superfluous. Four kernels to a hill would be ample, and no after thinning would be required.

Much of the success of the crop will depend on the after culture, and as most of this can be done with the horse-hoe, it should not be neglected. When the plants are about a foot high, they should get one good hand-hoeing around the hills, and have a little earth drawn to them to support the stalks, and at the same time a handful of equal parts of plaster and unleached wood ashes to each hill will be a great help to the crop. During the hottest and driest weather the corn should get as frequent stirrings with the horse-hoe as can be given, and as soon as the plants show their tassels, they should be left undisturbed until the corn is

ripe. If the cornstalks are to be saved for fodder, it will be best to cut them up by the bottom as soon as the ears become well glazed but not quite ripe, and set a dozen hills together in a shock to cure the stalks, and allow the grain to dry and harden. The old practice of topping the corn has been found to be injurious, and to greatly diminish the yield, so that it is rarely now indulged in, unless by some one who never takes any interest in the agricultural progress of the age.

Husking may be done at any time during the dry autumn days, as frost does not hurt the corn or cornstalks after they are ripe, and if the fodder is to be housed for winter, it must be thoroughly dried to prevent its becoming heated and mouldy.

Hints to Wheat Growers.

Hon. Horace Capron, the United States Commissioner of Agriculture, in a letter to Hon. B. C. Cook, of the National House of Representatives, gives some hints on wheat growing, which should be considered and acted upon by every grower of that cereal.

1. DETERIORATION FROM IMPERFECT SEED.

—Regard must be had to pedigree in wheat, as in cattle or horses, or deterioration is sure to result. Among wild herds, the prevailing law of the strongest aids in preserving its average excellence, but the prevalent neglect of the selection of seed of cereals is a sure means of degeneracy. Seed is generally taken at random, often an inferior and imperfect quality, because No. 1 wheat commands a higher price in market. Like produces like, and this shrivelled grain tends to slow growth in the plant, to late ripening, and consequently greater risk of insect ravages; it is immature and lacking in vitality, and decreased plumpness and diminished weight may be expected in the harvest; it may have germs of mildew affecting it, with insufficient vitality to resist the attacks of fungoid enemies.

2. DETERIORATION BY IN-AND-IN BREEDING.—The use of the same seed year after year undoubtedly tends to deterioration, on the well-known principle holding in animal reproduction.

3. NEGLECT OF ROTATION IN CROPS.—On the richest wheat soils, with continued cropping, even with change of seed and careful selection, a diminished yield is usually apparent after the second crop. Illinois, Minnesota, California, Australia—every famous wheat section known—attests the certainty and rapidity of decreased production under a practice which disregards rotation.

4. DEFICIENT AND CARELESS CULTIVATION.—As a rule, the only preparation for seeding is a slight scratching of the soil, sometimes only a harrowing of the weedy, grassy, uneven surface from which corn has just been cut, and weeds have thus an equal or superior opportunity for growth, and eventually

smother and dwarf the wheat, furnishing a prolific cause for deterioration.

The wheat plant is susceptible of great improvement if the same judgment and care are exercised as are exhibited by successful breeders of farm animals. It will also degenerate with wonderful facility under the average management of pioneer wheat-growers. After this careless culture becomes unprofitable, and probably not until then, will the requisite means of improvement be used.

The Sea Kale Beet, or Silver Beet.

Each year, as it progresses, forces on the attention of all persons engaged in, or observant of agriculture, that our crops are growing less and less annually, and that, instead of an increase in agricultural prosperity, taken as a whole, there is a considerable decrease. This fact all observant persons trace to the want of the turnip crop, or some equivalent for it. The improvement that has taken place in British agriculture has been entirely dependent on the turnip crop, and at the present time throughout Britain one-fourth of every farm is now devoted each year to turnips.

A Scotch farmer remarked to the writer a few weeks since, "I shall miss the turnips. I farmed one thousand acres of land in Scotland, and each year grew and fed two hundred and fifty acres of turnips. I must find some substitute here, for they tell me if I grow from five to ten acres of turnips it is as much as I can do." On explaining our system of bare fallows, with its attendant evils, he remarked, "Well, that may do for a time, but it is taking all out, and putting none back, and the end must come." He strongly condemned the usual course of Canadian farming, and it was only after the discussion had shown him the high price of labour, and the low prices of produce—so different from those he had been used to—that he could for a moment allow that our system could produce a profitable return at all.

A Norfolk (Canada) farmer, with whom the writer discussed the same subject—and he was a man who had been bred up in the United States and Canada—also admitted that we need not expect good crops from ordinary Canadian farming; but said he, "I have no cause to complain, for my crops are always good." His procedure is to sow clover with his wheat, take a crop of hay from the resulting grass, plough down the sod late in the fall, harrow the stale furrow well in the spring, and sow white turnips. These grow without hoeing until the ground is well covered, and he finds them smother most of the weeds. He ploughs them under in September, and again sows wheat with the best results. If the turnips have grown strong and thick, so as to kill the weeds, and the time promises well for barley, he lets the turnips grow till the season for fall ploughing arrives, then turns them under. They rot well before spring, and leave the land in the

most splendid condition for barley. The result has always been a heavy crop. He seeds down the barley with clover, takes an early crop of hay, ploughs down the second growth for fall wheat, or if the land requires it, he ploughs under the first crop of clover, as soon as it is well in bloom, and then prepares for fall wheat. He says this course leaves the land clean, and that it is on the mend all the time. When he finds it advisable, he sows and ploughs under peas instead of turnips. But the great complaint is that no kind of turnip can grow its best until the heavy dews and cool nights of autumn produce sufficient moisture in the soil, and supply the plant with enough moisture on the leaves, to ensure a rapid increase both in the root and the leaf.

It is to meet this difficulty that the following suggestion is made:

The Silver Beet, as some call it, or the Sea-kale Beet, as others call it, is a kind of beet which does not form a large root like mangel wurzel, but it throws up an immense quantity of large and succulent leaves. Those leaves have the centre rib very large, and of a beautiful clear silver white, and when the green part of the leaves has been stripped off, it forms a kitchen garden vegetable quite equal to sea-kale. It boils soft, and is an elegant-looking dish, and to those who like that kind of thing, is delicious. It is eaten with melted butter, and pepper and salt, like sea-kale, and is certainly very wholesome.

The root is entirely under the soil; it is large and fleshy, spreads off into a great number of branches under the ground, with a large mass of fibres in every direction, so that when dug up, the clump is as large as a half gallon measure. Meantime, the hotter the weather, the better it grows; the mass of leaves is very large, covers and keeps the ground moist, and is a perfect smotherer to all weeds, and so it continues to grow till the frost comes.

It grows close in the row, and can be kept clean with the horse hoe. The writer had the largest part of those grown by him last summer fed to the cows, and the ground certainly produced a monstrous mass of feed, of which the cows were very fond, and it agreed well with them. A few roots were left in the ground to see the effect of winter on them, and they have now been examined, and the result is—the dead and decayed leaves fairly cover the ground, the roots are thoroughly killed by the frost, and turned into masses of manure. Roots and leaves together are certainly equal to from thirty to forty loads of manure per acre, and the result must be most enriching.

The plant seems to be an original or wild variety, apparently a species of beet in its natural state, before the efforts of mankind had improved the root. It is certainly much hardier than either beet or mangel, stands the drought well, affords excellent feed where green feed is wanted, and the

roots, when destroyed by the winter, form a plentiful source of *underground manure* of the best quality, which requires no ploughing to bury it.

Here, then, we have all the requisites for a green crop for manure for ploughing under. It may be sown early, although it answers well when sown later. It will take care of itself with merely horse-hoeing, so that the saving of hand labour is very great; it affords an excellent green feed, if wanted, and the winter turns it into a manure of the first quality, ready in the ground for spring operations.

Comparing it with the turnip crop, in a manorial point of view, and leaving out of the question for the moment the profits to be made on feeding cattle with the roots, the following advantages may apparently be claimed on behalf of this beet:

We get rid of hand labour in hoeing—of hand labour in storing; it is a splendid grower all through the hot season, and continues growing until the frost cuts it off; winter storing is avoided; the manure has not to be carted to the field; moderate delay in spring operations is of no consequence, for the root is decaying in the ground—and, unless experience should show some evil which does not now appear on the surface, it seems just the thing we want in Canada to make up for the turnip crop, where want of capital will not admit of extensive turnip operations. How this variety of beet would succeed without manure the writer does not know, but from its mass of rootfibre, it is evidently a diligent searcher of the soil, and will doubtless find all there is to be found, instead of growing straight down like a turnip, or ordinary beet or mangel.

The seed can be procured from the seedsmen, and I earnestly recommend all who value a good green crop for ploughing under to give it a trial.

VECTIS

POSTSCRIPT.—After the foregoing had been written, the project was in part submitted to a friend at Guelph, who was the first person who raised the plant in Canada. He misunderstood in a measure the writer's meaning, and lest others should do so too, the following explanation is given. The friend in question mentions that at Guelph the best farmers raise from twenty to thirty, and even forty acres of turnips annually, and that they find the feeding of cattle with that crop the most profitable. In reply, the writer says that this suggestion is not for those who can raise turnips to that extent, but for those who cannot. To enable a farmer to grow and store from twenty to forty acres of turnips, he must have capital to cultivate that amount of crop, and also capital to purchase as many head of cattle as there are acres of turnips, and he must have equally extensive buildings, and other farm belongings. Now, this is not the fate of the great majority of Canadian farmers. The utmost amount of turnips generally grown is six acres, the cat-

tle fed therewith six in number, or less, and even then, supposing that by feeding his turnips the farmer makes from each beast a profit of thirty dollars, it does not give a return equivalent to a first-rate crop of fall wheat, such as used to be grown.

The foregoing suggestion is intended for the ordinary Canadian farmer, who has not capital to raise and feed a large crop of turnips, and who, if he did not do this, would do nothing better than grow from three to four acres annually, and trust the rest of his land to bare fallow.

The course here suggested would very soon enable the grower of the silver beet to raise better crops, and thus acquire more capital, and when he was able, he might, if he found it more profitable, go heavily into the turnip crop, feeding the whole of it to horned cattle. Whether the great majority would prefer the one course or the other, experience only can decide. The writer's object is to amend *poor* farming and benefit *poor* farmers, not to do away with the growth of from twenty to forty acres of turnips annually on rich farms, or to assist rich farmers who have plenty of capital to help themselves by more expensive means.

Wild Oats

To the Editor.

SIR,—“A Constant Reader,” writing from Howick, makes some enquiries respecting this pest, and the best mode of exterminating it. You refer him to articles on the subject in former numbers of your paper, which he, as well as myself, has evidently overlooked, and not having the files at command, I am unable to refer to them.

It is very true that this additional pest to agriculture is rapidly spreading through this western country to an alarming extent, and it is not to be wondered at that enquiries should be made as to the best method of staying their further progress, or, better still, of exterminating them.

I have purposed for some time past giving you and your numerous readers my views on this matter, but might not have carried my purpose into execution for some time to come at least, had I not been prompted to do so by the enquiries of your correspondent.

I am well aware that when once they have fairly got possession of a farm that it is no trifling job to dispossess them, but I am not prepared to admit that it cannot be done, indeed, I am well satisfied that it can be done, and that, too, without any loss of crops or any serious expense.

I have had conversations with persons who have tried various remedies, such as fallowing, growing root crops, seeding down, &c., but all of which remedies failed in accomplishing their destruction, as the seed will remain in the ground for many years without growing or being destroyed, when covered too deep to sprout and grow.

My method of dispossessing these troublesome visitors is this:—

Plough the land the usual depth, immediately after harvest, the sooner the better, for more reasons than one. Let it lie in this state until the latter part of the month of May following, when it will generally be in good order; then plough again lightly, using the gang plough if the land will admit, and sow immediately with barley or an early variety of peas, sowing pretty thick and covering with the harrow. These grains sown at this time, with the land in good cultivation, will spring up quickly, and getting the start of the wild oats, will keep above them, and will ripen before the wild oats are headed out, and should be cut as soon as they are ready; and thus all the wild oats that have sprung up will be destroyed. But, as the ground may still be full of the seed, the process must be repeated from year to year, until all the seed in the ground has been brought to the surface and grown. If the land be out of order, or be infested with Canada thistles or other obnoxious weeds, a deviation from this course may be permitted with advantage. Let the land be well fallowed for a season, and manured if need be, and sown with fall wheat of an early variety, say amber Michigan, with which it may be desirable to seed down with clover and timothy. But when broken up again, the process first pointed out must be continued until every grain of seed in the ground is grown and destroyed.

But unless great care is exercised first in thoroughly heating all the manure now on the farm, secondly, in the purchase of clean seed and grain for feeding, if such is necessary, and thirdly, that the threshing machine does not come directly from a farm infested with wild oats to your farm, it will be a difficult matter to get rid of them.

This method of exterminating this pest recommends itself from the fact that it is attended with no expense not necessary to good farming, and the crops recommended will be found generally to pay as well as any others that can be grown, and if persevered in, I am confident will result in the entire eradication of this modern pest.

I trust that the suggestions thus roughly thrown together may be of service to those interested, and they are legion, and will meet the views of practical agriculturalists generally.

A. BOOMER.

Linwood, April 20, 1870.

MANURE TRADE.—The manure trade has now acquired an importance second to no other branch of British manufacture. Put the annual increase of all our cotton, linen, woollen, and hardware together, and it is questionable if the sum will balance the increase of produce arising from the application of artificial manures to the British soil; and when we add to this notorious fact that this increase of produce is not half what it should be, something like an approximate estimate may be found of its value to all classes of the public.—*Irish Farmer's Gazette*.

Sewage upon Sand.

The power of sewage to produce a crop of succulent growth with a very minimum, if any, of assistance from the soil itself, has indeed been amply illustrated in an experiment of sufficient extent, not far from Loop Farm, Barking. One of the features of the plan of dealing with North London sewage, for which Parliamentary powers were originally obtained, was the reclamation of a large portion of the many square miles of sand which the tide lays bare by Foulness, at the mouth of the Thames; and there fertilizing some 8,000 or 10,000 acres by sewage irrigation. Although similar work has been actually done with the best results near Leith, with the water of the Edinburgh "Foul Burn," it was thought desirable to test the fitness of the Maplin sand from Foulness for the use of the sewage on it. About 3,000 cubic yards of the sand were accordingly barged up to the sewage outfall below Barking, and there spread some thirty inches deep over an acre of abandoned contractor's yard, which was levelled for the purpose. This acre of sand was smoothed with a slope of about 1 in 120, and sown with Italian Rye-grass in March, 1866. Three or four cuttings of grass were taken from it during that year, one of them close on twenty tons per acre, and the others at intervals of four or five weeks, varying from eight to twelve tons per acre. The plant received frequent abundant floodings with the water from the sewer alongside of it. I am unable to say, however, how much exactly either of sewage it received or of grass it produced. But it is certain that very heavy crops of grass were produced by the use of sewage alone upon this sheer sea-sand, which could have contributed hardly anything to the growth of the crop. Smaller plots of the sand were planted with mangold-wurzel, celerery, and carrots, and yielded satisfactorily. —*F. C. Morton, in a Report to the Metropolis Sewage Company,*

WEIGHING HAY.—Farmers frequently have occasion to weigh small lots of hay, and few have the contrivances for doing it. To weigh off a ton of hay by tying up one or two hundred pounds at a time, with a cord, is no small job. One of our American exchanges describes a very simple contrivance, which saves the tying, at least, and is very cheap and easy to make. It consists of an upright standard, five or six feet in length, of 4 x 4 scantling; a round pole will do as well. Near the bottom of this standard, two two-inch holes are bored at right angles to each other. Round, straight poles are slipped through these holes, projecting some three or four feet each side of the standard. On the ends of these poles are laid and fastened light narrow strips of boards or poles, forming a square, the sides of which are equally distant from the standard. A clevis is attached to the top end of the standard in which to hook the steelyard. The usual lever

arrangement is used to raise the hay, which is simply pitched on to the platform. When not in use, the cross poles can be slipped out, and the whole stored in a small place.

S. N. Wherry, of Pennsylvania, gives this account in the *Practical Farmer*, of three good crops:—"One field, ten and one-third acres (strict), made 909 bushels (by weight) of shelled corn—\$8 to the acre. Eighteen acres of wheat yielded 556 bushels (by weight) or 31 bushels to the acre. Twenty acres oats gave 1,410 bushels (thirty pounds to the bushel) or 70 bushels to the acre. The ledger for 1869 shows a very favourable balance, notwithstanding that wheat cost considerably more than it brought in market."

EXTERMINATING SORREL.—A writer in the *Country Gentleman* recommends the following method of exterminating sorrel:—"In my own experience, a single field previously growing scrub pines and sedge grass, was treated only with bones and guano. The ground was enriched, the corn grew finely, but the sorrel grew with even greater luxuriance. Though there had been little or no appearance of sorrel in the primitive sod, and the ground was nicely clean when the corn was planted, such was the growth of sorrel under the course of this culture and stimulus that in a few weeks it would have covered the ground with a general sod. Its destruction by harrow and hoe was impracticable. With an ordinary rotation, conducted with the greatest care, I would call it impossible ever to have extirpated that growth of sorrel without a *chemical* change in the soil. All other parts of my farm had already been freed from sorrel through the liberal use of lime. It was accordingly applied to this field. The sorrel directly disappeared from it also, except in trilling patches not reached by the lime. I know no other way of subduing sorrel, than by the use of lime. I assume that the alkali neutralizes the acidity of the soil in such cases; it certainly appears to bring about a condition uncongenial to the growth of sorrel."

EFFECT OF FORESTS ON HEALTH.—It seems to be generally understood among scientific observers, that forests, and even a few rows of trees, often have great effect in checking miasmatic vapours. It has been observed that a screen of trees, in certain localities in Italy, protected the inhabitants from fevers which were prevalent upon the other side of them. Certain commissioners in Tuscany advised the planting of three or four rows of white poplars to intercept the currents of air from malarious localities. Lieut. Maury believed that a few rows of sunflowers planted between the Observatory at Washington and the Potomac marshes, had saved the inmates of the Observatory from the intermittent fevers to which they had been formerly liable, and large plantations of sunflowers have been planted in alluvial soils in Italy with favourable results in preventing the spread of noxious exhalations from the marshes. It is supposed that the plants or trees not only act mechanically to check the unhealthy currents, but also chemically to render the noxious effluvia harmless by decomposing it.

Stock Department.

Cross-breeding Cattle.

It is astonishing how many inferior cattle continue to be raised in the country, and how little foresight and knowledge the generality of farmers possess on the subject of stock-breeding. Many are the farmers whose entire stock of young cattle would not sell when three years old for half the value of the food they have consumed in that time. Of this fact many have now become sensible, and have sold off every passably good animal on their farms, even to their cows, the only part of their stock that could be made available as a basis on which to commence future operations with a view to improvement.

Good cattle are now high in price. A good cow, that has been well fed and milks fairly, will command anything in reason. So will young heifers with a cross of short-horn blood in them. But this very circumstance does not seem to convince farmers that their best policy is to hold on to the good they have got, and endeavour to make it still better by a further use of thoroughbred bulls. How many are there among them who, to obtain grade heifers, worth from \$10 to \$20 more than their dams, will subscribe liberal amounts to their agricultural society towards the buying and keeping of a first-class short-horn bull, or pay an enterprising neighbour, who purchases and keeps one at great cost, the moderate sum of \$5 for each cow put to that bull?

For all practical purposes of the dairy or the butcher, it will be found that cross-bred cattle can be more profitably raised by farmers than the thoroughbreds. But it is necessary first to have cows of good form, and propensity to take on flesh kindly, which is indicated by moderate size, compactness and levelness of form, a straight broad back and a thin tail, and soft skin well covered with fine hair; then we want good milking quality indicated by a broad forehead, small muzzle, bright and kindly expression, udders full and large yet not fleshy, with the milk veins well developed, and thighs somewhat wide apart; and lastly, we must have good constitutions, which also insure early maturity, indicated by broad deep chests, and ribs well rounded out behind the shoulder. In selecting a bull, it must be remembered that what is most to be aimed at in breeding upwards from ordinary stock is to stamp the characteristics of the breed from which the male is selected upon his progeny, and that the further back his pedigree can be traced, provided it can be depended upon, and traced through animals successively bred through one strain, or by careful and reliable breeders, the greater his value, and the more likely he is to bring progeny of a high character of excellence, even though he may be himself deficient in some points.

If the bull be large of his kind, his produce will be apt to be somewhat coarse, and marked with defects that usually attend great disparity between sire and dam, and the dam will be more likely to experience trouble in parturition. As a general rule, the prejudice that exists in favour of large coarse bulls is founded on wrong impressions as to the principles of breeding, which indicate that males of moderate size, if level, solid and compact, and of good pedigree, are certain to produce better progeny than those of a size unusual to the breed. One of the greatest, yet very common mistakes made, is the breeding from grade or starred bulls, with the idea that because the animal is of good form, and shows off at a township or county show to more advantage than his thoroughbred sire, when judged by the eye alone, he is capable of getting good stock. This is what in many cases ruins the reputation of a breed, and results in discouraging superficial minded farmers from carrying on an improvement that, if once begun, would by the continual use of pure blood males result in bringing up the females in a herd to the highest standard of excellence attainable, short of perfect purity of blood. A grade bull, however well he may appear to the eye, has not the characteristics of the breed from which his sire sprang sufficiently stamped in his blood to enable them to be perpetuated in his descendants, which, in nine cases out of ten, are likely not only to be greatly inferior to himself, but to throw back strongly towards the deficiencies of the aboriginal race from which his dam came. Every cross-bred male should, without hesitation or failure, be castrated, and he will then prove far more valuable for the butcher than he would have done as a stock-getter. Thoroughbred males of a high quality are too valuable to be sacrificed until they are past their powers of procreation, but cross-bred males form the very best and most profitable stock available, either to make into beef at an early age, or use for working oxen, and then turn to beef when their best days are over, for if well fed, they will grow to a much greater size than either their sire or dam.

To Fatten Hogs Profitably

As soon as the grass starts in the spring, the hogs should be turned in, as they like it best when short and tender. They will subsist and grow well on grass alone, with a little salt occasionally. Some prefer to feed a little corn daily; it may not be good policy; they will be farther advanced for fattening, but will not fatten as well as if none is fed in summer, and with good pasture, water and shade, they will give satisfactory results. They will not fatten on grass, but it prepares them for fattening. Their systems are in a healthy state. They have no ulcerated livers and stomachs, as they will have if fed on corn through the hot weather.

Thus kept, they are prepared by the first of September to commence the fattening process, with sound teeth, good digestion, and vigorous health. They will after that time promptly pay for all the feed judiciously given. It may be, and doubtless is true, that a light feed of bran or provender might be fed with profit during the summer, but it is doubtful if corn in any quantity is beneficial. Feeding on corn alone during the summer, except it be to send them to a summer market, is bad policy; they become unhealthy, teeth sore, appetites cloyed, and they will not feed satisfactorily in the fall, and the comparative expense of the grass and corn feeding must be drawn as to which is the best policy. The cost of grass feeding, even with other light feed, is merely nominal, while a hog fed on corn, from the time it is weaned from the sow till butchered at 18 months old, can seldom pay expenses. The chief end of a hog is the weight and quality of his carcass. His value depends upon his being well fattened, and the object aimed at during his whole life is to prepare him for that event. If he fail in that his life is a failure. Corn is the proper food for fattening, but not for growth; and the fattening process is always, to some extent, a disease-producing process, and if too long continued is always so. But when the animal commences fattening in vigorous health, having lived for months on green vegetable and light food, his health will remain firm through any reasonable time required to become fat.—*Prairie Farmer.*

Never Mind the Horses; or a Few Ways in which to Bring Up a Colt.

Not long ago, a team of three-year-old colts started for market with a cord and a quarter of green cordwood, in the deep snow. Soon, the rear side animal stepped off the track, and plunged to the belly in deep snow.

"You're stuck," said I. "Never you fear, Captain. When it comes to a stick, that team is thar," was the somewhat surly rejoinder.

Crack went the whip on the young horse which lay in the snow like a log. A struggle, a desperate plunge, a few feet gained, and both horses are deep in the drift. "Dig 'em out," said I. Crack went the teamster's whip—another struggle. "That horse is on top of his mate." Another welt. "His leg is over the tongue." "Let him take it out," was the answer. A succession of blows—a torrent of oaths—a few desperate struggles—by a fearful effort the sixty-cwt is drawn through the drift. There stands that noble young team of three-year-old colts, trembling in every limb with nervous affright, the blood streaming from more than one cut, a shoe wrenched off, and a fore leg strained.

Never mind the horses—that's the way to put a colt through the snowdrift.

"Abe," said his friend Jack, as they rode their respective teams home from the plough one bright spring evening, "I'll bet this 'ere colt of mine to trot agin your'n for a mile." The bet was made, the harness taken off, and down the lane they go at a full trot. It is neck and neck, an even tie. It must be tried again, and so it is before the evening meal. The evening meal consists of dusty hay and musty oats, which wouldn't sell in the market. "Guess that colt of year'n has got the heavens," says Jack to his friend a few days after.

Never mind the horse—that's the way to train a colt.

A. went to the races with a fast horse, and getting on the spree, exhibited his colt's paces considerably on the course. On the way home he finds it necessary to finish up at a roadside tavern, and accordingly joins his friends, leaving his nag outside without a blanket, reeking with sweat, and the thermometer at zero. The veterinary surgeon says that colt has got inflammation of the lungs, and he'll never be the same horse again, but

Never mind the horse—that's the way to make a beast hardy.

"Neighbour, your horses' shoulders are mighty sore." "They are so," was the answer. "I can't make my collars fit, that's what's the matter." "Tell you what it is, Johnston," said the first speaker, "I guess you don't feed your horses over well for the work they do." "Well," said the owner of a pair of lean, hard-worked and galled young horses "the work's got to be done, and I ain't got no good hay nor no good oats. Fact is, I sold too much stuff last winter, and oats and hay is so plaguey high now, and I've got to meet a note next month; I can't afford to buy."

Starve and work them hard. *Never mind your horses—that's the way to put in a crop.*

A fine span of colts, valued at three hundred dollars, were taken to the field one blazing hot day in the latter part of August. Rain threatened, and a tremendous load of wheat was put on the waggon. On the road to the barn is a nasty place where it is always soft and springy. "Put some rails in that hole, Bill, or you won't get through." "Blow the rails! ain't got time; git 'em there." Down go the forewheels up to the hubs, and there the waggon stops. "Those colts never was stuck, and I guess they'll do it yet," was Bill's remark as he laid on the gad. The horses pull, first together, then one, then the other, till the off horse gives it up, and looking round at the load says as plain as a brute can speak that he can't draw it. "I'll teach you to baulk," says Bill, as he ples the poor horse with lash and oaths. "Guess I'll make you pull somehow." The thrashing won't do; now the horse says, *I won't pull.* Bill knocks him down with the butt end of the whip. The horse gets up scared and trembling. Bill

puts salt in his eyes. The horse, maddened, rears on his mate, and kicks his legs to pieces. He lights a fire under him, and the horse lies down and rolls in it. As a last resource he gets another team, or perhaps a yoke of oxen, and attaching a rope to the poor horse's neck attempts to pull team and load bodily.

He then does that which might have been done twice over in the time—unloads the grain, and draws out the empty waggon.

That horse, which never refused to draw before, is a confirmed baulker, on which no dependance can in future be placed.

Never mind the horses—that's the way to save time. C. E. W.

Ancaster, March 21, 1870.]

Importations of Live Stock.

Few persons are aware, unless their attention has been specially directed to the subject, how much expense and risk attend the importation of valuable animals from Europe. The selection and purchase of them in the first place usually involves, besides other expenses, a journey across the Atlantic and back. The price of such animals, when of first-class order, and none others are worth the trouble of importing, is often extremely high. Then there is the serious risk of the voyage. This, in the case of horses especially, is fraught with peril, a rough and stormy passage being often fatal; and the Insurance companies invariably decline to be responsible for any losses from this cause. No doubt, these difficulties have been very much in the way of valuable acquisitions from England, and those enterprising individuals who have successfully overcome them have laid the country, and the agricultural community especially, under great obligation.

One of the most serviceable importations recently made has been that of the draught horse "Old England," a noble animal, winner of many honours, which was imported last fall from Yorkshire by Mr. William Long. This gentleman again purchased, at still higher cost, another celebrated prize-winner, "Black Douglas," and embarked him in the spring for Canada; but, unfortunately, the animal died on the fourth day out from Liverpool. In order to repair this serious loss, Mr. Long contemplates a second voyage to England, and intends to bring out, besides other valuable stock, a first-class draught stallion. Some of his friends are desirous of aiding in this enterprise, and we call attention to the matter because it is one not altogether of a personal and private nature, but of some public importance to a Province like ours, so deeply interested in all that affects the progress of agriculture, and deserves the sympathy and co-operation of those who desire to promote the improvement of our farm stock. Persons who are disposed to lend their assistance toward the expenses of the undertaking are requested to send their contributions to any of the following gentlemen in this city:—Messrs. Crocker, Albion Hotel; Thomas Best, Bay Horse, Yonge Street; Swan Bros., King Street, or Captain Cox, of the Black Horse.

Sparred Floors for Cattle and Sheep-houses.

Sparred or grated floors for byres, cattle-feeding houses, and sheep-sheds, are now becoming of almost everyday use in Britain, and they might be adopted in Canada wherever a manure cellar is constructed. Mr. Mechi uses them altogether for both cattle and sheep. They save labour in cleaning the stable, keep the cattle and sheep always dry, and what is better than all, the manure falling through the interstices not only saves straw, but as it falls into a cellar, which must naturally be frost-proof, the necessary conversion of the fresh excretions into well decomposed manure is all the time progressing, ammonia is being developed in its most fertilizing shape from both the liquid and solid manure, and in the spring it is in the most useful state possible. If the smell of the fermenting mass in the cellar becomes too strong, or the ammonia is passing off, it can at once be stayed and deodorized by the addition of plaster or of sulphate of iron, and thus rendered into the richest possible manure, which is far superior to that not so treated.

Mr. Mechi does not find the health of his cattle and sheep injured by thus standing over the manure, therefore it may be inferred that we need not fear such a result here, where the lowness of temperature during the time the cattle are housed would render the smell from the pit even less offensive than in England.

The sparring of the floors must be done with oak strips or iron gratings, strong enough to bear the cattle without danger; and the under side of the interstices must be made wider than the top. They then clear themselves.

The cellar must, of course, be made absolutely proof against draughts and the weather; and in the case of cattle it is only the bottom of the manure gutters in the byres or stables which need be grated. For sheep the grating or sparring must be continued over the entire floor, but as the animals are so much lighter in weight, the grating may be of much slighter materials. The part near the feeding troughs and hay racks should be made solid, to guard against waste of food.

The manure cellars ought always to be well puddled with clay at the bottom, and be built up at the sides with brickwork laid in water lime, so that each cellar forms a tank for the liquid manure, without waste. VECTIS.

Such are the points to be attended to if it is determined to build a manure cellar, but it cannot be denied that opinions of practical men are not altogether at one in regard to the propriety of their use, and with all the precautions that may be employed, any one may be pardoned for entertaining grave objections to keeping animals over a reeking mass of ordure.—Ed.

Shrinkage of Swine.

A correspondent of the *Prairie Farmer* says:—"Hog buyers will tell us there is about one-quarter to one-fifth shrinkage on our hogs, no matter how well fattened they may be. My experience shows me the shrinkage or difference between the live and dead weight of well fattened hogs is only about one-seventh of the gross weight. I have ascertained this from several tests I have made on the average of a lot of thirty or forty hogs, fattened upon the ground, with a good straw stack to lie in, and held until the first of January.

"My investigations show me that upon a lot of well fattened hogs that range alive from three hundred to four hundred pounds, after counting the weight of the lard taken from the inwards, the shrinkage is less than one-seventh of the gross weight; so I consider it safe to reckon the shrinkage at one-seventh, as it will vary but a small fraction from that in either way.

"There is no doubt but farmers may have their hogs in so poor a condition that the shrinkage or difference between the live and dead weight will be nearer one-fourth or one-fifth, but my opinion is this, if so, the hogs are unfit for market, and as a general rule make very unwholesome food."

Exportation of Breeding Stock to America.

The *Mark Lane Express* of April 28th states that a shipment of two-year-old and yearling Shorthorn heifers left Liverpool recently for Mr. James O. Sheldon, Geneva, New York. These animals were purchased in England, and shipped by Mr. John Thornton, as breeding stock for the celebrated Duchess bulls in Mr. Sheldon's herd. Mr. Cheney's herd at Gaddesby supplied two heifers—Bouquet 3rd, a roan of the Foggathorpe tribe, and of the same family as Col. Towneley's prize heifer Baron Oxford's Beauty, and May Lass 2nd, roan, descended from Mr. Fawkes' Millicent tribe; both these heifers were by General Napier, a bull of Bates—Prince's blood. Lady Worcester 4th, roan, a Bates' Wild Eyes heifer, was selected from Mr. John Harvard's herd at Winterfold, and Sidonia 2nd, a red of Mr. Bowly's Gazelle family, from Mr. Isaac Downing. Two heifers were bought of Mr. Hugh Aylmer—Guava 4th, with some Booth blood, and Britannia 18th, red, descended from Mason's No. 6 Chilton sale. A Booth heifer, Rosary Charm, was purchased from Mr. Torr, at Aylesby, and Rosemary, descended from Mr. Cowling's Kitt stock, came from Teesdale. These animals had a very good voyage, and were landed safely at Mr. Sheldon's farm at Geneva, New York State, on the 10th of March. Messrs. Walcott and Campbell, who recently purchased Mr. Booth's cow, Bride of the Vale, for 1,000 guineas, are in treaty for another shipment of Shorthorns, including Col. Towneley's heifer, Baron Oxford's Beauty, and other well-known animals, and a small lot of heifers and bulls will shortly be sent to Colorado.

Treatment of Heifers.

We neglect our heifers; as well might we neglect our cows, as the treatment of the heifer tells upon the cow. We neglect our heifers, and we begin early—when they are calves. They are too often left to take care of themselves after being turned out to pasturage, only a little cold milk given, and skimmed at that. But skimmed milk is good, as it contains casein, which is wanted for muscle. It should, however, be well warmed, as otherwise it is apt to lead to the scours.

Shelter is one of the first things of importance to a calf. It is not accustomed to storms, and its limbs, which are tender, will suffer if it is not sheltered. Here we are very negligent; we should accustom our calves to the stall or shed—begin early to fix the habits of the cow. The best feed, aside from tender grass, is bran, oat-meal, milk. The feed should be regular, once or twice a day, and in small quantities, for it will not do to fatten or pamper a calf; this must be avoided.

After being accustomed to the grass, which, if it is clover, is all the better, little else need be given it. Grass contains all the elements necessary to growth; it carries the whole calf successfully. But it must be good grass—a clover meadow is the best—and the calf ought to be kept there till the crop is cut, which should be early; and this same clover, dried, should be fed to the calf in winter, and it needs little else besides. But you must have, to do well, grass cured with all the elements in a soluble state. There are farmers who raise their calves in clover lots with success, who feed nothing else besides. But, if it is necessary, feed bran, etc., as above indicated.

The first year is the critical time; that passed (successfully) there is little difficulty afterwards. But there is some; care must be taken; the proper feed is to be given, and regularly, and proper shelter secured early in the fall. Indeed the old habit of running to shelter in the summer must not be broken up; for now is the critical time; the heifer is to be made a cow at two years of age, and bad treatment or neglect will often defeat this, and the loss is a year's fodder. It is true, the animal grazes during this year, but she also will not make so good a cow as it brought early into the lacteal habit. Many dairy men prefer a two-year-old cow's first calf to that of a three-year-old. Experience says they are best for the dairy. And in order to get them to a fair size, it is necessary that they receive careful attention. In this way there is great profit in raising our own dairies.—*Ec.*

SALES OF STOCK.—Mr. F. W. Stone, of Guelph, has sold his short-horn bull, Grand Duke of Moreton, the great prize winner, and also the heifer Miss Margaret 5th, the winner of the first prize at London last year, and the heifer Duchess of York 6th, to Dr. Brown, of Kentucky, and Abraham Vanmeter, of the same place. The South

Lanark Agricultural Society have purchased the Short-horn bull Lord of the Hills, got by Grand Duke of Moreton from imported Sans-parcel. This animal will prove a great boon to the farmers of that county, as, aside from his sire being the best short-horn bull ever bred in Canada, his dam is of a famous milking strain, and all her female descendants have proved extra good milkers.

MERCURY IN WATER.—The cows belonging to a mining establishment in Nicaragua drank water from a trough in which the mercury used by the miners was occasionally washed. Persons who used this milk became severely salivated, but the cause was not discovered for some time, as the cows did not at first show the effects of the poison. But afterwards they became reduced in condition, and their gums much swollen, and some, though not all, died. Distinct traces of mercury were found in the milk by analysis.

HOW TO KILL LICE ON CATTLE.—A correspondent in the *County Gentleman* dissolved about a pint of strong soft soap in a pail of warm, soft water, and saturated the whole surface of a lousy cow's body with it; after about thirty minutes, repeated the operation, and in thirty minutes longer took a pail of clean, warm water and quickly and thoroughly washed out all the soap water and dead lice in large quantities, put her in a warm stable, and covered her with a dry blanket. The next day, after being thoroughly dried, she looked, and seemed to feel, like a new animal; more than doubled her quantity of milk within twenty-four hours, and immediately commenced gaining flesh and general thriftiness.

Mr. George Roach, of Hamilton, has just received, per steamer *Medway*, his fifth importation of thoroughbred swine. They comprise three Berkshires, two sows, one boar, and a Suffolk sow. The animals have been selected by his brother from the best and most fashionable prize-winning strains in Britain, and are, in every way, perfect in form and pedigree. They arrived, on the 7th of May, by the steamer *Champion*, from Montreal, and appeared lively and in good health, notwithstanding their long journey. They will, no doubt, put in an appearance at the forthcoming Provincial Exhibition at Toronto.

SELECTING CALVES FOR MILKERS.—A writer in one of our exchanges says:—"The points that indicate the good cow are discernible in the calf, and why not? This may stagger some dairy men, but that is just what we wish to do. This wholesale slaughtering of calves in the spring is wrong. A calf will show a good milk mirror as well as a cow, a rich cream-coloured udder as well as a cow, and a hearty, thrifty look and strong loin as well as a cow—and these points make up the cow every time. Let the breed be what it may, this is our experience in the matter. A calf that is worth ten or fifteen dollars should not be killed for its mere hide, for the lack of judgment in selecting.

Veterinary Department.

Teething in Young Horses.

At this season of the year, many young horses are weak and ill thriven from causes connected with teething. The mouth is sore and hot, the gums are swollen and tender, the ridged palate becomes so much congested and enlarged, that it comes below the level of the teeth, and is painfully bruised when the animal attempts to chew his ordinary hard food. From the difficulty and pain attendant on feeding, the animal does not take sufficient nutriment, and strength and condition accordingly fail. This tumid, tender state of the mouth is technically known as *lampas*. In the older books of farriery it is described as an abnormal growth; in popular estimation it is still looked upon as a disease; in reality it is nothing more than a natural condition of the gums and adjacent parts, common in young teething animals of all sorts. The development and eruption of the teeth demand a large supply of blood and nervous influence; as occurs in the growth and rapid repair of other textures, adjacent soft parts become turgid with blood. The like phenomenon is exhibited round the base of a cow's horn which has been broken off, and is being replaced by a new horny growth. Whilst the buck's antlers are shooting out through the skin, the neighbouring parts are similarly tumid and tender. Around the edges of a large wound increased vascular fulness occurs, and from these larger supplies of blood abundant materials are drawn for the rapid repair of the injured part.

These considerations will indicate the absurdity of the old-fashioned treatment of *lampas*. The sensitive swollen palate, ignorantly mistaken for an abnormal growth, was sometimes deeply cut into, and a portion of its surface cruelly torn away, leaving a raw, ragged, bleeding surface, which, if touched by food or anything else, inflicted on the animal excruciating agony. With as much sense and prospect of relieving the patient, might the reddened and inflamed gums of a teething infant be rudely torn away. Almost as cruel and irrational is the plan so often had recourse to of rasping the tender projecting palate with a red-hot iron. Rudely tearing the sensitive surface of the tumefied palate with a sharpened nail is recommended by some authorities; but even this popular remedy is uncertain, and apt to leave an ugly and tardy-healing wound. The only rational treatment which these cases of so-called *lampas* really require, consists in the careful lancing or cutting with a sharp knife of the palate if it is so much swollen as to interfere with mastication. The cutting does not require to be deep or repeated, the discharge of a very little blood, as in the lancing of a child's hot, swollen gum, suffices to relieve the congestion and tenderness of the colt's mouth. Any of the sucking-teeth which have got misplaced,

and appear to prevent the eruption of their permanent successors, should be removed with the fingers, or with a pair of pliers. Whilst the gums are tender, and the teeth both in front and behind are irregular, it is very important that the young horses should have their food supplied to them in a soft and easily masticated condition. It is desirable that the oats or other grains be given bruised; that the bulk of the fodder be cut or softened by soaking or steeping, and that well-prepared mashes and cut roots be given more frequently and freely than usual.

The process of teething in all animals is attended with some amount of risk and trouble. Ordinary food is seldom eaten in sufficient quantity to sustain the powers of life in full vigour. The irritation and pain prove, moreover, reducing; the sensitive state of the mouth is apt to be propagated to adjacent and similarly constituted textures, and hence among young horses troubled with teething, disordered digestion and annoying colds frequently occur. Occasionally when the teething is difficult and tedious febrile symptoms supervene, and unless the animal is carefully nursed and exempted from work, dangerous debility will follow. Agriculturists and other horse-owners should, especially during the spring months, notice from time to time the state of the mouth and teeth of their horses between two and five years old, and by soft and digestible food, lighter labour, and the lancing of the swollen gums where that is required, they may greatly mitigate the pain and prevent the untoward results of teething.

Injuries to the Horse's Foot.

The foot is often severely injured from punctured wounds, produced by picking up a nail whilst travelling, or from treading upon some other sharp substance. The sole is penetrated, and the sensitive parts injured. The part most liable to puncture is the frog, and the line of union between the bars and the frog. A short time since we had an opportunity of seeing a case of puncture, where a nail entered close to the side of the frog and passed through the tendon, and grazed the edge of the coffin bone. The inflammatory action, following such a serious wound, caused death the fifth day after the accident.

The danger to be apprehended will greatly depend on the situation of the puncture. If near to the coffin joint, acute inflammation of that important structure is very likely to supervene, and in some cases the joint is punctured, allowing the synovia to escape. Horses are also frequently injured in shoeing, from the nails through accident or carelessness being driven too far up and injuring the sensitive laminae, or even when the nail does not actually touch the sensitive part, it may come in close contact with it, and when the horse puts his foot forcibly on the ground, the highly vascular parts are bruised, and inflam-

mation is set up, which soon terminates in suppuration.

In the treatment of these injuries the offending agent must be removed, and in most cases the sole should be thinned, and when matter has formed, a free opening must be given through the sole. The foot may be placed in a bucket of hot water several times a day, when the pain is great, and immediately afterwards apply a poultice. In cases where the constitutional fever is great, a good dose of purgative medicine should be given. When the pain is removed, the horse may be shod, and great benefit will be derived from the use of a stout leather sole, with a stuffing of tar and tow.

Abscess in the Side.

To the Editor.

SIR,—Will you please give me your opinion of a disease that some of my cattle have been afflicted with? About Christmas last, I noticed one of my cows very much swollen on one side under the belly. About the middle of January the tumour broke, and discharged a sickly white matter, the smell of which was very offensive. At two different times I took out of her side a core about six inches long, which left on each occasion a hole large enough to put in a substance half an inch thick, and when I pressed the swelling upward, a stream of thin matter would come out, about a pint at a time. The cow is in good condition, but not entirely well yet. The place would scab over, and break out again, and there still remain lumps in the skin, as though there was congealed matter that wanted an outlet. I have a steer three years old that had been affected very much in the same manner as the cow; I opened the swelling twice with my knife; it afterwards broke, and is now better. None of my other cattle, fourteen in number, have shown any symptoms of the disease. Is it the rinderpest?

YORK.

NOTE.—The enlargement in the side of the cow was probably due to some injury resulting from a penetrating wound, or some irritant becoming lodged, which produced an abscess. Poulticing would be the proper treatment for a time. After the discharge of matter, if healing was protracted, a freer opening might be required. You need not feel alarmed, as such an occurrence bears no resemblance whatever to the rinderpest.

Stringhalt in Horses.

Stringhalt in horses is, we believe, identical with chorea (St. Vitus' dance) in the human subject or in dogs. It appears to depend upon a similarly irritable condition of the spinal chord. As with analogous nervous diseases, the symptoms of stringhalt are most noticeable when the patient first begins to move, or when he is excited. The precise

structural faults which produce the peculiar catching known as stringhalt are not as yet sufficiently understood. In the large proportion of stringhalt cases in which a post-mortem examination has been made, nothing unusual has been discovered either about the brain, spinal cord, or large nerves of the extremities. In a few cases, especially where stringhalt has occurred in both hind limbs, tumours have been found in the brain. With more accurate means of discovering deviations from healthy nervous structure, some softening or other change of texture would doubtless be discovered, either in the brain or spinal cord, sufficient to explain the symptoms which are now so perplexing. The ordinary forms of stringhalt are perfectly incurable. Dragging of the limbs and awkwardness of gait which occasionally follow attacks of indigestion and staggers, are apt to be confounded with stringhalt, and are usually abated or removed by mineral tonics, stimulants applied to the spine, and reasonable rest. In the later editions of Percivall and Blaine the similarity of stringhalt with chorea is indicated. The same view is propounded by Professor Gamgee in his work on the Domestic Animals in Health and Disease, and also by most French and German veterinary authorities.

Lymphatitis.

To the Editor.

SIR,—In your veterinary department, recently, you give the symptoms of acute laminitis, or founder. The horse in this country is subject to a disease very similar, which must be peculiar to the place, as I have never seen it mentioned in any veterinary publication. I have seen it both here and in the vicinity of Toronto, and it is often very annoying to farmers, as it always attacks horses in the spring, about the time they ought to be commencing the season's work. It generally attacks only one foot at a time, either hind or fore, and very often attacks another as soon as the first is well. The symptoms are similar to the symptoms you give of laminitis; acute pain, burning heat, and tension of the muscles up the inside of the leg extending up to the body. In a few hours the leg swells, and the pain seems to decrease. As a remedy I have tried both hot and cold water; I think the cold is best. Wrap the limb with a straw rope, then pour on a pail of cold water, and let the animal stand until a reaction takes place, and the limb is well sweated; then, when the limb becomes dry, pour on more water. I have also tried bleeding, but whether my treatment is proper or not, I do not know. The animal is generally better in a week. If you can give a description of the disease, its cause and treatment, I think you will benefit the public. J. BURGESS.

Durham, Co. Grey.

REPLY.—The disease referred to appears to be inflammation of the lymphatic or absorbent vessels of the limbs. It is a disease

ozonam amongst horses, and goes by different names in different parts of the country. In some districts it is called "weed," whilst in others it is known as grease, farcy, etc.; but perhaps the best definition of this disease is *lymphatitis*, meaning, as already stated, inflammatory action attacking the lymphatic vessels and glands.

Lymphatitis may occur at any season, and in any district, but is oftenest met with in farm horses during the spring months, when they are fed heavier than during the winter months. The increased feeding causes a disturbance in the balance which usually exists between the repair, or healthy nutrition of the system, and the continual waste that is taking place. There is a larger amount of chyle formed than is required, and as a result of this accumulation, the lymphatic glands and vessels become irritated and inflamed. Another cause is exposure to cold, and neglected scratches or grease, and it also frequently occurs from injury to the foot.

Lymphatitis is best treated by rest and hot fomentations to the limb; afterwards dry thoroughly, and apply a comfortable bandage, either of flannel or a good hay rope carefully and evenly applied. In many cases a smart dose of purgative medicine has an excellent effect by cleansing the bowels, and relieving the congested and inflamed lymphatics. A few doses of nitrous ether are also useful in stimulating the secretion of the kidneys. As soon as the pain is somewhat subdued, moderate walking exercise and hand-rubbing of the limb promote the absorption of the effused products.

Bog Spavin.

To the Editor.

SIR,—I have a colt two years old this spring, and in the course of this winter there came a lump on the inside of its hind leg, on the hock joint. It feels quite soft, and does not seem to make the animal lame. My neighbours pronounce it a bog or blood spavin, and some say it can be cured, while others say it cannot. Would you be so kind as to give your opinion? R G

Wellington Square.

ANS.—The puffy tumour on the inside of the hock joint is produced by distension of the capsular ligament of the large articulation of the joint, and such enlargement is commonly known as bog spavin. When occurring in young horses, and attended to in due time, and in a proper manner, the enlargement may be removed. The colt should be kept quiet, either in a loose box or small paddock, and the joint bathed several times a day with cold water. After continuing the cold application for about a week, apply a cantharine blister, to be well rubbed into the parts.

A disease of the foot, the consequence of cold during the winter, has prevailed amongst cattle in some districts this spring.

Swelled Neck in Lambs.

To the Editor.

SIR—Would you, or some of your readers, answer a question of mine through the columns of your valuable paper?

I have lost my entire lot of lambs, but three, this season. They have lumps on the throat, and cannot get breath, live a few minutes, and die. I opened one of the lumps and found it to contain very dark blood. Our ewes are in good breeding order, and seem very healthy. They have been fed on hay, pea straw and turnips.

By giving an answer you will oblige

A YOUNG FARMER.

Claremont, Ont.

NOTE.—Without a more particular description, or personal examination, it is difficult to hazard a conjecture as to the nature of the disease. In some respects the account corresponds with the symptoms of goitre. This disease arises from the flock having been too closely bred in and in. It is seldom that such lambs are worth saving but if any survive long enough, the swelling may be reduced by the application of a bandage saturated with camphor dissolved in alcohol and iodine over the lumps. The iodine is a good medicine to promote the absorption of swellings. To prevent the recurrence of the disease, which if once developed in a flock becomes hereditary, recourse must be had to destroying all those affected, and the use of a ram from another flock, in no way consanguineous.

We have received other communications of a similar nature. These accounts leave little doubt in our mind that they are all cases of congenital goitre or bronchocele—that is, enlargement of the thyroid glands, two organs of glandular structure lying one on each side of the throat. There is considerable doubt as to the exact nature and pathology of this morbid condition, as indeed there is concerning the true healthy function of the organs in question. They are naturally largely developed in fetal life, and after birth seem to subsolve no special purpose, gradually diminish in size, and usually become quite small. In the human subject the diseased growth of the glands, known under the name of goitre, is not generally congenital, though commonly hereditary. This enlargement in lambs, on the contrary, is usually, when it occurs, most marked at birth, and if the animal survive, will gradually disappear.

It is doubtful whether the enlargement of the gland is of itself the special ailment; it is more probably an accompaniment of a general condition of debility and imperfect development. The treatment to be adopted, when any is possible or advisable, is that recommended by us before—namely, the application of spirits of camphor and iodine; but the chief measure to be attended to is care in preventing the malady by avoiding too close in-breeding.

The Dairy.

Dairy Farming for Emigrants.

The vast number of emigrants that are leaving the old countries this season, is a source of anxiety as well as gratification. This is essentially a country calculated for the profitable exercise of muscular, rather than mental qualities. The active farm labourer, who has been bred in the agricultural districts at home, is fully appreciated by the community at large here, whilst the men of some mental ability, without muscle, are often in want. The most helpless class that reach our shores are the town and manufacturing artisans. These men require as much to support them as the other class, and unless employed at their ordinary trade and avocation in cities, are not worth half as much for country labour, until they have become inured to exposure of heat and cold, especially if they have attained middle age.

The best class of emigrants for Canada, all things considered, are those who have some money, and have emigrated from the country districts, and are thoroughly at home in the management of a farm and stock. But these men are always in a great hurry to buy land. The moment they arrive, they consider every day as so much lost time until their money is expended, and too often they think that any good-looking land is just what they want, and they at once purchase without at all knowing what they have bought, or how to work and clear it. These men would be much better off had they rented a cleared farm, and abstained from purchasing for two or more years. They would by that time have acquired practical knowledge of agricultural operations here in Canada, and could then distinguish good land from bad, and also would have had an opportunity of seeing different parts of the country and forming comparisons, before finally selecting a site for a home.

No branch of industry is so safe here at present for the agriculturist as dairy farming. Very little perishable dead stock is required, very little labour is wanted, and such as is necessary can very often be supplied by home assistance. Money, however, to purchase cows must be had, and these will cost, if selected in the best stock parts of the country, about thirty or forty dollars each; especially when there is a general strain of improved blood pervading such stock. Twenty-five to fifty cows of this class will make a large and lucrative return of say thirty-five to forty dollars to each cow; and be it remembered, the return at this rate is immediate. Every one will see the advantage of this course, as the money is not locked up or sunk, but is placed in stock; which, if young and well bought, are worth all the money paid during the three or four following years, and will always command it, and meantime support the family. Many people reading this may be ready to

exclaim, "Yes, this plan will suit me exactly, and give me time to look about me, if I could only meet with such a dairy farm." To these I would say, let your wants be known by advertising; the *GLOBE* and *CANADA FARMER* are devoted to such interests, and an advertisement, embodying the want felt, will within a few days be placed before about 40,000 subscribers, and no doubt will at once be answered, to the satisfaction of all concerned.

I have, for some time past, had some new ideas about this, and, as usual, had a talk and general "pow-wow" with my old friend, George Johnson, whose scheme I shall hereafter relate, which seems to me to meet all difficulties, and is the best I ever heard, both for landlord and tenant. His practical knowledge is always useful and on hand for his friends, and his eyes and senses seem always directed to where the evil lies, instead of overlooking it when, as is often the case, it lies just at our feet. But then, he is Yorkshire, and seems prepared for any and every emergency, and as he is farming about 400 acres of cleared land, has had great experience. After hearing what I had to say, and my impressing on him the necessity of some plan by which the tenant farmer at home could pay a light rent here, and yet remunerate his landlord sufficiently—and make use of the land to do so—and get back his capital in return, he answered that he would send me his ideas, and from the memoranda thus furnished, I have compiled an account and table, which I will give in another communication.

C.

Standard Butter and Cheese.

To the Editor.

SIR, - Your correspondent "R," under the above heading, has introduced a very important subject, and one that should be faithfully dealt with. Notwithstanding the opinion which will be found I entertain on Canadian butter, I do not believe that the butter referred to was in smell "worse," or even so bad, as "manure." If so, it must have been far worse than ever I saw, which is quite bad enough. Your correspondent is wrong, however, in saying "It is incredible that all the bad butter this dealer sold was Canadian." Not at all incredible; not only so, but it is quite consistent with the facts. It is a notorious fact, that an immense quantity of this stuff (called butter) is exported from this country to the British market, though "R" seems not to believe it, and if "Charles Fielding," or any other English dealer, were in want of some low-priced butter, suitable only for confectioners or sheep grease, he would certainly seek it in Liverpool and Manchester in the shape of Canadian butter. Again, your correspondent errs in saying that "a large quantity is passed off as coming from wrong localities, and Canada is often made the scape-goat for bad butter, etc." This is evidently a supposition, not a "fact,"

and there is not a particle of foundation in "fact" for it.

Being well acquainted with the trade at home, as well as here, I can vouch for the fact, that a buyer cannot mistake the kind of butter he inspects. The importer knows this, and cannot impose upon him, even if he would. Each country has its peculiar package, and there is no mistaking the Canadian or any other. The butter itself detests the odium that is heaped upon it; the great bulk of it, besides being out of flavour more or less, is, like Joseph's coat, of many colours, and this feature of it is as bad as the flavour. Another drawback is the ugly, dirty character, and want of uniformity in the packages, a good illustration certainly of the kind of "stuff" they too often contain. The fact is, the whole system is wrong. The butter is badly made, badly packed, and badly marketed. In the making it is either scalded, not worked as it ought to be, too much or too little salted, or the wrong kind of salt used. Then in packing, the good, and there is a fair proportion of it, is spoiled by being mixed with the bad, or with that of a different colour. Unfortunately, you cannot make bad into good by intermixing. It is often not packed closely; thus the air spoils it, if not already spoiled.

Perhaps the marketing is the principal foundation of the mischief, and ought to be remedied at once. Bring your butter along, says the storekeeper, and I will give you (say) fifteen cents for it; and it does come, good, bad, and indifferent, all one price. What encouragement is there in this system for any farmer to produce good butter? And how galling must it be to the farmer, whose good butter is worth eighteen to twenty cents, to see his neighbour's poor grease, worth about ten cents, fetch as much as his own. Then again, the commission buyer is often as bad as the storekeeper, and so the storekeeper has often no motive to use discrimination in his purchases, but at present few have the knowledge or power of discrimination; it is high time they cultivated it.

Let it not be said that I am using too disparaging terms. I am only laying bare the facts of the case, and my only motive in so doing, is to do what little I am able to effect an improvement. A good knowledge of the disease is one half its cure. Besides, my language is not applicable to a large and ever increasing number both of farmers and storekeepers, and these surely will approve rather than condemn what I say.

It may reasonably be asked of me, "What is your cure?" I confess that I know of no cure that would be so effectual, in my opinion, as the factory system. Where that can be carried out, the thing is done at once. Canadian butter, made as it might be, would realize on an average not less, probably more, than twenty-five per cent. more than it does now. It never was so good, on the whole, as last season; yet I think I may venture to say that it has realized on an average more than

thirty per cent. less than Irish. Next to the factory system, instead of taking it to the store, let it be sold upon its merits for cash in the open market; there, a premium will be offered for good, in the shape of higher rates, and when the maker of grease finds that she cannot command as much as her neighbour who makes good butter, by three to six cents per pound, she will soon find means for an improvement. Then again, even under the present system, storekeepers might effect an improvement of some ten or fifteen per cent. in the price and quality of their butter, by an improved method of handling it. I will not enter particularly into this, but would strongly advise you to invite suggestions on this point from storekeepers and butter packers who have successfully adopted an improved system. Many such there are. I will only add that the colours and the qualities should be packed separately, and sold accordingly, as is Irish, which is divided into firsts, seconds, thirds, fourths, and also by different brands.

I conclude by giving you a quotation from a correspondent of mine in Manchester, England. The butter referred to was from one of the best butter districts in Western Ontario, and from a highly respectable storekeeper. He had left the packages, as in most cases, with one of his clerks, and while I realized 120 shillings per 112 pounds for some in the same parcel, packed by myself, this only realized from 60 to 80 shillings. This is an every-day occurrence, and tells its own tale.

My friend says:—"Those which you say you have not seen are not unlike one of the circus horses we used to call piebald, containing all and every colour under the sun, except three, which are like driven snow with a sprinkling of blood thrown amongst it." Again, "I have seen five of your casks to-day, and of all the horrid things in the world they could not be worse. The outsides are fearfully rough; in fact it is nothing but lumpy butter thrown in, there is no attempt at packing it or blending the colours. I would not engage to sell such for ten per cent. commission. Do not, on any account, ship more to me."

This subject is one of immense importance to the Canadian farmer, and I hope that you will find space for it, and invite further contributions from others.

JOHN JEPSON.

London, April 30th, 1870.

NOTE BY EDITOR.—We commend the above letter, and the whole subject, to the thoughtful attention of farmers and dairymen throughout the country. There is nothing in our agricultural system that more loudly calls for reform than this matter of butter supply. The farm produce sold under that name in our cities is simply execrable. The establishment of butter factories, as Mr. Jepson suggests, would, no doubt, afford the most effectual means of remedying the evil.

Soiling Crops for Milch Cows.

The advantage of having a few acres of some kind of crop, from which to cut fodder, to be fed out in a green succulent state to the cows giving milk during the season of the year when the pastures have become nearly bare from the combined causes of a dry atmosphere and the close grazing of stock, are as yet very little thought of or understood by our farmers. From the end of haying and harvest, until the cool fall rains set in, is the time at which milch cows will give the largest quantity and best quality of milk either for cheese or butter making, and to allow them just in the nick of their very best time to fall off in their yield of milk, for want of a little extra feeding, beyond what they can then get on the browned-up pastures, is a very poor policy indeed. For let it be remembered that once the yield of milk falls off, it cannot again be recovered during that season. Many will doubtless consider that the extra expense of cutting and carrying the fodder to the yard, which is the proper place to serve the feed, will be too great at a busy season; but the fodder can be grown near by, and a good smart boy can easily cut, and convey in a wheelbarrow or cart to the byres, twice a day, enough fodder for ten or fifteen cows, without expending more than four hours' work at it. One of the best crops for this purpose is Indian corn, drilled in rows just wide enough apart to enable the land to be kept clean and well tilled with a cultivator or horse-hoe. The seeds are dropped about six inches apart, in a light furrow made by the plough, and covered by harrowing the way of the furrows. Sow a succession of rows from the end of May to the beginning of July. The first sown will be ready to cut by the time the drought begins, and the last sown will be ready to use early in September before frosts come, and what is then left may be cut and cured for late fall use.

It is astonishing how large an amount of green fodder for soiling can be obtained from an acre of Indian corn, drilled in under this plan, especially if the land is rich and well tilled. The corn is fit to use as soon as it is three feet high, and continues to be green and succulent till after flowering, for when closely grown in this way, the ears are small, and do not draw the juices out of the plant to any great extent. Nor is the crop an exhausting one to the soil.

Besides corn, other crops can be grown for the purpose of cutting for fodder, such as peas, oats, rye and tares, but, of course, will not remain green so long, as, when the seed forms, they quickly ripen, and their stalks become dry. A large armful of fodder twice a day, morning and evening, to each cow, will, together with what grass can be had on the pasture, be sufficient to keep up an abundant flow of milk through the dry season, until the fall rains have again recuperated the grass fields.

Milk and Milk Testers.

In reply to the enquiries—How many pounds of milk will it take to make a pound of cheese—what are the best instruments for testing the quality of milk, etc.? N. A. Willard, Esq., answers as follows in Moore's *Rural New Yorker*:

Milk varies in quality at different seasons on account of food of the cows, length of time from the period of calving, and from various other circumstances affecting the cows.

Toward the close of the season, when cows begin to fall off in milk, it is richer and will make considerably more cheese than the same quantity yielded by them in June. When milk is to be purchased for cheese-making, the purchaser should fix a price for the whole season's milk, or else make two prices, one for the summer and the other for the fall milk.

At the New York factories ten pounds of milk are usually taken as an average during the season for one pound of cured (marketable) cheese. This is considered a safe estimate, though some factories occasionally overrun this quantity, while many others report a pound of cured cheese from nine and a half pounds, or less, of milk as their average.

In New York the milk is not generally purchased by the proprietors of factories, but is made up into cheese for patrons at a fixed price per pound. The system, therefore, of weighing the milk at the factory is often very loose. Manufacturers desiring to make a favourable record, not unfrequently give light weights, taking a few pounds every day from each patron for the purpose of making it appear that a large yield of cheese is produced from the milk. The competition among factories and manufacturers fosters this kind of deception, and, although patrons may not lose anything from it pecuniarily, since all of the cheese made from the milk belongs to them, still the practice is an unwarranted deception, and serves to cover up wastefulness and want of skill in manufacturing, besides throwing a doubt as to the accuracy of reports when genuine weights have been given.

In purchasing milk, we should advise, then, that no less weight than ten pounds of milk be taken as an average for one of cured cheese, and it will be well for the purchaser to keep a full record in his books of all milk deliveries, weighing the cheese as it comes from the press, and marking upon it the weight and date of manufacture. When the cheese is marketed, its weight and the quantity of milk required for its manufacture will keep him advised as to his operations.

The instruments generally in use for testing milk consist of two equal glass jars or cream gauges, one per cent. glass, and a lactometer. The cream gauges are graduated so as to determine the quantity of cream that may rise on any specimen of milk. The lactometer, when used in connection with the cream gauges, will determine pretty accurately whether milk has been diluted, unless it has been tampered with in other respects to alter its specific gravity.

Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

Fruit Growers' Association of Ontario.

At a recent meeting of the Fruit Growers' Association a resolution was unanimously passed that the President and Secretary should be instructed to prepare a prospectus of the objects contemplated by the Society, for gratuitous distribution among the members and others.

In pursuance of this appointment, the following synopsis is respectfully submitted to the consideration of our Provincial fruit growers.

Article 11 of the Constitution comprises the following summary:—"Its objects shall be the advancement of the SCIENCE and ART of fruit culture, by holding meetings for the exhibition of fruit and for the discussion of all questions relative to fruit culture; by collecting, arranging, and disseminating useful information, and by such other means as may from time to time seem advisable."

A wide field is thus opened up to us by the framers of our constitution—room enough on the one hand for the discussion of abstract and speculative principles, and on the other, verge for the most acute, or it may be, the most prosy performances in practical gardening.

The aim and ambition of our Fruit Growers' Association is, directly and indirectly, to lead the votaries of horticulture to the study of vegetable physiology. The highest delights of horticulture are to be derived from a knowledge of the growth of the different species of fruits, and the functions of the various parts of plants; of the principles that govern and regulate growth and maturity, the formation of wood and the production of fruit.

Meteorology, too, looms up as a necessary adjunct to the success of the gardener. Pomologists and fruit-culturists in the United States fully realize the importance of this branch of science as materially modifying the circumstances of weather,—heat and cold, drought and moisture—which affect the labours of the horticulturist. The philosophical discussions on this subject in horticultural assemblies or conventions in the United States are worthy of our imitation. It may not perhaps be amiss to hint to our members, that a free discussion on the benefits of scientific study, whether of chemistry, botany, or meteorology, might not be out of place alongside of our animated assertions about "pear blight," "frozen sap," or "fungous growth." What profitable discussions might arise from the simple but prevalent principles of light, moisture, heat, or its negation, cold. How

much knowledge is requisite for the adequate discussion of any one of these subjects, and yet how absolutely necessary is such knowledge to the would-be successful horticulturist? We may here direct attention to the fact that Professor Kingston, of Toronto, will furnish, at a small expense, the necessary instruments of observation, and provide (gratis) directions for the use of the observer.

Our Association is also designed to promote the ART of fruit-culture. The first grand pre requisite of this art is to know "a good soil." A clayey loam is the best for fruit growing, although different varieties of fruit require different soils; some doing well on stiff clay, others on sandy or light texture.

Draining will also come under this division. It is essential to all soils. If the inferior strata be retentive, draining must be executed with the greatest care to carry off the superfluous moisture. In "The Essay on the Philosophy of Drainage" it is shewn that "the thermometer in drained land rose, in June, 1837, to 66° at seven inches below the surface, while in the neighbouring water-logged land, it would never rise above 47°." The reason why drained land gains heat consists in the well-known fact, that heat cannot be transmitted downwards through water. It is melancholy to see the effects of wet land in our Province, or indeed anywhere. Witness the swamp between St. Catharines and Niagara; the level land in the neighbourhood, east and west, of Komoka, and elsewhere. How desirable for townships to club together and clear main or leading drains, so as to allow individuals along the line the opportunity of draining their lands. The stunted, undergrown, moss-covered fruit trees, the poor stubble, the over-rank grass, all cry out for agricultural and horticultural societies to do their duty, and urge men to benefit themselves and their neighbours.

Manures.—The proper application of manures to fruit trees also requires our attention. In manuring an orchard, shall we apply the manure to the surface, or let it do the double duty of mulching and enriching? The object of this Association is to ascertain and disseminate correct views of this and kindred questions.

Shelter for fruit trees, and even for land, is a consideration every year becoming more and more necessary for us on this high table plateau. As the country is getting denuded of its timber, the remark is frequently made, how changed our seasons are now from what they were five-and-twenty years ago. Doubtless, this is a fact not to be gainsayed. From observations by Professor Kingston, Toronto, the rainfall of this district is gradually decreasing. The planting of trees for shelter for land and crops has been proved productive of abundant rain, what rain would do for this country, if sufficiently copious, every summer, is known to every farmer. The climate becomes ameliorated, and many blessings flow in the train of attention to this one of the most es-

sential items of successful agriculture and horticulture. Let only municipalities vie with each other in arboriculture, and an incalculable amount of good would accrue to themselves and to the country at large. To elicit and disseminate information on this important subject will come within the aims of this society.

Fencing is also pressing itself on the attention of farmers, gardeners, and others. Why should not the members of the Fruit Growers' Association strive to indoctrinate their neighbours and friends with better views than have as yet prevailed on this subject? As lumber becomes scarce, a substitute must be found and employed. In Westminster, the Messrs. Macpherson have miles of thriving quickset thorn hedges round their fields. *The Thorn* of the country is not winter-killed, and the benefit to the fields is great by the hedge having an open drain, or as it is called, a sunk fence, accompanying it in its length and breadth. We are to ascertain by experiment and discussion what plants are best adapted to hedging in this country.

FRUITS.

The Apple.—As regards the art of fruit-culture, it remains for us to notice the great staple of Canadian fruit-culture, *the apple*, and its varieties.

The Province has, unfortunately, been flooded with all sorts of apple trees. A class of middlemen, who make a trade on the ignorance and credulity of our farmers, has been of incalculable damage to fruit-growing. Any name is easily attached to the trees after they are got from the nurserymen, and it is only after years of anxiety and labour in raising them, that experience finds out that they are a worthless variety. A local tax on the vendors of such trees is the only means we see of successfully putting an end to this kind of traffic. Every member of our Fruit Growers' Association is invited to lend a helping hand to suppress this evil. In presenting to our present and future members a list of varieties to be cultivated and recommended for general trial throughout the Province, we cannot do better than quote from the prize essay on the apple, which will be found in the Report of the Honorable Commissioner of Agriculture and Arts of the Province of Ontario for 1869, and in the CANADA FARMER for January, 1869.

"It will usually be found that an orchard for family use, comprising the following varieties, will give good returns in fruit, and furnish a supply throughout the season, viz: For summer, the Early Harvest and Red Astracan, as sour apples; and the Sweet Bough. For early autumn and early winter, the Ribston Pippin, Hubbardston Nonsuch, Fall Pippin, and Snow Apple. For midwinter, to March, the R. I. Greening, Northern Spy, Esopus Spitzenburg, Pomme Grise, and Tolman Sweet; for spring, the Golden Russet, and Roxbury Russet.

For market, the most profitable varieties are Red Astracan, Duchess of Oldenburg,

Gravenstein, and Hubbardston Nonsuch, ripening in the order in which they are named. For a near or home market, and for shipping, the R. I. Greening, Baldwin, Golden Russet, and Roxbury Russet, will yield the largest pecuniary returns."

The Pear.—For pear culture we are persuaded that the most profitable varieties for home use or for market are very few, and we would strongly recommend the Louise Bonne de Jersey, Bartlett, Beurre d'Anjou, Beurre Clairgeau, Flemish Beauty, Duchess d'Angouleme, Graslin, Sheldon, and Winter Nelis.

The Plum.—The following varieties of plum are recommended after trial throughout a large portion of the Province:—Lombard, Washington, Huling's Superb, Jefferson, Smith's Orleans, Coe's Golden Drop, Guthrie's Apricot, and Green Gage.

The Cherry.—Most of the varieties of cherry succeed well in warm and sheltered localities; such as Black Tartarian, May Duke, Black Eagle, Elton, and Napoleon Bigarreau.

Strawberries.—Strawberries of all sorts do well. Wilson's Albany bears the palm, and is by far the most productive of all the varieties. For cultivation the Association recommend Wilson's Albany, Triomphe de Gand, Jucunda, Trollope's Victoria, Agriculturist, Nicanor, and Russel's Prolific.

Small Fruits.—For an exhaustive list of small fruits, their mode of cultivation, insect pests, market value, planting, soil, etc., we would unhesitatingly recommend the prize essay on this subject by Mr. William Saunders, of London, published in the April number of the CANADA FARMER.

Grape Culture is yet in its infancy in Ontario. Mr. Underhill, the veteran vinticulturist, recently paid us a visit, and declared to several of our members, that he had seen no part of the North American Continent so suitable for vine culture as the western portion of the Province of Ontario. The leading varieties which have been long tested are, Clinton and Concord, Delaware and Adirondac, Creveling and Rogers' Hybrids.

MEETINGS FOR THE EXHIBITION OF FRUIT.

Our Association holds an annual meeting at the place where the Provincial Exhibition is held, at which the office-bearers for the season are chosen. Three other general meetings are held in different localities, where exhibitions and discussions on old and new varieties of fruit give interest to the meetings and profit to the members.

Collecting, arranging and disseminating useful information.—The Honorable the Commissioner of Agriculture issued queries to the several agricultural and horticultural societies; which, having been answered, were condensed and arranged by the Secretary and President of our Association, and appear in a collected form in our Report for 1869. A copy of this compilation is placed in the hands of all our members.

The Association has also from time to time offered and awarded prizes for the best essays on subjects connected with horticulture. Such essays have been published, and other papers of a similar kind, and these publications are known to have given an impetus to horticulture among the yeomanry of our Western Province.

The Council of the Association has also offered prizes for collections of insects beneficial and prejudicial to agriculture and horticulture, and at this moment several of the most learned and enthusiastic entomologists in the country are members of our Association, ever ready to hold their ability and knowledge at the disposal and for the instruction of our Association. Nor ought mention to be forgotten of the efforts the Agricultural Board are making in the same direction, it having recently contributed a handsome sum for a similar purpose. Prizes for the encouragement of hybridizers, and producers of new and valuable fruits, have been held out as inducements for members to enter the arena, and contend with enthusiastic producers on the other side of the line. The future is bright with wonders, through the efforts of such men as Wilder, Dana, Hovey, and Grant.

Correspondence, too, has been opened up with the neighbouring Provinces, and an interchange of fruits for exhibition has been the result. Our reports are thus widely circulated, and only the other day we received a valuable gift on agriculture from Sir William Young, through the Board of Agriculture of Nova Scotia. We desire others to share in the advancement of the common good of this and the other Provinces of Canada.

More recently we have entered upon another means for the advancement of fruit culture, in that we have unanimously agreed to present to every member a specimen of some new vine or fruit tree. This year, "the Eumelan," a new vine, highly recommended, will be placed in the hands of every member desiring it, on condition of reporting to our Society of its success or failure during the next five years; a condition we hope to see generally complied with.

Nor does the Association leave the horticulturist at a loss what to do with his fruit, and how to keep it, after he has raised it. We have had profitable discussions on the marketing and preserving of fruits. We desire generalization on both matters, and anxiously look to the old and new members for expressions of their experience on such matters, in order to a wide circulation for the public benefit.

There is just one desideratum that we would like to mention, and that is the enlistment of the middle class of society in this good work—the encouragement of the amateur who has only his quarter or half an acre. The study and practice of horticulture has an elevating and humanizing tendency. To the wearied artizan on his return from a heavy day's work, there is nothing so refreshing as

the tending of a few fruit trees in his garden patch. Indeed, wherever this taste has assumed the form of enthusiasm, comfort, content, health and happiness, have almost invariably been the concomitants. With the increase of fresh members, intent on the accomplishment of the grand objects of the Association, we may look for fresh successes and triumphs on new and unbroken ground.

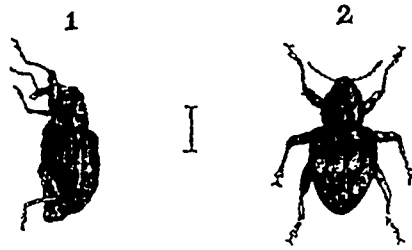
ROBERT BURNET, President.
D. W. BEADLE, Secretary.

The Curculio.

A PRICE SET ON HIS HEAD.

The season is rapidly approaching when his plunderer of our plum orchards commences his operations, and those who wish to save their fruit must be on the watch for this most mischievous insect.

In order to facilitate the detection of the animal, we give a portrait of his person, in the first cut greatly magnified, and in the second of the natural size. Fig. 1 is a side view; fig. 2 shows the appearance from the



back; fig. 4 represents the insect in the act of perforating the young plum; and fig. 3 the crescent mark left after the operation.



To encourage their destruction the Fruit Growers Association offers to pay a handsome bounty for their bodies. Any and every person sending to Mr. William Saunders, of London, two thousand of the plum curculio, will be paid the sum of twenty dollars; or sending one thousand, the sum of ten dollars; or sending five hundred, the sum of five dollars. The transportation must be prepaid. Those who wish to send these insects to Mr. Saunders will find a strong wide-mouthed vial or small bottle very convenient. By filling this about two-thirds full of sawdust, and then wetting

it thoroughly with alcohol, brandy, or strong whiskey, and putting the curculios into this as soon as they are caught, they will creep into the saw-dust and be preserved by the spirits until ready to be sent to Mr. Saunders. The vial should be kept closely corked. In counting the insects Mr. Saunders will, of course, reject any insects sent which are not the true plum curculio. As soon as they have been counted he will send by mail to the sender of the insects a certificate which will entitle the holder to the bounty money, on application to the treasurer, Mr. D. W. Beadle, at St. Catharines. Surely the combined inducements of a crop of fruit and the liberal bounty should have the effect of greatly lessening the numbers of this troublesome pest.

Trees for Shelter and Ornament.

To the Editor.

SIR,—I am delighted to notice your plea on behalf of planting trees, and I am confident that instead of its being, as at present, considered a luxury, in a few years it will become a necessity in this country. When I commenced clearing my land, some thirty-five years ago, and had fixed on the site of my house, I determined to save a good many of the trees near the house, and although folks laughed at me I stuck to my notion.

The only mistake I made was in saving too many of large growth, and cutting down too many of the young ones. A good many of the large trees were blown down by the heavy summer gales which often accompany thunder storms, but I have a number of fine trees yet; particularly elms, maples, and basswood or lime. The beech and the ironwood do not stand well as single trees. I have an elm tree in my garden, I think about eighty years old, having a nice natural bower on one side, where I keep a garden chair in summer. The branches reach to the ground, and with a little trouble there is room on the other side for a second chair. I would recommend settlers going into the woods, who love trees, to cut down all the large timber near their houses, but spare the young trees from six inches in diameter downwards, and if they do not experience the good of them in some years after, I shall be much astonished. In our hot summer days it is pleasing to see the horses and cattle standing under the grateful shade of the trees enjoying themselves, instead of being roasted in the bare burning heat of the open fields.

With regard to the hemlock, I cannot understand why it should be so delicate; but I have had a good many transplanted, of various sizes, and they do not in general seem to thrive, though they seem to flourish in the woodland. The basswood, too, is very tender, and does not bear transplanting well, which is a pity, as it is a beautiful tree and stands the wind well. I sowed a little plot with soft maple and basswood in my garden at the same time and in the same place. The

basswood was a complete failure, but the soft maple came up nicely, and I have six thriving young trees; I tried the basswood again, but nothing appeared. The elm grows freely from seed, and when young, transplants easily, and grows very fast. I may safely say, if people would only take the trouble, they could have nice plantations at very little cost. Patience, perseverance, with good fences, and a little careful attention for five or six years, will certainly make fine trees. I keep no regular gardener, only hiring in spring or when there is some extra work on hand; and my land is by no means first-rate, some of it being close to the river and rather wet, and the rest being light loam.

The *Pinetum* I alluded to belonged to a wealthy gentleman, a Mr. Parry, and his place was called Highnam Court, situated some three miles from the fine old city of Gloucester. If I had a little of that gentleman's means and the same favourable situation, I might adopt your suggestion and start a pinetum; but I think some of your wealthy Toronto merchants might try the experiment at some of their country places north of Yorkville, where there are rolling lands. I question much, however, if our desperate winters would do with Californian, Australian, and East Indian pines, which flourished at Mr. Parry's, and some of which are very handsome. The Scotch Fir was considered the handsomest pine in the collection; of course tastes differ, but it is a noble tree.

Fergus.

F.

Culture of Asparagus.

The asparagus is a hardy perennial, maritime plant. It is indigenous to the shores of various countries of Europe and Asia; and since its introduction into this country has become naturalized to a considerable extent. It is propagated from seed, and delights in a rich sandy alluvial soil.

The ground should be thoroughly trenched, to the depth of at least two feet, and a large portion of fine manure incorporated with it, at bottom as well as top. Sandy mud, decayed leaves, the remains of hot beds, good peat or muck, or indeed almost any other manure in not too crude a state, will answer. Where the soil is shallow, or the subsoil coarse or gravelly, the ground should not be trenched so deep; the bottom of the trench being merely dug over.

With some gardeners, it is customary to lay off the plantation in alternate beds of three and five feet in width, with an alley or path of two feet between. The object in making a difference in the width of the beds is to secure an earlier production in some than in others. As the narrow beds are sooner heated by the sun's rays than the wide ones, the crop on them is generally ready for market a few days earlier.

Where large plantations are set out, this dividing into beds is perhaps not necessary, nor is it usual. If laid out in beds, the beds should run east and west, as asparagus

pushes earlier in the season when thus planted, than where the beds run north and south.

The plants should be set not less than one foot apart, and where extra sized shoots are desired, eighteen inches. The transplanting may be performed either in April or May, the time depending upon the weather. Good plants of one year's growth are preferred by experienced growers, though some choose those of two years. The trench or furrow for transplanting should be drawn wide enough to allow the roots to be laid out without doubling; the crown of the plant being covered with about two inches of soil. Some cultivators make a ridge in the middle of the trench, astride which they set the plants. Care should be taken to have the crowns as nearly as possible on the same level. If this is not seen to, they are apt to be injured in cutting.

During summer, keep the plants clear of weeds, using the hoe carefully, so as to avoid injuring the roots. In the autumn, cut the tops level with the surface and burn; then dig the bed lightly over, and give it a dressing of good rich loam, intermixed with well digested compost, to which add salt, at the rate of two quarts to the square rod. In the spring of the second year the beds should have another careful digging. In the fall, stir again, and add an inch of soil and manure, which with previous dressings, will bring the crowns, say six inches below the surface. The same course should be pursued the third year, and if the plantation has succeeded well, some slight cutting may be done; but those who desire vigorous, strong plants and large crowns, will allow the whole crop to mature naturally, without cutting, as in the first and second year. In the fourth year, the bed may be freely cut for market.

Where it is desired to grow the roots for transplanting, the seed may be sown late in autumn, or early in spring, in drills twelve or fourteen inches apart, and about an inch in depth; of course the bed should be thoroughly spaded, well pulverized, and strongly manured, if strong roots are wanted.

Beans.

Beans like a dry and rather light soil, though they will do well in any garden soil, if not set out too early in the spring. Nothing is gained by planting until the ground is tolerably dry and warm. The Dwarf varieties grow from twelve to eighteen inches in height, need no support, and are planted either in drills or hills. The drills should be not less than a foot apart, two inches deep, and the seed set in the drills from two to three inches apart. The usual method in hills is to allow about half a dozen plants to a hill, and the hills two by three feet apart. Rows are best for the garden. A quart of ordinary sized beans is about fifteen hundred, and will sow about two hundred and fifty feet of rows, or one hundred and fifty hills.

Hoe well, but only when dry. Running Beans are generally less hardy than the Dwarfs. The usual way of planting is in hills, about three feet apart, with the pole in the centre of the hill. A very good way is to grow the running varieties in drills, using the tallest pea brush that can be secured conveniently. When the plants reach the top of the brush, pinch off the ends. The effect will be to cause greater fruitfulness below. In a stiff soil, especially, the Lima comes up better if planted carefully with the eye down. — *Vick's Guide.*

Bark Splitting.

To the Editor.

SIR,—An article appeared recently from Miles Young on bark splitting, and also a request that any one that has had any experience would give it. I will give you mine. I have a young orchard, five years planted, just commencing to bear; and I discovered a number of the trees with the bark split, as Mr. Young described, this spring. I examined for cause, and came to the conclusion that it was from allowing manure to lie close around the bark of the tree for some distance up from the ground. I drew a lot of manure into my orchard in the fall, and threw it from the wagon around the trees, intending afterwards to spread it; but winter set in too quick for me, and I find the only trees damaged are those where the manure was close around the bark. In further proof, I find the suckers, where there happened to be any, entirely destroyed, the bark all shrivelled to tatters, and every particle of greenness extracted from the wood. The manure was from the horse stable.

Oban.

J. M.

Training Apple-trees in Cold Climates.

To the Editor.

SIR,—In a recent issue of your journal, and under the above heading, the question is asked whether any of your readers have seen orchards in the colder parts of the Province, which have been trained with low branches, and what is the effect, beneficial or otherwise.

I beg leave to answer that I have sold a good many apple trees throughout this county—Dundas—and have closely observed every orchard that I have met with, old or young, and I have repeatedly noticed that trees which have been allowed to branch out near the ground are *always* healthiest and thriftiest looking, and I am told that they are the best bearers. So thoroughly am I convinced that they are the best, that I am purposely training my own young orchard to grow low, and where some of the young trees have died in the trunk, and sprouted up above the *graft*, I am letting them grow, believing that they will eventually be better than if the original stock had not died.

THOS. E. CAUTTIORT.

Winchester, April 12, 1870.

Renewing Old Orchards.

In examining our orchard this spring, I was much surprised and pleased at the successful results of my method of renewing old orchards, as described some months since in the CANADA FARMER. I was tempted to follow the course here spoken of about five or six years ago, having always been convinced of its entire practicability; but the beneficial result is now so apparent, and seems so certain and decided, that to avoid any longer urging the same plan on all whose orchards are growing old and stunted, appears to me to be selfishly withholding from others the advantages derived from well-tested experience.

My plan for some years has been to encourage the growth of healthy, thrifty sprouts, that show themselves in the branches of old stunted apple trees; and first and foremost, with this object in view, I manure most abundantly, and *never crop the land*. My experience goes to show that about twenty feet square is quite far apart enough for the trees to be planted; they will thus do better, and more completely occupy the land, and will satisfy the most greedy that the land has enough to do to support its crop of trees, without any grain or roots. The soil must be so well manured that it is loose, soft, and springy under foot, and you will never be tempted to dig or plough, which is, under these circumstances, not simply useless and unnecessary, but absolutely destructive.

When I am quite sure of a certain sprout, (probably one of three in the desired position on the tree,) being likely to thrive particularly well—and as soon as it attains a growth of say four feet in height—provided it is clean and without branches—I prune off all others in the neighbourhood, and carefully protect this one from all contagious injuries. In two years, or thereabouts, it will probably have attained a diameter of about two inches, often more, and now I am sure of a new limb to replace the old ones. When this new branch reaches the age and size sufficient to commence bearing—which will generally be in about three or four years, as this sort of growth matures much earlier than any other—I saw off the parent branch, no matter how old or large it may be, close to the new sprout. This dismemberment must be done in June, not later than the first week; the latter part of May will do, but not usually so well—it is important to attend to this particular. I use no plaster or covering of any kind, experience having convinced me it is quite unnecessary. If all be done right with a clean, straight cut, with a very fine sharp saw—any other will ruin the job completely—and carefully planed off afterwards with a sharp, keen plane—none other must be used—without any rounding or paring of the edges on any account whatever, so as, when finished, to expose a straight, smooth, closely-planed surface, you may calculate on the wound being well covered at the edges before

winter, and half obliterated before the winter following, and within two years and a half, often in less time, entirely healed over. Do not on any account leave a projecting end, as it always, sooner or later, dies back, and then the bark can never heal over it, you may just as well expect your flesh to heal over a splinter. In fact, this rule applies to all orchard pruning, the sprout takes all the sap away from the projecting end, and, of course, it cannot heal over. The examination of our orchard shows many such sprouts grown to be six inches in diameter, and the end of the old branch entirely healed over, and all bearing profusely.

My attention was particularly called to these facts at this season, by observing the state to which almost all the old orchards in the eastern section of the Province are reduced. The tops more resemble trimmed or stripped trees than the thrifty sprouting look that well-doing orchards ought to possess. In fact, there is no better test of the proper or improper culture of an orchard than the scrubby, bushy look of the tops. The branches in our orchard, when loaded with fruit, nearly sweep the grass, as the growth is outward, and the branches elongated, instead of tending upwards into a little scrubby bush. Of course, it will take some years to renovate such orchards as have been neglected; but during the process the apples will be increased in size from that of small eggs to that of your double fist, or at all events, doubled in size and quantity; and as to flavour, an ill-doing apple tree has little or none; whereas, the same tree, if in the best heart and condition, will produce abundant fruit of well-developed flavour.

I am rather enthusiastic in my love for trees of any sort, but especially apple trees, that so well repay one's care and attention. Last fall I mentioned my experience, in the planting, culture, and maturity of young orchards, promising to state more fully the result this spring—when the certainty was apparent by the abundance of the bloom—this I shall not forget to do, as I have probably a few hints yet to offer that may be useful.

Pruning Apple-trees.

To the Editor

SIR, As the time is at hand when fruit trees should be pruned, I beg to give a few hints to those in need of them, as I differ from some about the time of pruning. Last summer a correspondent had a letter in your valuable paper, in which he gave his opinion that the proper time to prune apple trees was in June. This I believe to be wrong, for many reasons. Why deprive the tree of any of the season for healing? It begins to heal as soon as the sap goes up. It will also require great care at that time, for the least strip of bark not cut will peel the tree from top to bottom. Nothing will stop the sap from running at the wound until it is prop-

erly dressed. When the tree is in full leaf it would be very difficult to see what limbs to take off properly. Not one in a hundred would have the hardihood to go into an orchard, saw in hand, to cut away limbs hanging with young fruit.

He also states that his neighbour's orchard was pruned in March, and it did not do well. This was too early, as the frost would be in the trees at that time, and the wounds most likely were not dressed with anything to protect them from the frost and sun, and when the season came for the wounds to heal, being so long exposed, the trees would be partly dead, or paralyzed. Some others preferred the fall for pruning, but this is worse than either March or June, as they have to remain far longer without healing, and exposed to the frosts of winter.

I believe the proper time to be about the third or fourth week of April, just immediately before the sap begins to swell the buds; then the wounds commence at once to heal, and have all the season of growth for doing so.

Saw close to the tree, but saw off large limbs about six inches from the tree first, to prevent splitting and hurting the tree, then saw close. Pare off smooth with a knife or broad chisel. Have a dish with paint and brush ready to dress the wounds at once. This prevents the wood from decaying, and keeps the water out and the sap in. The best thing known for wounds on trees is white lead and linseed oil, and a little lamp-black will make it the colour of the bark. Red lead is not good. Have a good thick paint, or paint twice. This is also good for the trunks of young apple trees, to prevent the apple tree borer, and also to prevent mice from girdling in winter. Any valuable old apple tree that is partly decayed could be revived again by cleaning and painting. Trees that have a great many limbs to be taken off should not have them all taken off in one season. Trees that lose large limbs by pruning will throw out a great many shoots. Cut or pluck these off through the summer, or they will do more harm to the trees than the limbs did.

Before conclusion, I ask those who do not believe in my time and method of pruning to try one tree according to my plan, before they cast it aside as a humbug.

AN OBSERVER.

Cropping Orchards

To the Editor.

SIR,—I noticed recently in your journal communications on the bad policy of cropping orchards with gram. No doubt, your correspondents are right, so far as half-way culture is practised. But, under good cultivation, no such condition as stunted trees, or mouse-ear leaves of a velvety colour, will be seen. Ever since I came to this neighbourhood, I have been a close observer of the different kinds of fruit raised here, which

is a very profitable branch of agriculture. Not only has there been marked success in the raising of apples, but also in peaches, quinces, strawberries and grapes. Of the latter over sixty acres are planted out on an area of about four miles, fronting on Lake Erie. But to return to the subject of apples, I will try to show that grain growing in orchards is not all moonshine.

Thirteen years ago a neighbour of mine had about three acres of orchard containing old trees. He planted the remainder of the field, about three acres more, the old as well as the young trees being mostly R. I. Greenings. Every alternate year the orchard has been in fall wheat, yielding from twenty-five to thirty-five bushels to the acre, the other years it would be put in with, sometimes, barley, peas, beans or corn, always yielding a heavy crop. As for the fruit crop, it is spoken of far and wide, and all admit that Mr. Stover always has a heavy crop of apples. But Mr. Stover has a very valuable receipt which he annually applies to both lands and trees. Every fall all the manure made during the year is put in the orchard to be ploughed under. In the spring every tree is looked to, and all unnecessary wood, young shoots and sprouts from the root removed. The trees are then washed with lime and wood ashes, the mixture applied with a splint broom, which effectually removes bark-lice and moss from the trees. And I doubt very much if your correspondents ever saw much thriftier trees, old and young, or that bore better crops of finer fruit.

I could mention other orchards, set out 13 years ago, and treated pretty much the same way, with the same results. At some future time I may have something to say about an orchard of twelve acres. A part of it has been in grass for twenty years; the other part was set out at the same time with those I have mentioned. The holes were dug and filled up as recommended by "C.D.," and the orchard contained amongst its variety 350 Northern Spies. H.

To Destroy Weeds in Walks.

A most efficient agent for the destruction of weeds, and one not expensive, can be made by boiling four pounds of arsenic and eight pounds of soda in twelve gallons of water. To every gallon of this boiling mixture three gallons of cold water should be added, and the liquid carefully sprinkled over the walks while it is yet warm. It is desirable to do this in fine weather, and when the walks are dry, so that the weeds and weed seeds may have the full benefit of the application. Care must be taken not to let any of the liquid fall on the leaves or reach the roots of any plants it is not desired to kill. In twenty-four hours after the poison is put on the walks every weed will be killed, and if it be once thoroughly done, it will keep the walks clean through the whole season.

Training Tomato Vines.

A writer to the *Rural New Yorker* says that the best method of growing the tomato is to plant them three feet apart each way, and drive a stake, six feet high, close to each plant. When the plants are a foot high take a ball of twine, such as is used for tying wool, pass it around the vine close under a leaf, and tie it to the stake. When the first blossoms appear, pinch out every branch that has started below the blossoms, and as the plants grow in height, keep tying them up until they reach the top of the stake, then pinch off the top of the vine. Keep the side branches pinched off as fast as they appear, leaving only the main stalk, which will be a perfect mass of fruit from the ground to the top of the stake. This method of training will ensure ripe fruit earlier, in the opinion of this correspondent, than the usual method of allowing the vines to run over the ground.

Apple Trees—Bark Splitting.

To the Editor.

SIR,—I have frequently seen apple trees with the bark on the south-west side raised or loosened, which I consider is occasioned by the severe frost of the winter. The action of the sun on the trees when in a frozen state seems to injure the inner bark, thus causing it to shell off and injure the tree to a greater or less extent.

The best preventive I know is to put up some temporary protection during the winter, to keep the sun from them while in a frozen state. I have often seen trees affected in the manner described by Mr. Young in one of your recent issues, and have always found that it affects only the south-west side of the tree, and will even extend up the larger branches, and in such a case the tree will be very likely to die. THOMAS BRETT.

New Lowell, May 2nd, 1870.

Diseased Nectarines.

To the Editor.

SIR.—In the year 1865 I planted a nectarine out of curiosity, as I knew nothing about the kind of fruit it produces. It proved to be a thrifty grower, and commenced to bear some fruit, which we thought very delicious, but about the beginning of August last I was surprised to find the leaves dropping off the tree, as if there had been a hard frost. The leaves all came off, and new leaves came on in about two weeks, but to my sorrow I find this spring that the tree is dead. The bark on the trunk of the tree seems to be loose.

If you or your correspondents can give the probable cause, or a remedy, I shall feel obliged.

Brooke.

A LOVER OF FRUIT.

Have any of our readers had a similar experience, or can they answer our correspondent's enquiry

Planting Trees After They Have Green Leaves.

It is not generally known that by a peculiar course of treatment trees may be as successfully removed for a month after the bursting of their buds as during the month before. This peculiarity of management consists in taking off the expanded leaves, and shortening back a few inches of the shoots. When this practice is followed trees rarely fail, indeed many trees move more successfully so treated than at any other season of the year. The roots seem to push forth new fibres immediately, and sustain the heavy demand for moisture which is always the difficulty in a newly-planted tree. When a tree dies under the operation, the "philosophy" of the thing is that evaporation has been greater than the supply of sap could sustain.

It is well in transplanting at any season to remember this bit of "philosophy." Hence, do not let the roots dry, even for a moment, if it can be helped, because every withered root by so much lessens the plant's capacity to draw moisture from the soil. In like manner get up all the roots you can for the same reason. Some very clever workmen will tell you that "there has been enough roots there to satisfy anybody," but after you have all this, get still more if you can. And then in planting ram the earth very firm. Stamping with the foot is not enough. A paving rammer is a good thing. Ram the earth with every shovelful thrown in, and all for the reason that unless the roots are in actual contact with the soil, they cannot absorb moisture freely to supply the waste of evaporation. There is, you see, but the one object all through, the easiest way of all being that which induces a rapid production of roots, and that is to plant at the growing season when the roots and branches both are very active; but at the same time guarding against a too rapid exhaustion of moisture, by cutting away the green leaves, which would otherwise exhaust the stock in a few hours.

The writer has not proceeded to give these hints, as he fears too many are written, by sitting in his library and studying out these "principles," and feeling sure it must be so practically, recommend as a fact what he has not really tried. He found by experience the results of this method of planting were as related, before he understood the reasons therefor; and he will say that if his reasoning is not good, the reader will find it none the worse for the facts. So many persons who do not plant before the buds burst, regret that they thereby have "lost a planting season," that it is, he trusts, conferring a public blessing by thus "adding another year to their lives," to give to the public this, the result of ten years' practice of this system.—M. in *Germanstown Telegraph*.

Fruit prospects are very promising in most sections of the Province.

Enothera, (Evening Primrose).

A very fine genus of showy plants, opening their flowers suddenly in the latter part of the day, and making a most brilliant exhibition during the evening and early in the morning. Some of the newer varieties will attract as much attention as anything that can be grown. Some are perennials, but the following, which are the best, all flower the first season.

Veitchii, a very pretty half-hardy annual, growing about one foot: flowers bright yellow, with a red spot at the base of each petal.

Rosea, dwarf; perennial; not quite hardy; flowers first season: rose-coloured.

Acaulis alba, a very dwarf, or rather stemless plant, the leaves lying close to the ground. The flower is snowy white, about four inches across, with a calyx tube four or five inches in length. Each plant produces one and sometimes three of these beautiful flowers every evening. Grow plants in frame or seed-bed, and set about six inches apart.

Lamarkiana grandiflora. This is one of the most showy of the genus. The plant grows about three feet high: branches freely, and blossoms most abundantly. Flowers bright yellow, four inches or more in diameter, borne in large clusters. Flowers well the second year, unless the plants are exhausted by blooming the first.—*Vick's Floral Guide*.

How to Get a Cheap Orchard.

To the Editor.

SIR,—The expense, labour, and length of time required to plant, cultivate, and rear an orchard, induce me to throw into a short space a few years' observations on the cheap method of growing fruit trees.

In selecting trees for planting, don't be particular about the quality of trees. If you get inferior trees for five cent's apiece less, and they die, you lose less. In laying out and distancing for planting, don't be particular, a foot or two will not make a great difference, and you will save at least one day's work of two competent men in squaring and staking a field for one hundred trees.

In planting the tree, any one knows that a small hole is dug in less time than a large one; so cram the roots in, and if the tree don't do well, condemn the nursery. If the roots are injured, leave the fractured parts to decay; and if the tree does well, make your experience known to the professional fraternity at the hospital for the benefit of the profession. If the soil is not good, pile it round the tree; you will save labour in drawing something better to mix with the poor soil. Don't be particular about trimming the tree when it needs it; you can do that at any time, and then there will be such beautiful contrast. Some will grow like the poplar, while others will resemble the weeping ash. Do not bother yourself in killing the worms on the trees, if the leaves are devoured, there will more grow next year—if the trees

don't die. In ploughing the land, keep both horses to the plough until you plough the land or tear the trees out. It is a bother to plough next to the trees with one horse, and then it will require an additional hand to keep the whistletree from the trees. Seeding a young orchard to grass, and wintering cattle on straw, are both equally economical.

My experience is, that the practice of leaving young trees without protection in the winter is not equal to the theory. I have an orchard of sixty trees, which was done nothing to except to stamp round them after the first deep snow. The mice have destroyed forty-one of the number. I have an orchard of one hundred and seventy trees, which I piled old manure around after the ground was frozen: of this number not one was injured with the mice. Both orchards were set in 1865.

I find that chip manure, or the scrapings of the barn-yard, improve the growth of the trees, but those who are prejudiced against manuring trees might find a profitable investment of a few dollars in peeling the bark from trees of some kind in June, and sawing it into pieces of two feet long, and putting it round the fruit trees in the fall, again removing it in the spring. One set of barks would be sufficient, if taken care of, for one orchard.

I propose, at some future time, giving the result of experiments used for the preservation of the trees injured by the mice. It may not be generally known that hog manure will kill every fruit tree that it is piled round in warm weather.

BLOOMINGTON

Hedges.

To the Editor.

SIR,—I wish you would stir up the hedge question through the CANADA FARMER. I have tried a number of plants for hedging, half-a-dozen of which will make a good hedge, but the mice destroy them. They won't eat buckthorn when they can get anything less bitter. Hecob, whitethorn, crab-apple, willow, poplar, plum, osage, buckthorn—this seems to be the order of their bill of fare—the last liked the least. I have never found that they had touched the Norway Spruce, although the moat of this tree must afford them shelter. Can any of your correspondents in the pine woods tell if the young pines are girdled? As yet I have not found the bark of a resinous tree gnawed.

The Norway Spruce, after it is two or three years old, or later, transplants easily and safely, stands up no sprouts, and keeps its mass of fibrous roots close to the trunk. Ploughing the fields close up to the line of the hedge would secure a root-pruning, which, with an occasional clipping, should dwarf it near the limits of a hedge plant.

I am inclined to try it, and would like to be warned by any one who has made the experiment already, if I had better leave it alone, and why.

West Middlesex.

W. S.

BLACK KNOT.—Mr. James W. Squeleh, Wick P. O., asks:—Can any of your readers give a sure remedy for the black knot in the plum tree? I have tried ashes and lye, and have found some good from it, but it was not an entire cure.

RECIPE FOR DESTROYING INSECTS.—"Take equal parts, say half a pound, of strong soft soap, potash (or soda), and tobacco (the stems will do for that); or in absence of tobacco, take walnut leaves. Boil these in three gallons of water for a short time, stirring it all the time. After boiling, add two gallons more of water, and mix it well. When cold, apply it with a syringe, or in any other convenient way. It does not hurt the plants or the foliage, and destroys the insects." The foregoing recipe was furnished by Mr. Bauer, of Hamilton, and is the mixture for killing insects on vines and plants mentioned by him at the Fruit Growers' meeting.

STOCK, TEN-WEEKS. (*Malthia annua*)—The Ten-Weeks or Annual Stock presents nearly or quite all the requisites of a perfect flowering plant—good habit, fine foliage, beautiful flowers of almost every delicate and desirable tint, delightful fragrance, early flowering, and abundance of blossoms. Flowers in splendid spikes. The seeds offered are from the best German grower of this splendid flower, all from selected pot plants, and more than three-fourths will produce fine double blossoms. Seeds may be sown in the hot-bed or cold-frame: or in the open ground in May. Easily transplanted when small. They should be removed from the seed-bed before they become "drawn," or slender, or the flowers will be poor. Make the soil deep and rich. Set the plants about twelve inches apart. Half-hardy annuals.—*Vick's Floral Guide*.

MILDEW ON ROSES.—I, in my turn, would like to be of use if I can, and I venture to send you a receipt for the cure of mildew on roses. I may state at once that this is not a discovery of my own, but a remedy recommended to me by a lady who is a most successful grower of flowers, and she received it from a nurseryman. I assert that it is a complete cure. Rub down in a gallon of soft water one pound of soft soap, with the solution syringe the upper and under surfaces of the foliage, and the mildew will disappear as if by magic. Mr. Rivers recommends a cure in soot. Perhaps soap is more cleanly, it is, I am sure, as effectual—though I do not for a moment doubt the efficacy of soot—and an outlay of one shilling will clear one hundred plants from every vestige of the disease, if properly applied. I find it useful to syringe the trees with clear water, next day, to rid them of the whitish deposit which fixes on the edges of the leaves after the application of the solution. There is no necessity to cut off the blooms, the solution could only damage these in proportion to the force with which it hit them, and as contact with the mildew is all that is required, no force is necessary.—*Cor. Collage Gardener*.

Correspondence.

Cheer the Immigrant.

To the Editor.

Sir,—Permit me, through your journal, to put in a plea for the newly arrived immigrants now coming to our shores in unprecedented numbers. Naturally enough, the first feeling on their arrival here is often one of comparative despondency, especially when to their other causes of discomfort is added the ordinary trouble of a scanty purse. Everything is strange to him, and the immigrant has no friend or acquaintance to turn to, with whom he can exchange a greeting, and too often the newly arrived is treated as fair game, and his ignorance and peculiar position taken advantage of to reduce the rate of remuneration for labour.

Now, this is wrong and heartless in the extreme, and I take this opportunity of calling on all who may have it in their power to hearten up the immigrants as much as possible, to meet them as they themselves would like to be met in a foreign land, with words of sympathy and encouragement, and above all things to scout the idea of taking the kind of advantage I have alluded to.

We all know that a new arrival neither understands nor can do the work that an old resident can, and on this account is not worth as much. But that is no reason why the few hearty, friendly words of encouragement so much valued should be withheld, especially when they cost the giver nothing. Still less is it any excuse for not giving the full value for his services. Most certainly, there are many kind-hearted men whose active benevolence seldom sleeps, who enter readily and willingly into the immigrants' views, counsel them what to do, where to go, and who are most likely to require their labour, placing all things before them in as favourable a light as is consistent with truth.

This kind of treatment is most especially needed by men with small families and scanty means, who cannot afford to wait about in idleness, and it is a duty we all owe to our newly arrived countrymen to help them heartily to the extent of our power.

With regard to the manner of receiving strangers, truth compels me to speak favourably of the Irishman. He has often but little, yet that little is readily shared with any one; the kind word is seldom wanting, and assistance rarely withheld.

The Scotchman, also, readily hails with heartiness the brother Scot, and with words that from their homely accent are dear to the hearer. But, with shame do I say it, my countrymen, the English are most backward, and more inclined to treat with coldness the new-comer. They often use an immigrant just as they would any other article of importation—the more plentiful the cheaper, and consequently the less worth.

We ought to feel that these men, the immigrants, and their families, are here from necessity, not usually from any fault of their own, but from adverse circumstances outside their control in their own country. They have been compelled to emigrate. They could not contrive to remain at home, and have been induced to come here, hoping, from representations made to them by others, to better their condition and that of their families by the exchange.

I say that, under these circumstances, the great mass of these people, so situated, are entitled to our individual sympathy and active co-operation in obtaining them employment; and common humanity, to say nothing of "brotherly kindness," should secure them from the smallest approach to unfairness in our dealings with them. C. D.

Protection of Birds.

To the Editor.

Sir,—I have lately noticed some arguments, based on the ground of humanity, in favour of the protection of birds. I will not, however, urge this plea—it has its weak points. Considered in the "cruelty to animals" light alone, without reference to the good or evil occasioned by the said animals, killing birds is quite a humane occupation, inasmuch as each bird killed would certainly, had it lived, have taken many thousand lives—very valuable lives, too, to the owners. With the farmer, self-interest is here on the side of protection, and will furnish reasons which, if less laudable, are likely to be more forcible.

We are deeply interested in the preservation of these tenants of the air. They are sources of both pleasure and advantage. They protect our food; they please the eye; they charm the ear; they may even instruct the mind. I will not inflict on your readers long quotations, showing how various wise governments, in their zeal for the preservation of some few grams of corn, some few small fruits, supposed to be feloniously appropriated by the birds, ordered the extirpation of these malefactors, and how, in consequence, insect plagues well-nigh stripped every ear from their fields and every leaf from their trees, till they were forced, at

great expense, to import fresh detachments of their feathered allies. In fact, the subject is better understood than it was a few years since. The Canadian farmers, of late sore pestered by insect enemies, are becoming, both from personal observation and by the perusal of agricultural publications, pretty well aware that each insect-eating bird which frequents their fields has its actual money value, and that its destruction involves the loss of a certain number of shillings and pence. Nor is this knowledge without effect. In both town and country, I am glad to notice, birds are more plentiful and less timid, this spring, than for years past.

They have, as I have remarked, many other claims on our consideration, besides their value as insect destroyers. Their beauty, their lively movements and graceful flight, their cheering song, give additional charms to every landscape, and form one of the greatest pleasures of rural life. They are, too, in their own way, preachers and moralists, whose lives deliver sermons and homilies. Their whole existence is a perpetual lesson of industry, of gratitude, of contentment. Surrounded by perils; in danger from want, from cold, from tempest, from their own natural enemies, and from those who should be their friends—and fully conscious of all these causes for fear—still, with spirit undepressed, they urge their daily labours; still their joyful carol rings boldly through the air. It is strange that, with so many claims upon our kindness and sympathy, we should find any gratification in injuring them. Why should we destroy creatures whose death can in no possible way benefit us, and whose lives constantly yield us profit and afford us pleasure?

Farmers, especially, who protect birds, may confidently expect full repayment for their kindness. They will return yearly, in increased numbers, to the very fields where they have found safety, to guard from the creeping things of the earth, from the winged plagues of the air, the growing crops of their benefactors. No creatures are more quickly sensible, none thoroughly appreciative of kindness. I was, last month, while engaged in erecting a miniature house for swallows, amused to observe that, while it and the pole intended for its support were lying on the ground, several of these birds, hovering around, seemed perfectly aware of my intention; and when I was raising it to its place, while it was yet wavering in the air, three of them, alighting on it, were eagerly examining and evidently approving of its proportions, and contending for its possession. Agriculturists and gardeners, in different countries, have found it to their advantage to erect many such houses. Their tenants return regularly, they are of great benefit, their whole lives being spent in the destruction of injurious insects, and they can do no harm whatever, as they are purely and entirely insectivorous, and would, if denied in-

sects, starve among the finest grain, or the rarest fruits.

To those farmers who agree with me on the subject, I will mention that, in one respect, their foes are of their own household. The united efforts of men, boys, and dogs, do not accomplish the death of a number of birds amounting to one-tenth of those destroyed by cats. These animals, though very useful to us in other respects, devour many thousands of young unfledged birds of those classes which build on the ground. If they could be kept in-doors for a couple of weeks, at the proper season, great good would result. Those who wish birds in their gardens should exclude cats altogether. They lie in wait behind the bushes for hours, until their victims alight on adjoining beds and grass-plots; they even climb the trees to secure their prey. They are, it is well known, the deadly foes of the whole species; and I have repeatedly noticed that, to one of the prettiest—the beautiful American humming-bird—their access to gardens is certain destruction.

R. W. PHIPPS.

Toronto, May 28, 1870.

Queries—Salt & Lime, Etc.

To the Editor.

SIR,—In the April number of the CANADA FARMER I observe it stated by "Vectis" that "salt and lime mixed together and turned over for three months will greatly ameliorate the process of turning stable manure into rotten dung." Now, I should like to know, 1st. In what proportion the salt and lime must be mixed? 2nd. How often in the course of the three months they are to be turned over? 3rd. Would it answer to scatter a portion of this mixture over the fresh manure every day as it is thrown out of the stable, the manure being kept under a shed; and if so, what quantity of the mixture should be applied to every waggon-load of manure?

I should like to underdrain my farm—which is a stiff clay loam, with a very hard pan underneath, and limestone rock about twelve feet below the surface, with any amount of outfall, but no springs—so that the drains would be dry except in the spring and fall. Now, under these circumstances, how many years might board or log drains be expected to last?

With respect to the Lombardy Poplar as a wind-break, I intend to try them as soon as I can get some cuttings. Twenty-six years ago I saw some large ones, about thirty or forty feet high, which had been planted around the door-yard of a house in the Seignior of St. Jean Port Joh, about fifty miles below Quebec, on the south shore of the St. Lawrence. They had been planted for ornament only, and were about ten or twelve feet apart. On the south side of these poplars, cherry trees were planted, so close that their branches touched the poplars; and they bore abundant crops of fruit every year. Neither

did the poplars throw up suckers anywhere. The land was level, and sandy near the river. I do not know the exact age of the poplars, but from what the proprietor told me they could not have been fifty years old, and yet they were beginning to show signs of decay in the tops. An answer to the questions contained in this note will oblige.

SARAWAK.

NOTE.—A common method of making the salt and lime mixture is to dissolve one bushel of salt in water; then with the salt water slack three bushels of caustic lime. This mixture should be placed under a shed or in a building, and in the course of a week or fortnight, after being turned over a few times, it may be composted with muck or other vegetable matter, using about four bushels of the salt and lime to each cord of muck. When composted a few months it will be found a valuable fertilizer, and a good divisor for barn-yard manure. When no muck or other compost is at hand, the mixture may be added direct to the barn-yard manure. The best results may be expected from composting it in the manner described, although when scattered on the surface at the rate of ten to twenty bushels to the acre it will be found a cheap and beneficial manure for top-dressing.

With regard to the drainage question, an attentive perusal of the articles on this subject that have appeared from time to time in this journal will give the writer of the above communication sufficient information bearing on his own case to guide his practice. In reference to his postscript, which was evidently not intended for publication, and has accordingly been omitted, we would remind him that while we have the greatest pleasure in replying to reasonable enquiries, it is but just that correspondents who expect such special information should, at least, be subscribers to the paper, and not content themselves with "borrowing," and "recommending it to their neighbours."

Sharpening Saws.

To the Editor.

SIR,—Can you, or any of the numerous readers of your paper, give me any information how to sharpen the different kinds of saws used by farmers, viz., the buck-saw, the hand-saw, the cross-cut saw, &c. The use of cuts would assist in understanding it to better advantage.

CULTIVATEUR.

REPLY.—This art is one that cannot be attained by a novice without continued trials, and at the price of repeated failure and much disappointment perhaps, at length gaining tact by experience. It is one of great nicety, and simple as it may seem, a most elaborate article respecting it would only suffice to afford faint and imperfect instruction. This being the fact, we would advise our correspondent to go to some good mechanic who has learnt the art by long

practice, and he will show him more in half an hour, and for fifty cents, than he could learn from any description, and at a cost of many dollars in time and files. Any one who is a judge of saw filing can tell, as far off as he can hear the sound, whether a saw is working right and cuts keenly; and this applies to all saws, from the ordinary buck-saw to the ten-feet circular used to make veneers. And, strange to say, so much true art and knack is there in the operation, that you shall take a circular saw, say sixty-inch diameter, and an adept shall have it in beautiful order, but let a man not thoroughly posted just touch the teeth with a file, hardly removing anything, and the saw will not go within fifty per cent. as well as before. This fact is much more apparent with the same work where a man, instead of an engine, drives the saw.

Farm Implements.—A Seed Drill.

To the Editor.

SIR,—The value of roots is now generally admitted in all good farming, yet it is a singular fact that a cheap drill for sowing two drills at once, of turnip, carrot or mangel seed, to be drawn by a horse, or even by hand, cannot be found at any seed establishment or dealer in agricultural implements in the city. An implement of this kind is a necessity on every farm, yet every farmer seems to be left to his own ingenuity to supply the want. Surely our manufacturers could make it advantageous to produce a strong cheap drill of this kind.

A FARMER.

Toronto, May 6th, 1870.

NOTE.—Several manufacturers make such an implement, and two or three are usually seen at our Provincial Exhibitions. But it is often difficult to know just where to procure the article required. One or more stores for all kinds of agricultural implements is very much needed in our principal cities. In the States, even a small town of six or seven thousand inhabitants would have an establishment of this class, where machines and implements of all kinds for the farm would either be kept on hand or could be obtained to order.

Crops about Cobourg.

To the Editor.

SIR,—Our spring, though it was late in commencing, has been, on the whole, a good one. The promised seed time and harvest never fails.

The first ploughing done was on the 9th of April, but it was ten days after that time before ploughing became general, and, on low wet farms, it was the first of May before any work could be done. Since then the weather has been fine, dry and warm for the season, so that when once begun, work went steadily forward, and the seed was mostly

got in as soon as the ground was fit to work. Owing to the great quantity of snow there was on the ground, and the heavy rains we had in the beginning of April, the ground kept longer wet than usual. Still, grass came earlier in; the fruit trees were sooner in blossom than they have been for some years, and in general have been very well covered with bloom this season.

The fall wheat has been injured to a considerable extent, is mostly very patchy, and looks better at a distance than it does on close inspection. Under the most favourable circumstances, now, it will be below an average crop. Clover, too, has been badly killed out, though here and there there are fair fields. Should clover be injured in other parts of the country, as much as it is round here, the seed will be scarce next spring. The clover has not been drawn out by the roots as it usually is when winter-killed, but lies close on the ground, and looks as if it had been scorched or burnt out. I am inclined to think that it was killed by the very icy weather we had in this neighbourhood at one time during the winter. I am the more inclined to this opinion, as many years ago, in the winter of 1853, if I am not mistaken, when we had similar icy weather, the fall wheat and clover were badly killed.

Spring crops, on the whole, have come well forward, but as there was very little rain all the month of May, the crops are now much in want of it. Even should it come soon, hay will now be a light crop.

Baltimore, June 1, 1870. W. R.

RAW-HIDE ROLLERS.—We cannot learn where these are to be procured. J. J. had better apply to some manufacturer of chaff-cutters.

AGRICULTURAL SOCIETIES.—OFFICERS VOTING.—A correspondent enquires whether a secretary or treasurer of an agricultural society can vote as a director. Certainly.

GOLDEN PHEASANT EGGS.—Mr. Charles Palmer, of Markham, wishes to know where he can procure eggs of this variety of ornamental fowl. If any of our readers can supply the information, they would do well to address him or advertise.

CHEESE FACTORIES.—N. Y., Springfield.—We gather from your letter that your cheese factory manufactures cheese for stockholders at one and a half cents, and for non-stockholders at two cents, and that the stockholders who manufacture cheese pay the running expenses by a tax on their milk, and that your question is as between those stockholders who do and those who do not have cheese manufactured for them, whether there should be any difference in sharing the profits. We should think not. The tax on the milk may be set off against the reduction in price of the manufacturing for the stockholders. If this does not balance, the by-law should be altered, but that is hardly a legal question, but one for the stockholders to regulate.

THE DRAINAGE LAW.—Newtown Robinson, must give a notice to his neighbour under the drainage act, and then call in the aid of the Fence Viewers. As a magistrate's aid is required to carry out the proceedings, he had better get one to show him the form of the notice, &c. The law upon the point is to be found in Chap. 57, Consol. Stat. U. C., and in Chap. 46, Ontario Statutes of 1868-9, or in Wills' compilation of the acts relating to Municipal Institutions, pages 221, 227.

HYBRIDIZING WHEAT.—A subscriber wishes to be informed of the best method of procedure in hybridizing wheat. Will Mr. Charles Arnold, of Paris, who has been hybridizing wheat, and has a practical knowledge of the subject, please answer the enquiry?

A curious instance, showing the value of a little exact scientific knowledge, has lately occurred. M. Bidard, in some observations on the Flower of Grasses, shows that when, as we say commonly, the wheat is in flower, the fertilization is really over, and the now useless stamens project outside the flower. Assuming this to be true, what is the value of the plan proposed for facilitating fertilization in wheat by violently shaking the ears by means of a cord stretched along the rows, when the wheat is in bloom? Again, if this be true, hybridization or cross breeding in wheat is impossible, unless effected artificially. What explanation then is to be given of the supposed hybrid between *Triticum* and *Egilops*?—and which, it may be remembered, was offered in explanation of the alleged transformation of *Egilops* to wheat.

The Canada Farmer.

TORONTO, CANADA, JUNE 15, 1870.

Disappointed Emigrants.

It is no matter of surprise that out of the immense numbers and endless variety of characters that seek our shores with a view of mending their fortunes, some few should experience disappointment and bitterly express that feeling, laying the blame of their adverse experience on their informants and advisers, on the country, or anywhere but in the right quarter—on themselves. Over and over again has it been stated that Canada is no paradise for the idle—no Eldorado where gold can be had for the picking, and that in order to ensure success it is necessary that the men who come to settle here should be of the right class.

Failure and disappointment arise either from the emigrant being radically unfit on account of previous habits of life, or innate character, for the change, or because false and exaggerated expectations have been formed respecting the country. There are some persons who will be dissatisfied, and therefore unsuccessful, anywhere—who are morbidly quick to find fault, to see every-

thing in a distorted and gloomy aspect—who are disheartened by the first obstacle, and ready to give up at the mere shadow of a difficulty. With such persons the veriest trifles are magnified into calamities. They will denounce the country, and piteously bewail the hardships of their fate, because, forsooth, they have no *sugar in their tea*; or some equally mighty trouble will make them repent their coming before they have been twenty-four hours in the land. These characters had better remain at home. They certainly make a false move when they choose the lot of an emigrant, no matter to what part of the globe they take their course.

Others fail, and deserve to fail, because they are ridiculously fastidious, and will even decline an engagement at good wages, for the silly reason that the locality or occupation is not exactly to their mind. To make a good settler a man must be willing to turn his hand to any honest employment that offers.

The mistake of arriving just at the beginning of winter, when labour of all kinds is comparatively intermitted, is another fruitful source of distress and embarrassment.

Some are disqualified, not from any peculiarity of character, but on account of their habits and training, which have been wholly foreign to the requirements of this country, and because they have no capacity to adopt a new mode of life. They may be good mechanics, for instance, in one particular department, but altogether ignorant and unskilled to turn to any other. For such men there is often here no demand at all, or at the best only a very limited scope; and it is not surprising that weavers, ship-carpenters, or any other adepts in just one special branch of industry, should fail to find immediate employment amongst us, especially when a number of the same class arrive together.

Again, there are those whose only experience has been that of clerks in stores or offices, or in some similar white-handed capacity, and who come out with the idea that in Canada there is such a scarcity of this sort of gentry that they have but to present themselves, and they will at once be installed in some responsible situation with an ample salary. What else can happen but that some at least will find themselves in small request, out of place and out of pocket? Already the proportion of clerks to the number of labourers, mechanics and farmers, is excessive, and we need rather an exodus of the surplus population of our cities to rural districts and occupations, than any large increase of penniless adventurers and knights errant of the clothyard and quill.

But, perhaps, of all men who make a mistake in emigrating to this country, they are most in error who come out for the express purpose of farming, but without the slightest practical acquaintance, or faintest theoretical notion of agriculture. They are quite aware that they know nothing about the business,

and that it would be "midsummer madness" to think of undertaking to raise crops in England; but any one, they think, can farm in Canada—all the knowledge and skill required can be easily and quickly "picked up" by observing one's neighbours. Land is cheap, soil and climate fertile to any extent, crops sure, and farming altogether the most delightful and easiest thing in the world—with plenty of strawberries and cream, eggs and butter, and no harder work than watching the cheerful and trusty labourers in the field, and giving a little oversight to thriving flocks and herds. Alas, that it should be necessary to dispel so pleasant an illusion. But the realities of farm life in Canada are very different from this ideal, as any one who tries will soon find out; and it would be safe to say that ninety-nine out of every hundred who come out with such absurd notions, will abandon agriculture in disgust after one year's experience. Successful farming here, as everywhere, requires industry, practical skill, and a knowledge of scientific principles; though it must be confessed that in the last particular too many are deficient. It should, however, be conceded that there are many facilities here, arising partly from natural advantages, and partly from a certain freedom and elasticity common to the condition of all young colonies, that render the adoption of a new calling, and of agriculture in particular, more feasible than in older countries. We can all of us point to signal instances of successful farming in Canada by men who were totally unprepared by any previous training, and had all to learn in regard to their vocation after they settled on their farms. But such men brought with them patience, energy, industry and intelligence, making up in part for want of practical skill by thought and study, and compensating for any lack of "cunning" in the hand by a good use of their brains. Such men would achieve success in almost any undertaking.

The disappointment of those who have failed does not only affect themselves, but in their turn they influence others. And often in the bitterness of their mortification send abroad the most unfair and exaggerated, if not altogether false, representations of the condition of things here. These statements deter many from coming, and hinder the progress of the colony. That there is room enough and ample opportunity for any number of immigrants of the right sort it is not necessary to reiterate. Industrious, sober men, with energy and determination, who, if one thing fails, will turn to another, ready for anything rather than remaining idle and helplessly bemoaning their fate—such men will assuredly win their way to comfort and independence.

Labourers of all kinds, and particularly farm labourers, mechanics, sons of farmers, or those who would be tenant farmers in the old country, but have been compelled by rising rents, increasing competition, and

their own limited means, to look elsewhere; men with small capital who know how to take care of their money—these are all needed in our new Dominion, and with industry and determination cannot fail to improve their condition, in some cases to the extent of exchanging destitution for luxury, by coming to Canada.

United States Agricultural Report.

The last report of the United States Department of Agriculture, bringing accounts down to the end of April, is of more than ordinary interest. Very full returns are given of the condition of winter wheat throughout the Union, and though partial, and in some places total, failures are reported, the tenor of the information is, on the whole, encouraging, and warrants the expectation of at least an average yield.

The general condition of farmstock, owing to the favourable results of the mild winter and a plentiful supply of fodder, is more than usually good. Particular reference is made to their comparative immunity from disease and greater vigour of constitution in colder latitudes. The cattle of the more Northern States, it is said, are in better order than those of the central or southern belts, simply because they are better sheltered and protected from exposure; they are also better fed than those of portions of the central and of nearly all of the Southern States. No cattle in the country are in a more healthy condition to-day than those of Maine and Minnesota, and those of New Hampshire, Vermont, Michigan, and Wisconsin, are unsurpassed in that respect by those of any State south of them. They are not only sheltered, cared for, and fed with regularity, but the uniformity of the winter is a stimulant to appetite, and conducive to health. Further south the animals are less carefully tended, and as the result, become reduced in flesh and debilitated. "In proportion as nature is kind, man becomes cruel; if his kindly services may, in part, be dispensed with, he becomes totally negligent, and inflicts upon his own pocket losses proportionate to the measure of his own inhumanity, and to the sufferings of the dumb creatures that minister to his wants."

In a brief and comprehensive survey of the disorders that have prevailed among the different classes of stock is this remarkable statement: "Starvation is the most common as well as the most serious malady. Throughout the West and South much fatality should be attributed to exposure and lack of nutrition." The enforcement of the laws to prevent the summer driving of southern cattle has had a marked effect in arresting the prevalence of that most fatal malady, commonly called "Texas fever." In contrast with the favourable reports respecting the diseases of other farm stock, the rapid spread of cholera among hogs is thus noticed. "There is some-

thing radically wrong in the management of swine, resulting yearly in the loss of millions of young pigs and hogs, or else the genus *Sus* is an unhealthy and unwholesome animal, and therefore unfit for human food. One or the other of these conclusions seems to be forced upon the common sense and sound judgment of the observer. The mortality among young pigs, for which the butcher has no responsibility, is nearly if not quite proportionate to that of infants of the human species, and aggregates millions of individuals yearly. What is the cause? It is greatest in the West, notwithstanding the healthfulness of a free range, while eastern pigs are generally shut up in close pens. In all accounts of 'hog cholera,' which popularly means any disease which sweeps off the species as an epizootic, while remedies are unavailing, prevention is found to be practicable, at least in a partial degree, and coal ashes, salt, sulphur, soap, saltpetre, gas-lime, coal-oil, tar, charcoal, sulphate of iron, smartweed tea, soap-suds, poke-root, tobacco, assafetida, garget-root, mandrake, and all the poisons of the apothecary shop are administered. There appears to be an irrepressible craving for something besides the inevitable corn, which is too concentrated for the exclusive and continuous diet of any animal; hence, those who feed sloppy mashes of potatoes, beets, or other roots, as well as corn, giving wholesome variety and sufficient bulk, and have exercised ordinary care and discretion in other respects, have generally escaped the dreaded 'hog cholera.'" Numerous reports have been received, showing the discouragement of pork producers in districts where diseases have been peculiarly fatal, and revealing a disposition to quit hog-raising altogether.

A startling array of figures is brought forward in reference to the ravages of dogs among sheep. The aggregate loss in four hundred and seventeen counties is 99,387. "The due enforcement of a tax upon dogs," it is observed, "like that of British and European governments, would prove a hundred-fold more benefit than hardship, relieving the poor of the great burden of keeping them, and society of the intolerable nuisance of worthless dogs, at the same time improving the animals worth the value of a tax, and taking from the industry of wool-growing one of its greatest burdens of taxation."

The following statement is given respecting the British imports of 1869, in which the wheat received amounted to 37,695,828 hundred-weight. In 1868 the receipts were 32,639,768 hundred-weight. The increase is about sixteen per cent. The proportion received from the United States was much larger than usual. In competition with Russia, Prussia, Denmark, France, Turkey, Egypt, Chili, British America, and other countries, America sometimes contributes a very small portion of the quantity required to supplement the home production of wheat. It is, however, very strikingly shown that Great Britain and her colonies constitute the

chief foreign market for the surplus wheat of this continent. Few may be aware how small the quantity taken by other countries actually is. The amount of wheat exported in the fiscal year ending June 31, 1868, was 15,940,899 bushels; of this but three per cent. (461,198 bushels) failed to reach British or colonial territory.

A brief but encouraging reference is made to the development of beet sugar manufacturing; and among other matters indicating progress in agriculture, the successful introduction and advantages of steam cultivation are set forth, suggesting, to us in Canada, the course which, sooner or later, there is little doubt we shall ourselves adopt.

The American Entomologist and Botanist.

The April number of our old friend, the *American Entomologist*, comes before us in a somewhat altered form, and with additional features of interest; hitherto it has been entirely devoted to the discussion of the forms, habits, classification, and beneficial or noxious qualities of *insects*; now, a department of the magazine is appropriated to the similar treatment of *plants*. Mr. Riley, the able State Entomologist of Missouri, continues in charge of the former department, while the botanical portion is edited by Mr. George Vasey, of Richview, Ill. The two sciences of entomology and botany are, indeed, as the editor remarks, twin-sisters; and no student of the former can accomplish his work satisfactorily without some knowledge of the other; nor, we should suppose, could any field botanist rest long contented without striving to learn somewhat about the wonderfully varied and oftentimes beautiful creatures that prey upon his favourite plants. Botany is, no doubt, a more generally popular pursuit than entomology, at least its students are not assailed with the same ridicule or treated with the same amount of wondering pity that the so-called "bug-hunters" often are; and therefore we trust that Mr. Riley will find the new department of his magazine conducive to its wider dissemination and more extended support. We hope soon to hear, indeed, that his list of readers has doubled, and that many lovers of flowers who formerly abhorred the sight of an insect, have been led by the charms of his pen and pencil to bestow a little of their sympathy and attention upon beetle, butterfly, or bug.

The number before us, which is as admirably printed and well illustrated as ever, contains articles upon "Wheat rust and barberry rust," "Is any knowledge useless?" "How to collect and study insects," by Mr. Sanborn, of Boston—an enthusiastic collector, who well knows how to direct others to the attainment of the same success that he has achieved—"The bald-faced hornet," by Mr. Gillman, of Detroit; "Insectivorous habits of the prairie lark," by Dr. Le Baron, State Entomologist of Illinois; "Hindrances to

successful fruit growing," by Mr. Pullen; "Scientific language," by Mr. Andrews, of New York; "Insects injurious to the grape, No. 7.;" "The death-web of young trout;" "Southern notes," by Mr. Steele; "Entomological jottings," correspondence, etc. If this is not a bill of fare varied and attractive enough for any reader, then let him go on to the botanical department, where he will find articles on "Spring-flowers," "The soft maples," "Who should study botany?" "Blood-root," "Red-bud," "The grasses," "The spicy wintergreen," etc.

The magazine can be procured, as formerly, from the Secretary of the Entomological Society, Credit, Ont., for \$2 per volume, free of both American and Canadian postage.

Annexation—How it would Affect the Canadian Farmer.

We believe that American annexation is virtually further from the thoughts or wishes of the majority of Canadian farmers than ever.

There are, however, certain irrepensible, and, we may add, usually irresponsible, persons, who periodically air their opinions upon the glorious future which would surely be opened up to our farming community were we once enrolled beneath the "Stars and Stripes."

It is well, then, that we should constantly review the advantages which we possess under our present form of Government, and the probable status that we could maintain as a very small speck upon the area of Uncle Sam's dominions. Some cry independence, and in the same breath repudiate annexation. It is an insult to the common sense of the Canadian farmer to speak of independence in the present state of this colony, otherwise than as the first step towards our speedy absorption by the United States.

The question of annexation has been frequently discussed by our papers of every shade of politics. We propose merely to see if there be any possible incentive justly held out to the Canadian farmer sufficient to induce a change of flag.

First. There are some things in which we should gain nothing. Our markets would not be benefited. The Americans must have our cattle, sheep and wool, our timber, our barley, flour and apples. This is plainly shown by the fact, that ever since the abrogation of the Reciprocity Treaty, they have obtained from us large quantities of such agricultural products. Notwithstanding the thirty per cent. duty, which would seem to be almost prohibitory, they pay as good a price for their purchases in the Canadian market as they did before the Treaty was annulled. A glance at the market quotations and the yearly statements will prove that the above assertion is correct.

As our sales, then, have not been perceptibly affected by the loss of the Treaty, we should *gain nothing* in market prices were the

duty removed by the union of the two countries.

Secondly. In many respects we should find ourselves losers. It is stated on the authority of United States *orrans* that whereas ships are built at \$22 per ton in Nova Scotia, the cost on their own side is \$45 per ton. The same relative difference of cost will apply to the manufacture of farm implements. The high wage paid to mechanics on the other side is due to the heavy taxation and great cost of living. Were we annexed, we should, of course, be subject to such expenses, and should *certainly lose* the difference between the present cost of our implements and the price we should have to pay under the new regime.

Then the question of taxation comes up. In considering this point, we will take for a basis the statement issued in a late number of the *Chicago Tribune*, that the expenditure of the people of the United States is computed at \$10 per head, while that of our own country stands at \$5 per head; thus our average taxation under the present form of Government is but one-half of that of the Americans. After annexation each farmer would have to consider his taxes doubled; the tradesman must advance the price of his goods in proportion to this increased assessment. We should have to pay very much more for our provisions, clothing, and labour, etc.

On the whole, the Canadian farmer has every reason to be contented with his present condition, and would lose in every particular by annexation. Our agricultural prospects have never looked brighter than they do today. That great plague, the midge, has lost the worst of its sting; our taxes are light; our wages and rate of living restrained within reasonable bounds.

Were we annexed to-morrow, taxes would be immediately doubled, the prices of provisions, clothing and living greatly increased; our liberty curtailed; the privilege of the vote, hitherto wielded by every farmer among us without fear or favour, would be overridden by the bribery of ignorance; and we do not believe that our market prices would be raised one iota in gold. Let the Americans keep up protective tariffs, they must have our products and at our own prices. Instead of being as free a country as exists, we should, after annexation, become but a small corner of the great republic, bearing our full share of an enormous taxation, in close competition with the Western States, and our prices ruled solely and only by the American market; there would then be no alternative between their prices and no sale. We should lose our name of Canadian farmers, a name of which each one among us is justly proud, and have to rest contented with such a share of republican glory as would be in proportion to our population and our isolation.

At the present time, especially, it is incumbent on us to show, by an outspoken unanimity of opinion on this subject, that if our neighbours think to drive us into annexation

by these villainous raids on our borders, they have wofully mistaken the spirit of the Canadian people. Such unprovoked and inexcusable aggressions, from the responsibility and guilt of which it is impossible altogether to exonerate the rulers of law and public opinion in the United States, will but force the two nations more widely asunder, while indirectly they may turn to our advantage—call forth and educate our self-reliance, teach us to value our independence and freedom, and fix the love of our country more deeply than ever in our hearts.

Editorial Notes.

During the last of April and the early part of May a trip through portions of Western Ontario afforded an opportunity of gaining an idea of agricultural prospects in that section. From Toronto to Guelph and Galt, the fall wheat looked patchy and badly winter killed. The farmers appeared to rather behindhand with their spring operations, through the land being surcharged with moisture from the melting of the heavy snow-fall of the past winter. Much of the fall wheat in Waterloo county has been injured, and some fields will have to be re-sown with spring grain. The floods on the Grand River and its feeders have been heavy in some places, the water overflowing the banks, carrying away bridges, buildings, etc., and leaving the soil covered with a debris of broken timbers and branches of trees. Along the line of the Great Western, from Toronto to Sarnia, the fall wheat looked better: in some places very fair fields of wheat was seen, though generally much of it is patchy. The spring work is well advanced, many farmers in Brant, Oxford, and Middlesex having completed the sowing of spring grain, and some fields are already (May 6th) quite green with young barley and spring wheat. Through Middlesex the fall wheat appeared to be in pretty fair condition, and the spring work well advanced. The grass is generally backward, much of the young clover having been either winter-killed, or smothered out by the heavy weight of snow on it, and stock can get but little in the pastures till towards the end of May. Sheep have done well this season, the ewes being unusually prolific, and the spring lambs look strong and healthy. The country has been pretty well cleared of cattle, owing to the large demand from the States, and the high prices offered have induced many to part with animals that ought to have remained at home. Stock-raising never was so profitable, and really good grade cows and heifers bring prices that a few years ago would have been thought fabulous.

The Great Western Railway seems to be doing an enormous through traffic, and the regularity, safety and speed at which its trains are run, together with the comfort and elegance of its appointments, show that it is now under thoroughly good management,

and is well sustaining its reputation of being one of the best railways to travel over in America. One little reform, however, is needed, and that is, to put a stop to the abominable practice which ill-bred and selfish travellers have of occupying four seats for one fare, surrounding themselves with bags, baskets, satchels, shawls, and hand-boxes, while passengers are standing for want of a seat. Let conductors have orders to charge full fare for all seats so occupied, and in case of refusal to pay, remove all the paraphernalia they are filled with to the baggage room, which is supposed to be the place where luggage is carried. Tickets, instead of being marked, "Good for this day only," should be "Good for one seat only."

The unusually heavy snow-fall of last winter, occurring, as it did, both early and late in the season, must prove a great hindrance to the settlers in the backwoods. A settler in Muskoka informs us that the greatest difficulty has been experienced in felling the trees, and getting them cut and put in proper position for burning in spring. It is to be feared that they will find the excessive quantity of moisture in the new land will take some time to evaporate, and that in consequence the crops in that section will be planted late, and run much risk of never ripening. It would be well if they at least avoid the errors of the early settlers, of the older sections, and take care to leave sufficient belts of forest along the northern sides of exposed situations, as temporary barriers until new growths of timber are raised, to break the force of the autumn and winter blasts, and prevent excessive droughts in summer.

The culture of the sugar beet promises to become a very profitable branch of agricultural industry, and the result of the few experiments being tried here will be watched for with interest. In England, sugar beets promise to take the place of mangel-wurzels, and it is beginning to be seen that though they do not produce so heavy a yield of roots to the acre, yet the crop is richer in feeding qualities, as well as free from that strong, objectionable flavour so characteristic of mangels, which makes them undesirable as food for cows giving milk.

The English plan of sowing the seeds of the sugar beet, in a well-prepared seed-bed in March, and afterwards transplanting the young plants to the field where they are to grow, by dibbling them out in May, is hardly likely to find favour here, where hand labour is dear, and the weather likely to prove too dry just after transplanting, for the plants to quickly recover their growth.

The roots are as easily kept over winter in pits or root-cellars as carrots, but must be gathered and housed before frost comes, or they will quickly heat and decay. They are more susceptible to frost than any other roots when ripe, and from that cause require to be planted sufficiently early to give time to grow to a good size and maturity before September

frosts come on. As they grow more rapidly and to a less size than mangels, they will probably succeed even if sown so late as June, provided the seed is soaked long enough to sprout it, and ensure quick germination. They can be grown more closely together than mangels or turnips; the fault with those who grew them last year in England being that they thinned out the plants too far apart in the rows.

Notes on the Weather.

May, 1870, has been the warmest and driest May we have had in many years. Already the spring crops are suffering for want of moisture, and the grass is not so far advanced as usual at the beginning of June. The fruit trees bloomed early. Plums bloomed early in the month, followed shortly after by apples and peaches, and so far as our observation extends, there is a prospect of a fair crop of fruit this season, no untimely frosts having occurred. The trees of the forest donned their robes of green a fortnight earlier than usual, and many of our later feathered spring visitors appeared early. Humming-birds were numerous on May 7th, and orioles on May 11th.

The mean temperature of the month has been $56^{\circ} 4$, being five degrees warmer than the average, and $5^{\circ} 6$ warmer than May, 1869. The highest temperature was $81^{\circ} 2$ on the 14th, the lowest $38^{\circ} 8$ on the 3rd. This high degree of temperature has been exceeded but once previously in May, in 1856.

The rain-fall has been far below the average, being but 1.150 inches, or 2.206 below the average, being the smallest since 1850, when but 0.515 inches fell. The absence of dew has been equally marked, and the result upon gardening operations must have been injurious.

There have been five clear days, thirteen partially clear, and thirteen overcast.

The prevailing winds have been easterly, the wind being in an easterly quarter on nineteen days of the month.

The extreme dryness has caused many bush fires, which in some places have spread over large areas, destroying much valuable timber, and in some instances no human aid could avail to stop the flames from sweeping over and destroying the farms and outbuildings of the settlers.

AGRICULTURAL EXHIBITIONS.—We shall feel obliged if the secretaries of agricultural societies, or other persons who can give correct information, would apprise us in good time of the dates fixed for the fall exhibitions to be held in their neighbourhood. We shall then be able to publish a list, which we hope to make as complete as possible, of the agricultural shows to be held in the Province, besides the principal fairs in the United States, during the coming season.

Seeds.

We have received from Messrs. Sutton & Sons, of Reading, England, their Farmers' Year Book," and "Amateurs' Guide." These are really extensive and valuable works, and contain, besides a list of plants grown in Britain, elaborate essays on the cultivation of some special varieties.

As the agricultural and gardening population of Canada are dependent on Britain and Europe for many of their seeds, there cannot be too much caution used in ascertaining where those seeds come from, and that they are of the best possible quality. Messrs. Sutton & Sons were one of the five great English firms who resolutely set their faces against the systematic adulteration of seeds, which for many years past has prevailed to such an enormous extent in England that there were large manufactories entirely devoted to the preparation of the adulterating materials for all the different kinds of seeds which are sold. This was chiefly done by collecting old seed which would not grow, and otherwise would have been a dead loss, and by killing cheap seed of similar appearance, but of a different kind. Thus turnip seed, cabbage seed, and all seeds of that class, were adulterated with "killed seed" of charlock, black and brown mustard, and other seeds of similar nature. Where such "killed" seed did not exactly match with the seed to which it was applied, it was painted or stained. When old, it was oiled and polished, and made to look like new. And this was carried to such an extent, that few samples of seed purchased from the second dealers contained more than from thirty to fifty per cent. of true seed, and sometimes much less.

The practice is now rendered criminal by Act of Parliament.

One of the most useful things in the Messrs. Sutton's book is their essay on permanent pastures, and the renewal of meadows by annually or otherwise adding a refreshing coat of such grass seeds as naturally die out, or are gradually crowded out by their stronger growing neighbours.

They publish lists of all the grasses proper for the different kinds of British soils, and to such an extent is the system of renewal of pastures carried in Britain, that the mixtures consist of from eighteen to twenty-five different kinds of grasses, the proportions of each being varied to suit the particular soil in which it is to be grown.

This sort of thing would rather astonish our Canadian farmers, whose standard artificial grasses are timothy and clover, eventually crowded out by June grass, couch grass, and the several natural grasses to which the particular soil is favourable; but the British farmer is not like his Canadian and American brother—he puts a great deal into the soil, and expects to reap a great deal more, and does so; whilst the Canadian puts very little in, and consequently takes but very little out. No doubt, circumstances are against us; but we must mend in these matters in general, and in permanent grasses and artificial manure in particular.

The North Renfrew Agricultural Society offered a prize of \$250 for the best horse to be exhibited at their spring show of stallions, held at Beachburgh on the 7th of May. This very liberal premium has been awarded to Mr. James Lawrie, of Malvern, Scarborough, for his three-year-old horse "Farmer's Fancy," imported from England in 1868.

NEW POULTRY PERIODICAL. We learn with much satisfaction that a new periodical, devoted to the subject of poultry raising, is about to be issued under the auspices of the Ontario Poultry Association. Such a medium of intercommunication will, no doubt, be duly appreciated by fanciers in this interesting department of stock, and it is hoped that the originators of the enterprise will receive from them such encouragement and support as will remunerate them for their trouble, and establish the magazine on a permanent footing. The new periodical is to be called the *Canadian Poultry Chronicle*, and to be issued monthly, on the 1st of each month. The subscription price, including postage, will be \$1 50 per annum. The first number is to appear in July. Orders for the journal, and communications on matters relating to poultry or kindred subjects, should be addressed to the editor of the *Canadian Poultry Chronicle*, Box 25, P.O., Toronto.

THE POULTRY BULLETIN.—This is the title of a new periodical published by the New York State Poultry Society, and devoted exclusively to the subject which its name indicates, and the kindred topics of the rearing and management of rabbits, small birds, and other pet animals, fish culture, &c. It will be welcomed by those interested in the increasingly popular pursuit of raising poultry, as a ready and frequently recurring means of communicating with each other, comparing experience, and obtaining such information as its advertising columns will supply for the means of adding to or disposing of their stock. We look with much interest for the appearance of the coming numbers of this journal.

LETTERS ON EMIGRATION TO CANADA.—The newly-awakened interest in emigration has caused the publication in newspapers, and other less ephemeral forms, of a mass of information and argument on the subject. We have been specially pleased with a small pamphlet, containing four letters, originally published in the *Gloucester Journal*, from Mr. C. E. Whitcombe, formerly a student in the Agricultural College, Cirencester, and now resident on a farm in Ontario. The writer comments on what he has learnt by personal observation and experience, and gives a very fair and unvarnished account of the inducements which Canada offers to English emigrants. The points chiefly taken up are the class of persons who should emigrate, the peculiarities of Canadian farming as distinguished from that of the "old country," and the advantages of the Province of Ontario. A brief but judicious letter is devoted to the

case of the younger sons of English gentlemen, and some excellent advice is given to this class of emigrants, who, as a rule, the writer observes, do not do well on Canadian farms. In order to succeed in a sphere so foreign to their education and habits, they must possess certain not too common qualities, and have a clearer idea than most of them possess of what they will have to encounter, and what they may reasonably expect to achieve. The publication of letters of this kind, conveying truthful information and sound counsel, cannot fail to do good.

HARRIS ON THE PIG.—We have just received a copy of this new book, written by Joseph Harris, Esq., Moreton Farm, Rochester, author of "Walks and Talks." Such a book has long been needed, and the one before us seems to be just the thing for farmers. It is terse, pointed, and practical, printed in good large clear type, and illustrated with over fifty engravings. It can be had from the publishers, Orange Judd & Co., New York city, at \$1 50 per copy. Mr. Harris, in his preface to the book, says:—"It should be our study to furnish good food at reasonable rates. At the present time, consumers are obliged to pay much more for flesh meat than it is intrinsically worth, and on the other hand, with the exception of those who produce beef and mutton of the best quality, farmers make nothing by raising and feeding cattle and sheep. We receive more for our meat than it is worth, and yet it costs us more than we get for it. The remedy for this unsatisfactory condition of affairs will be found in cultivating our land more thoroughly, in growing better grass, in keeping better stock, and in liberal feeding." Mr. Harris insists with great force on the necessity of using only thoroughbred male animals of a high quality, to produce stock intended for slaughter, and also that the larger the quantity of food of a high quality an animal can consume and assimilate in a given time, the more rapidly will it fatten. Large eaters make quick feeders, while small eaters are slow feeders. Some of the actual experiments in fattening pigs which are described in Mr. Harris' book are very interesting, as showing how much difference there is in feeding quality among pigs of exactly the same size and weight, when put up to fatten. He says:—"The farmer who once uses a thoroughbred boar, and adopts a liberal system of feeding, will find he can produce better pork at far less cost than when he uses a common boar, and will be likely then to study the principles of breeding with an interest he has never felt before. The introduction of a thoroughbred boar will lead to the introduction of a thoroughbred ram and a thoroughbred bull of some good breed, and this, in conjunction with cleaner culture and more liberal feeding, is all that is needed to give us better and cheaper meat, and at the same time we shall make more and richer manure, and thus be enabled to grow larger and far more profitable crops of grain."

Agricultural Intelligence.

Agricultural and Arts Association.—Special Meeting.

A special meeting of the Council of the Agricultural Association was held in this city on Thursday, May 12th. The President, Hon. David Christie, occupied the chair. After the reading of the minutes—

The CHAIRMAN said he was glad to announce that the efforts made to exempt from duty male animals imported for breeding purposes, had been successful, and in the new tariff such animals were entered as being free from duty. Mr. Young had been most indefatigable in his exertions to bring about this most desirable state of affairs, and he thought that the thanks of the Association were justly due to that gentleman. A vote of thanks to Mr. Young was passed for his services in this matter.

Among other communications read by the Secretary was one from Mr. Charles Elliott, of London, Ont., requesting the Association to grant him a space inside the building, for the purpose of showing one of Cantelo's apparatuses for hatching chickens by the action of steam, at the ensuing exhibition. Mr. Elliott desired to be allowed to make an extra charge for seeing the machine, but the Council were of opinion that such could not be permitted, but were willing to allot a space to the applicant, provided no charge was made. The Secretary was directed to communicate with Mr. Elliott to that effect.

Mr. RYKERT read a report from the Master in Chancery respecting the disputed claim between the Association and Mr. Denison. The report was referred to the Solicitors of the Association.

Among other matters, the code of Exhibition rules was brought up for discussion on one or two points, and the Chairman thought it would be well to make it incumbent on all male animals, above one year old, that they should be in and serve in the Province, either one season before showing, or that their owners should guarantee that they would remain for one season after. This suggestion was agreed to, and embodied in the rules of the Association.

The consideration of the prize list, which will be published shortly, occupied the remainder of this day's session.

INTERVIEW WITH THE SELECT COMMITTEE OF THE CITY COUNCIL.

At half-past ten on the following morning, the Board had an interview, in the Mayor's office, with the select Committee of the City Council, appointed to confer with the Association respecting the Crystal Palace. The Committee consisted of The Mayor, and Aldermen Sheard, Hynes, Bell, Thos. Smith, J. E. Smith, and Baxter.

Dr. Beatty explained to the Committee the requirements of the Association, and

pointed out what repairs and alterations would be necessary to be made before the Exhibition could take place. The roof, he said was in need of being made watertight, and the floors were in a very bad state, and wanted renewing.

The MAYOR thought that it was hardly worth while going to the expense of a new roof and floor, for this occasion, especially as the Exhibition was held only once in four years, and he hoped before the time of the next one, Toronto might have a more suitable building for such purposes, one that would be a credit to the city.

The COMMITTEE after some discussion decided to have the palace and grounds put in a fit state for the purposes of the Association.

THE PROPOSAL OF THE HON JOHN CARLING.

On the return of the Board to the Agricultural Hall, the consideration of the letter of the Hon. John Carling, dated 22nd February last, (which at the time of the last meeting of the Association was published in the GLOBE) was proceeded with. Mr. Carling, with a view to the more economical management of the Association, suggested that the offices and library should be transferred to a room in the Parliament Buildings. A Committee composed of the President, Dr. Beatty and Mr. White were appointed to report upon the matter, which did not appear to be very favourably received by the members of the Board. The following is a copy of the Committee's report:

Your Committee to whom was referred the letter of the Hon. Minister of Agriculture of the 22nd February, beg to report.

In reference to the letter of the Minister of Agriculture, addressed to the President of this Council under date of 22nd February last, the following considerations are respectfully submitted:—

1st. The records of the Agricultural Association exhibit a constant and most gratifying evidence of progress in the increase of entries and prizes offered, from the year of the first Exhibition, 1846, when the entries were 1,150, and prizes offered \$1,600, to the Exhibition of 1869, when the entries were 7,649, and prizes offered \$13,248.

2nd. The improvement in the quantity and variety of articles exhibited, whether in the Department of Agriculture, Horticulture, Mechanics or Arts, has been quite as marked and gratifying as has been the increase in quantity.

3rd. The observations of the members of the Council made during frequent visits to the annual Exhibitions of New York and other States, and the acknowledgements of distinguished Americans visiting our Exhibition, freely and impartially given, warrant the assertion that the annual Exhibitions of Ontario not only stand in the very first rank, but really excel any and every other of the same mixed character on the continent.

4th. The successful establishment of the Veterinary College, under the charge of Andrew Smith, V.S., of Edinburgh, and the number of qualified Veterinary Surgeons now annually sent out from the College, supplying a most important desideratum to the agricultural community, is confidently referred to as further evidence of the successful management of the Association.

5th. The working expenses of the Association, which the hon. the Minister of Agriculture asserts "seem to be very large," have been very materially increased under the

operation of the system adopted under the present Agricultural Act, increasing the number of the elective members of the Council from eight to twelve; and by the practice of electing members, residents of the respective districts they represent, while beneficial to the interests of the Association and satisfactory to the public, the travelling and incidental expenses are very considerably increased when compared with the system and practice under the former Act. For the past year, also, the working expenses were very largely increased by the large sum the Council were obliged to expend in providing the necessary accommodation at London for the annual exhibition, amounting to about \$3,350.

6th. The expenses under the head of "Miscellaneous," specially referred to, can scarcely create surprise, when some of the items are examined, to wit, \$2,000 of the amount was a sum paid to Professor Buckland, for three years' services as Lecturer for the Association, which had been appropriated to him and should have been paid by the late Treasurer more than two years ago; \$163 65 discount paid upon silver received for entrance to the Exhibition; \$135 paid for the Lieut.-Governor's bill as Visitor to the London Exhibition, are all extraordinary payments, and deducted from the miscellaneous aggregate of \$3,467 79, leaves but \$1,169 14 to be fairly charged under that head.

Circumstances connected with the former Council and Board of Agriculture, and the operation of the first year under the present Act, made it necessary to hold a larger number of meetings of the Council than ordinary, and perhaps double the number which will be required for the present year, and this will very materially reduce the working expenses of the Council.

7th. An Agricultural Library, to be of general benefit, must be so located as to be easy of access to agricultural men; and it is submitted that there can be no comparison in this respect, as between the rooms in the Parliament Buildings, proposed by the Minister of Agriculture, and the commodious premises now owned and occupied by the Council of the Association, the latter being the most central location in the city.

8th. Instead, therefore, of the plan suggested by the Minister of Agriculture, it is now proposed that the Agricultural Library should be united to the "Valuable Library of Books relating to Agriculture and Arts" collected by the late Board of Arts and Manufactures, when forming an active part of the Agricultural Association, and which, in all fairness, should have been handed over to this Association; to locate the United Libraries in the Agricultural Hall, which contains one of the finest rooms for a library and museum in the city; establish a Free Library, open to the public every day of the week, and at least three evenings of the week until 10 p. m.; the present Messenger having charge of and being accountable for the proper care of the Library.

This plan would involve but little extra expense, and a moderate appropriation from the annual grant would provide for continuous improvement by the addition of suitable works and periodicals as issued.

9th. A most important element in the successful management of the Association is, that it has been entirely free from political influences; to the people has been left the conduct and location and control of the annual exhibition, aided and fostered by annual grants of money by the Parliament, but in no way influenced or interfered with by the Government of the day—and it is sub-

mitted that this element of success must be entirely destroyed by the plan of management suggested by the Minister of Agriculture, and the expense—the plea used—could be but slightly if at all diminished, except, indeed, that the Government should assume the entire control, and dispense with the services of the Council, in which case it would no longer be an Institution of the people, but a creature of the Government.

The members of the Committee are convinced, and this expression of opinion is unanimous, that it is of the utmost importance to the continued success of the Association that it should preserve its autonomy in the future as in the past, independent of and unaffected by whatever shade of politics may mark the existing Government.

So far as the Committee are aware, the change proposed by the Minister of Agriculture has not been asked for by the public. Since the proposition was submitted to the Council, the members have had some opportunity of testing public opinion, and they have not met a single person who approved the scheme.

(Signed) J. BEATTY,
Chairman of Committee.

Toronto, May 13th, 1870.

Dr. BEATTY moved that the clauses in the report be considered *seriatim*.

Mr. WILSON seconded the motion.

Mr. COWAN moved the following amendment:—That this Council have given their careful attention to the communication of the honorable Commissioner of Agriculture, of the date 22nd of February last, offering considerations having for their object the lessening of the working expenses of the Council of the Agricultural and Arts Association, approve generally of these suggestions, and as soon as the room spoken of is fitted up, this Council will give practical efficiency to them, so far as in their opinion consistent with the efficient working of the Association.

Mr. McDONELL said that he would second the amendment, not because he approved of the nature of it, but because it would be necessary to do so before any discussion could take place upon it. While he felt convinced that the Minister of Agriculture was actuated by the purest intentions, and had in view the economical management of the Association in throwing out the suggestion contained in his letter, he (the speaker) could not see what possible advantage could be derived from removing the offices and library to the Parliament Buildings, and he was strongly opposed to any such measure being adopted. He coincided with the report just read, and especially with the latter clause of it.

The amendment was then put to the meeting, who negatived it almost unanimously, its mover being the only one who voted in favour of it.

Dr. Beatty then read the report, clause by clause; and, on the motion of Mr. Wilson, seconded by Mr. White, it was adopted.

COMPLIMENT TO CONSTABLES.

The Secretary was instructed to address letters to Constables Fair and Groves, of London, expressive of the satisfaction of the Council at the skill and acumen they displayed in making the arrest of Scanlan, who committed the ticket frauds.

THE VETERINARY COLLEGE.

The following report of the Principal of the Veterinary College was read:—

To the Council of the Agricultural and Arts Association:

GENTLEMEN,—I have much pleasure in bringing before your notice the following brief Report of the past session of the Ontario Veterinary College.

The Session for 1869-'70, commenced the 20th October, and was attended by fourteen second and third year's students. At the termination of the Christmas term, Messrs. Sutherland, Hope, and McIntosh, passed their final examinations and were awarded the Diploma of the Council. The Board of Examiners consisted of Mr. Clarke, V. S., Royal Artillery, Mr. Hagyard, V. S., Brampton, and Drs. Thorburn, Rowell, and Bovell.

The term for first year's Veterinary students and Agriculture students commenced Jan. 5, when fifteen junior students were admitted, making the number attending the various classes twenty-nine.

The annual examinations took place on the 7th April, at which five candidates presented themselves for their final certificate, and the whole passed a successful examination. Five students also passed a primary examination in anatomy and physiology. The gentlemen who acted as examiners were Mr. Clarke, V. S., Royal Artillery, Mr. Hagyard, Brampton, Mr. Cowan, V. S., Galt, and Drs. Rowell, Bovell, and Thorburn.

I am glad to be able to state that the number of students is yearly increasing, and that the facilities for teaching and other accommodations in connection with the college are materially enhanced by the building recently erected, as well as the accommodation for teaching and dissection. Students have also an opportunity of attending to the practical part of their profession through the advantages offered by the Infirmary attached to the College.

I am, gentlemen,

Your obedient servant,

(Signed,) AND. SMITH.

Professor BUCKLAND said that with respect to the Veterinary College, he thought the Council could do a great deal more for it than had been done hitherto, and that the curriculum might be very considerably extended. He was of opinion they might offer some encouragement in the shape of prizes or bursaries to students; by doing so they would hold out a great inducement to young men to enter upon a course of veterinary study. This was done in England, and the plan answered admirably. As to the extension of the branches of education, in a country like this it was necessary that the veterinary student should possess a knowledge of agriculture, as, with the exception of the large cities, the practice alone would hardly support a veterinary surgeon, and in the majority of cases he combined agriculture with his profession. He would recommend, therefore, that a course of instruction on the composition of plants and the management of soils should be added to the subjects already taught in the College. He hoped the Council would give the matter their consideration.

Dr. Beatty said he agreed with Professor Buckland's remarks, a few prizes offered would be a great stimulus to study. He thought \$200 or \$300 a year expended in this way would be productive of very good results. They might assist the students who were not as well off as the others by paying a portion of their board as a reward for proficiency in their studies. There were plenty of young men in the country who were anxious to study veterinary surgery but were deterred by the expense attending it, and these were the men they ought to en-

courage, he had always found that such a class were always the most willing to learn, and made the most progress in their profession. The plan he suggested was practised in the Normal School with some of the teachers therein, and if it were carried out in conjunction with prizes given to those who passed creditable examinations, the number of students at the College would soon increase largely.

After some remarks from other members of the Board, the subject was referred for consideration at some future time.

BEET-ROOT SUGAR.

Mr. Cowan said it had been his intention to have made some observations upon the culture of beet-root for sugar making purposes, as he believed this country was eminently suited for it; but the time would not admit of his going into the details of the subject at present, and he was awaiting some information from Mr. Oelschlager, of Berlin, who was thoroughly conversant with the matter. He should bring the matter before the next meeting of the Council, as he felt convinced that the climate of Canada was as well adapted for the growth of the beet as that of north Germany, where it was cultivated in large quantities, and he thought it would be worth the while of the Association to spend two or three thousand dollars upon the experiment.

The meeting then adjourned until Wednesday, the 6th July, at 2, p.m.

The Exhibition will be held on the 3rd, 4th, 5th, 6th and 7th of October next. The entries for horses, cattle, sheep, swine and poultry will close on the 3rd September. For grain, field roots, &c., on the 10th September, and for horticultural products, ladies' work, &c., on the 24th. Entries in the class of implements will close on the 3rd of September.

OFFICERS OF THE ASSOCIATION.

The following are the officers for the ensuing year:—

PRESIDENT—Hon. D. Christie, Paris.

VICÉ-PRESIDENT—Hon. James Skead, Falkirk.

TREASURER—George Graham, Brampton.

SECRETARY—Hugh C. Thomson, Toronto.

HONORARY ASSISTANT SECRETARY—Arts and Manufactures Department—William Edwards, Bureau of Agriculture, Toronto.

CONSULTING CHEMIST—Prof. Croft, University College.

VETERINARY SURGEON AND REFEREE—Andrew Smith, Lecturer, Edinburgh Veterinary College.

SEEDSMAN—Jas. Fleming, Toronto.

BANKERS—Bank of British North America.

General Superintendent of the Exhibition—W. A. Cooley, of Ancaster.

Superintendent of the Arts and Manufactures Department—J. E. Pell, late of Toronto.

Superintendent of Grain, Roots, and the Horticultural Department—James Fleming, Toronto.

COMMITTEES—On horses—Messrs. Skead, McDonell, and Shipley. On cattle—Messrs. Christie, Gibbons and White. On sheep and pigs—Messrs. Cowan, Wilson, and Shipley. On implements and poultry—Messrs. Gibbons, Walton, and White. On judges and delegates—Messrs. Christie, Rykert, and Farley. On Arts Department—Messrs. Beatty, Rykert, and Buckland. On horticultural and agricultural products—Messrs. Mills, Buckland, and Rykert. On dairy products—Messrs. Wilson, McDonell, and Skead.

Agricultural and Horticultural Societies in Ontario, 1870, and their Secretaries.

N. B.—Electoral Division Societies are printed in small capitals; the rest are township societies.

ADDINGTON—J B Aylsworth, Newburgh.
 Camden—J B Aylsworth, Newburgh.
 Loughboro'—Wm Boyce, Loughboro'
 Portland—James Cook, Harrowsmith.
 Sheffield—James Aylsworth, Tamworth.
 ALGOMA—C J Bampton, Sault Ste Marie.
 BRANT, NORTH—R L Dickson, Paris.
 Brantford—Henry Imlach, Cainsville.
 Dumfries, South—H Hart, Paris.
 Onondaga—Wm Burrill, Jun., Onondaga.
 Paris Horticultural—Henry Hart, Paris.
 BRANT, SOUTH—Duncan McKay, Brantford.
 Burford—J Bingham, Burford.
 Brantford Horticultural—B F Fitch, Brantford.
 BRUCE, NORTH—James Saunders, Paisley.
 Arran—J N Gardner, Invermay.
 Bruce—Hugh Murray, Underwood.
 Elderslie—M Macnamara, Paisley.
 Saugeen—Archibald Roy, Normanton.
 BRUCE, SOUTH—A St L Macintosh, Walkerton.
 Brant—A St L Macintosh, Walkerton
 Carriek—D McLean, Mildmay.
 Culross—J Fraser, Teeswater.
 Kinloss—Robert L Hunter, Lucknow.
 Greenock—John Cunningham, Greenock
 Huron—Thomas Wilson, Kincardine
 Kincardine—Thos Bradley, M D, Bervie.
 BOTHWELL—Wm Latimer, Selton.
 Euphemia and Dawn—Isaac Unsworth, Florence.
 Howard—John Duck, Morpeth.
 Orford—John Blue, Duart.
 Zone—C W Conover, Bothwell.
 BROCKVILLE—D B Jones, Brockville.
 CARLETON—A S Woodburn, Ottawa.
 March—W G Monck, South March.
 Fitzroy—T G Somerville, Hubbell's Falls.
 Huntley—W Revington, Carp.
 Ottawa (city)—A S Woodburn, Ottawa.
 CARDWELL—John Allen, Mono Mills.
 Adjala—J C Hart, Keemansville.
 Albion—L N Bolton, Albion.
 Caledon—E Kirkwood, Rockside.
 Mono—John Anderson, Orangeville.
 CORNWALL—John S McDougall, Cornwall.
 DUNDAS—Alex G Macdonnell, Morrisburgh.
 Matilda—Adam Harkness, Iroquois.
 Mountain—R Shaver, South Mountain.
 Williamsburgh—W Whittaker, Williamsburgh.
 Winchester—J F Gibbons, Winchester.
 DURHAM EAST—John Foott, Port Hope.
 Cavan—J W Sootheran, Millbrook.
 Hope—R Dickson, Port Hope.
 Manvers—A Ryley, Bethany.
 Port Hope Horticultural—J S Johnston, Port Hope.
 DURHAM WEST—R Windatt, Bowmanville.
 Cartwright—J Parr, Cartwright.
 Clark—J L Tucker, Orono.
 Darlington—R Windatt, Bowmanville.

Bowmanville Horticultural—W R Clinie, Bowmanville.
 ELGIN EAST—H F Ellis, St Thomas.
 Bayham—R L McCally, Vienna.
 Dorchester, South—M Fullerton, Lyons.
 Malahide—R Ward, Aylmer.
 Yarmouth—L S Leonard, St Thomas.
 ELGIN, WEST—J A Philpot, Iona.
 Aldboro'—Richard Coates, Rodney.
 Southwold and Dunwich—J A Philpot, Iona.
 ESSEX—H Botsford, Amherstburgh.
 Colchester—W Grubb, Colchester.
 Gosfield and Mersea—C Palmer, Leamington.
 Maidstone and Sandwich East—T F Kane, Maidstone.
 Malden and Anderson—H Botsford, Amherstburgh.
 Rochester—J A Hogan, Rochester.
 Tilbury West—J F Dadd, Trudell.
 FRONTENAC—J. Simpson, Kingston.
 Pittsburg—R J Milton, Kingston.
 Storrington—J Conklin, Inverary.
 Wolfe Island—H O Hitchcock, Wolfe Island.
 GLENGARRY—T McDonell, Williamstown.
 Charlottenburgh and Lancaster—T McDonell, Williamstown.
 Lochiel and Kenyon—A McDonell, Lochiel.
 GRENVILLE, SOUTH—T. J. Tracey, Prescott.
 Edwardsburgh—J Robertson, Spencerville.
 GREY SOUTH—S C Legate, Durham.
 Artemesia—J H Heard, Flesherton.
 Egremont—D Allan, Holstein.
 Melancthon—H Jarvis, Horning's Mills.
 Osprey—J Gamey, Maxwell.
 Proton—A McPherson, Cedarville.
 HALDIMAND—Jacob Young, York.
 Rainham—J Law, Rainham Centre.
 Seneca, Oneida, and North Cayuga—F N Nelles, York.
 Dun and South Cayuga—T Q Hamilton, Dunville.
 Walpole—R W Hewett, Cheapside.
 HALTON—Wm C Beaty, Omagh.
 Esquesing—J Murray, Esquesing.
 Nassagaweya—S L Lister, Nassagaweya.
 Nelson—R Miller, Nelson.
 Trafalgar—H M Switzer, Palermo.
 HAMILTON—F C Bruce, Hamilton.
 HASTINGS, NORTH—James J Ryan, W Huntingdon.
 Madoc—Charles Gream, Madoc.
 Dungannon and Faraday—Philip Harding, York River.
 HASTINGS, EAST—P R Daly, Belleville.
 Thurlow—E D McCready, Thurlow.
 Tyendinaga—Charles Anderson, Melrose.
 HASTINGS, WEST—D Ketcheson, Belleville.
 HURON, SOUTH—H Love, Sen, Hill's Green.
 Hay—R Brown, Zurich.
 Stanley—J Walker, Varna.
 Stephen—J Greenaway, Exeter.
 Tuckersmith—W McComel, Egmondville.
 Osborne—J Greenaway, Exeter.
 Goderich Horticultural—A McRoss, Goderich.
 HURON, NORTH—S Malcomson, Clinton.
 Morns—W Wilson, Blythe.
 Ashfield and Wawanosh—J Roberts, Dungannon.
 Grey—D Stewart, Ainsleyville.

Howick—W Laurie, Wroxeter.
 Wawanosh East—J H Taylor, Westfield.
 KENT—James Hart, Chatham.
 Chatham—John Lillie, Jr, Wallaceburgh.
 Raleigh—A White, Charing Cross.
 Tilbury East—James Fletcher, Tilbury East.
 Harwich—W R Fellows, Harwich.
 KINGSTON—A J Briggs, Kingston.
 LAMBTON—E Watson, Sarnia.
 Bosanquet—Martin Watson, Wilder Station.
 Emmiskillen—John Hendra, Ossian.
 Moore—H J Miller, Corunna.
 Plympton—James Simpson, Aberarder.
 Brooke—E Bowlby, Napier.
 Sombra—Peter Cattanaeh, Sombra.
 Warwick—George Smith, Warwick.
 LANARK NORTH—Wm Templeman, Almonte.
 Dalhousie—J Donald, McDonald's Corners.
 Lanark—J Stewart, Middleville.
 Pakenham—A Fowler, M D, Pakenham.
 LANARK, SOUTH—Arch. Campbell, Perth.
 Beckwith—Robert Bell, Carleton Place.
 Montague—E Chalmers, Smith's Falls.
 LEEDS AND GRENVILLE, NORTH—Hiram McCrea, Frankville.
 Gower, South—Hiram McCrea, Frankville.
 Kitley and Elmslie—S Chalmers, Smith's Falls.
 Wolford—Isaac Coolridge, Easton's Corners.
 LEEDS, SOUTH—Wm Brough, Gananoque.
 Yonge and Escott—Isaac C Alquire, Farmersville.
 Lansdown—Wm Thomson, Lansdown.
 Crosby, North—R A Preston, Newboro'.
 LENNOX—Charles James, Napanee.
 Fredericksburgh, North—W N Doller, Napanee.
 Fredericksburgh South and Adolphustown—A Neilson, Sandhurst.
 Ernestown—Robert Aylsworth, Odessa.
 Anherst Island—John Hitchins, Emerald.
 Richmond—O D Sweet, Selby.
 LONDON—Wm McBride, London.
 LINCOLN—Jas H Bessie, St Catharines.
 Clinton—J C Kerr, Beausville.
 Grantham—W H Emmett, St Catharines.
 Grimsby—J T Middleton, Grimsby.
 Louth—J Pawling, Port Dalhousie.
 MIDDLESEX NORTH—W K Atkinson, Ailsa Craig.
 Adelaide—A Preston, Adelaide.
 Biddulph—J S Hodgins, Granton.
 Lobo—J Irvine, Lobo.
 McGillivray—R Shoult, McGillivray.
 Williams East—T Shipley, Falkirk.
 Williams, West—J Dawson, Sylvan.
 MIDDLESEX, EAST—H Anderson, London.
 Dorchester North—J B Lane, Dorchester Station.
 London—R Orr, Arva.
 Nissouri, West—W Lee, Thorndale.
 Westminster—Thos Fleming, London.
 MIDDLESEX, WEST—Jas Keefer, Strathroy.
 Caradoc—W E Sawyer, Mount Brydges.
 Ekfrid—A Douglas, Longwood.
 Metcalfe—R Richards, Strathroy.
 Mosa—A Thomson, Wardsville.
 MONK—S T Holmes, Wellandport.

- Caistor—Thos Pearson, Abington.
Gainsboro—S. Kennedy, St. Ann's.
Pelham—C A Dillin, Fenwick.
Wainfleet—J Priestman, Marshville.
Western Branch, Dunville—W Braund, Dunville.
NIAGARA.—Alexander Servos, Niagara.
NORTHUMBERLAND, EAST.—R. P. Hurlburt, Warkworth.
Brighton—Munro Mordon, Brighton.
Cramahe—William Easton, Colborne.
Murray—Henry Fieldhouse, Rosa.
Percy—R P Hurlburt, Warkworth.
Seymour—J Clark, Burnbrae.
NORTHUMBERLAND, WEST—Charles Bourn, Cobourg.
Alnwick—John Thackeray, Roseneath.
Haldimand—Josias Gillard, Grafton.
Hamilton—R Cullis, Cobourg.
Cobourg, Hort.—David Brodie, Colourg.
NORFOLK, NORTH—D W Freeman, Simcoe.
Middleton—I C H Ferran, Courtland.
Townsend—Hiram Slight, Townsend Centre.
Windham—D W Freeman, Simcoe.
NORFOLK, SOUTH—A W Smith, Simcoe.
Charlotteville—J H Montrop, Vittoria.
Walsingham—J D Morgan, Pheasant Hill.
Woodhouse—T M England, Port Dover.
ONTARIO, NORTH—J Christie, Manchester.
Brock—T H Glendinning, Brock.
Mara & Rama—G Boulton, Atherley.
Reach & Scugog—J Christie, Manchester.
Scott—A Turner, Ashworth.
Thorah—N F Patterson, Beaverton.
Uxbridge—A Todd, Goodwood.
ONTARIO, SOUTH—George Robson, Whithy.
Pickering—J Brown, Pickering.
Whitby—John Willis, Whithy.
OXFORD, NORTH—R W Sawtell, Woodstock.
Blandford—J Oliver, Ratho.
Blenheim—William Key, Richwood.
Nissouri, East—J W Robinson, Kintore.
Zorra, East—R Campbell, jr. Strathallan.
Zorra, West—James Minno, Embro.
OXFORD, SOUTH—R T Williams, Culloden.
Derham—R T Williams, Culloden.
Norwich, North—W S Scarff, Norwich.
Norwich, South—A B Moore, Otterville.
North & West Oxford & Ingersoll—W H H Ganc, Ingersoll.
Oxford, East—T H Arnell, Vandicar.
PEEL—D L Scott, Brampton.
Gore of Toronto—J Linton, Humber.
Toronto—J D King, Cooksville.
PERTH, NORTH—Stewart Campbell, Stratford.
Elma—D Falconer, Newry.
Logan—P Coveney, Mitchell.
Mornington—S Whaley, West's Corners.
Wallace & Elma—I C Tilt, Listowel.
PERTH, SOUTH—W N Ford, St. Mary's.
Fullarton—W Davidson, Carlingford.
Hibbert—J McCurdy, Staffa.
PETERBORO, EAST—W E Roxburgh, Norwood.
Asphodel, Belmont & Dummer—W E Roxburgh, Norwood.
Dummer & Douro—W Snellgrove, Warsaw.
Dysart—J Irwin, Haliburton.
Otonabee—M Campbell, Keene.
PETERBORO, WEST—J Carnegie, jr. Peterboro.
Monaghan, South—J Riddell, Centreville.
Smith & North Monaghan—M S Dean, Bridgenorth.
Peterboro Hort.—S Balmer, Peterboro.
PRESCOTT—J Shields, Vankleekhill.
Caledonia—J H Bradley, Fenaghvale.
Longueil & E & W Hawkesbury—S Cass, Vankleekhill.
Plantagenet, North—H Smith, N. Pl. itag't.
Plantagenet, South—A McLean, Riceville.
PRINCE EDWARD—J P Roblin, Picton.
Ameliasburgh—I Diamond, Mountain View.
Hollowell & Hillier—S W Flagler, Wellington.
Sophiasburgh—A Greeley, Demorestville.
Picton Hort.—T Bog, Picton.
RENFREW, NORTH—N W Jackson, Westmeath.
Ross—Robert Allen, Cobden.
RENFREW, SOUTH—R McLaren, Renfrew.
Admaston—A Brown, Admaston.
Grattan & Wilberforce—S G Lynn, Eganville.
McNab—A Hamilton, Balmer's Island.
RUSSELL—Ira Morgan, Osgoode.
Clarence G Edwards, Clarence.
Cumberland—C Hunter, Cumberland.
Gloucester—J Johnston, jr. Ottawa.
Osgoode—James Cowan, Vernon.
Russell—E Esoucks, Russell.
SIMCOE, NORTH—J Thomas, Edgar.
Medonte & Flos—W Harvey, Elmsdale.
Nottawasaga—H M Frame, Glenhuron.
Orillia—G Tudhope, Rugby.
Oro—J Thomas, Edgar.
Tiny & Tay—C Ross, Penetanguishene.
Sumidale—A Hislop, Stayner.
Vespra—George Sneath, Midhurst.
SIMCOE, SOUTH—W M Stevenson, Bradford.
Essa—W Armson, Thornton.
Gwillimbury, West—W M Stevenson, Bradford.
Innisfil—T Maconkey, Lefroy.
Muhmur—J A Love, West Essa.
Tecumseth—S Walker, Penville.
Toronto—G Cumming, Rosemont.
STORMONT—G Shaver, Wales.
Finch—W Johnston, Chrysler.
Osnabruck—G Shaver, Wales.
TORONTO—W Edwards, Toronto.
VICTORIA, NORTH—J McFaggart, Kirkfield.
Bexley, Saxton & Digby—S Corbet, Oakhill.
Eldon—G W Miller, Woodville.
Fenelon—J D Naylor, Fenelon Falls.
Muskoka—J B Browning, Bracebridge.
VICTORIA, SOUTH—W J Thirkell, Lindsay.
Emily—J R McNeill, Omemece.
Mariposa—James Weir, Oakwood.
Ops—E Gregory, Lindsay.
Verulum—W B Read, Bobcaygeon.
Lindsay Hort.—E Gregory, Lindsay.
WATERLOO, NORTH—M Springer, Waterloo.
Wellesley—G Oakley, Crosshill.
Woolwich—J Hall, Winterbourne.
WATERLOO, SOUTH—A Macgregor, Galt.
WELLAND—A Read, Crowland.
Bertie—E A Dickont, Point Albino.
Crowland—J McIntyre, Crowland.
Humberstone—J Thompson, Humberstone.
Stamford—R Garner, Drummondville.
Thorold—R Spencer, Allanburgh.
Willoughby—J McCredie, Chippawa.
WELLINGTON, NORTH—R Mitchell, Arthur.
Amaranth—R T Martin, Whittington.
Arthur—J Isles, Arthur.
Minto—A Meiklejohn, Harriston.
Peel—William Watson, Winfield.
WELLINGTON, CENTRE—J Beattie, Fergus.
Eramosa—William Tolton, Eramosa.
Erin—J W Burt, Coningsby.
Garafraxa, West—J J Dobbin, Garafraxa.
Garafraxa, East—E F Johnstone, Reading.
Nichol—A Goforth, Fergus.
Pilkington—R Cromar, Salem.
WELLINGTON, SOUTH—G Murton, Guelph.
Puslinch—J Grant, Aberfoyle.
Guelph Hort.—G Murton, Guelph.
WENTWORTH, N.—J Weir, jr. W. Flamboro.
Beverley—J Armstrong, Rockton.
Flamboro, East—T Stock, Waterdown.
Flamboro West—C Durant, W. Flamboro.
WENTWORTH, SOUTH—W A Cooley, Ancaster.
Ancaster—F Snider, Ancaster.
Barton & Glanford—C Grey, North Glanford.
Bimbrook & Saltfleet—J Davis, Mount Albion.
YORK, NORTH—E Jackson, Newmarket.
Georgina & N Gwillimbury—Angus Ego, Georgina.
Gwillimbury, East—A Hughes, Sharon.
King—J Wood, Laskay.
Whitchurch—M Jones, Bloomington.
YORK, EAST—J Robinson, Markham.
Markham—J Spright, Markham.
Scarboro—J Crawford, Malvern.
YORK, WEST—B Bull, Yorkville.
Etobicoke—W A Ide, Islington.
Vaughan—T Grahame, Woodbridge.
York—J McCarter, Toronto.

Second Agricultural Society, County of Rimouski, Quebec.

To the Editor.

SIR,—As this Society is so little known, I should be glad of the use of your columns to bring its history and objects before the notice of the public. Its bounds extend from Metis to Cape Chats, the former situated 210, and the latter 270 miles below Quebec. The line of the Intercolonial Railway goes through Metis, about four miles from the St. Lawrence, after which it takes a more inland direction, which increases till it reaches the Bay of Chaleurs.

The following are the objects at which the Society aims:—The advancement of agriculture by the importation of choice animals for the improvement of stock, and the award of prizes for the best fields of grain and roots, and cultivated farms, the best kept stables, the best made manure heaps, &c. Each subscriber receives a copy of the *Canadian Agriculturist* or *La Revue Agricole*, according to his choice, at quarter price. Each winner of a prize is paid the amount due to him in the use of the animals imported for breeding purposes. The whole of the Government grant is devoted to the purchase of thoroughbreds. There is a special fund raised by subscription for the purchase of field seeds, roots, and farming implements, which are

sold at cost price. Half of his subscription is returned to each member in field seeds at cost price.

When the fact is taken into consideration that this Society has been established among a population which, in general, looked on the benefits of an Agricultural Society as consisting only in the subscriber receiving back directly much more than he subscribed, the reader will at once see that the committee had many difficulties to contend against in their efforts to carry out the above-mentioned objects, which are so different from those at which the majority of Agricultural Societies aim. These difficulties, it is pleasing to state, have been overcome, thanks to the liberality of two members of Parliament, the public spirit and energy of some of the committee, and the confidence placed in the committee by certain members of the Society who subscribed simply for the public good.

In consequence of the difficulties just mentioned, the subscriptions for 1868 and 1869 amounted to only \$209 50, making, with the Government grant of \$424 50, a total of \$634. With this four Cotswold rams were purchased in 1868, which cost, inclusive of carriage, \$200. Last spring a pair of Berkshire pigs were purchased, which cost \$65; and last fall, another pair of Berkshires and a young Ayrshire bull were purchased, the cost of which, inclusive of carriage, amounted to \$165.

The Cotswolds and Berkshires were chosen by the Vice-President, Mr. L. N. Blais, on the well-known farm of Mr. Cochrane, of Compton, Quebec, and the bull by the same gentleman, on that of Mr. John Gibb, of the same place. These are all first-class animals, as the mere mention of the sources from which they have been obtained would naturally lead one to suppose.

After paying all necessary expenses, the Society has on hand a balance of \$6 71 in seed and \$5 74 in cash.

To the fund for the purchase of seed and agricultural implements \$138 have been subscribed. With part of this the following articles have been procured according to order: A straw-cutter, a root-cutter, a grain-sower, a cultivator, a turnip-sower, a fanning-mill, and a few bushels of fall wheat and rye for an experiment. The rest has been spent in field seeds, which have been sold at cost price, in proportion to the amount subscribed by each purchaser.

It has been arranged by the Society that each parish within its bounds shall have for breeding purposes as many of the offspring of the Berkshire pigs as are necessary, and that the rest shall be sold by auction among the members, in order to have this excellent kind of pigs distributed as widely and as quickly as possible.

All the income of the present year is to be devoted to the importation of a stallion from France.

The subscriptions for this year promise to be larger than those of former years.

But I must not encroach any further on your space. The jottings given above, I may state, are taken from the report read at the last annual meeting of the society. I think that they cannot fail to be gratifying to every lover of agriculture who may read them, especially when the circumstances in which we are placed are considered. Indeed, some societies of longer standing, and enjoying greater advantages, might do well to follow, in some things, the example of the Second Agricultural Society of Rimouski.

T. F.

The Manse, Metis, Quebec.

Shorthorn Sales in England.

The Shorthorn herd of R. E. Oliver, Esq., Colebrooke Lodge, Northamptonshire, England, was offered at public sale by Mr. John Thornton, April 13th. Of the result, *Bell's Messenger* says that the fifty-six animals sold realized £3,811 10s. Nine lots brought above £100 each. The highest priced cow was Lilage 4th, which went to S. E. Bolden for 450 guineas; Lady Wild Eyes 2nd brought 170 guineas; Lady Wild Eyes 3rd, 140 guineas; and ten Bracelets went from 47 to 130 guineas each, the three highest priced ones going to S. E. Bolden. Those animals were principally of Bates blood.

The celebrated Osberton herd of the late Mr. Foljambe came under Mr. John Thornton's hammer, April 27th, and brought very fair, though not high, prices, considering the goodness of the animals and the fine condition they were in. They were mostly descended from the herds of Earl Spencer and Mr. Mason of Chiltern, with an infusion of Booth blood, the bulls Imperial Windsor, Lord Lyons, Knight of the Garter, and Knight of the Crescent, having been used. Some cows and heifers and the bull Knight of the Bath were retained as a nucleus from which to form another herd, only thirty-five head being sold; twenty-eight cows and heifers averaging £65 18s. 11d. each, and seven bulls £66 15s. each. The highest priced cow was Mrs. Page; she went to R. E. Oliver, for 165 gs. M. H. Cochrane, of Compton, bought a yearling heifer, Goody Two Shoes, for 110 gs., and R. Gibson, Mrs. Ford at 75 guineas.

Diseases of Stock.

The latest issue of the *Mark Lane Express* that we have received contains the following summary of information respecting the progress of the various diseases of stock now prevailing in Great Britain, and on the European continent:

THE CATTLE PLAGUE.---Precautionary measures were still in force to prevent the entrance of the cattle plague into the province of East Prussia or Posen from either Russia or Poland. The frontiers were carefully guarded by troops in addition to the other means adopted by Prus-

sia against the introduction of the disease. Galicia, Buckowina, and Transylvania are not yet free from the plague, but Hungary, it was hoped, had succeeded in again stamping it out. We have also received information from Trebizond and Erzeroum, to the effect that the disease was declining in this part of Asiatic Turkey, but chiefly in consequence of the numerical diminution of the cattle.

THE FOOT AND MOUTH DISEASE.---Accepting in Lombardy, where the malady was still widely spread, the reports from the continent show that a considerable diminution has taken place in the attacks of the foot and mouth disease. Its introduction into Lombardy is said to be due to infected cattle being sent from Switzerland. In Ireland the disease has re-appeared, and the cows in the Dublin dairies are suffering severely from the outbreak. The disease has also made its appearance in the county of Kildare, in the midst of a grazing district. The number of centres of the infection in Great Britain continues to lessen, but there are still fifty-four counties more or less affected. In some places the disease has assumed a malignant form, and several calves and young pigs have died of it.

PLEURO-PNEUMONIA.---A further decline has taken place in the number of centres of pleuro-pneumonia since our last report. The disease has existence in fewer counties, and the number of animals attacked is also less than during the past month. In the London dairies an increase has, however, been observed. Pleuro-pneumonia is likewise reported to have shown itself in some fresh places in Holland and Pomerania. In Ireland the malady is still very rife and fatal.

GLANDERS AND FARCY.---Four or five months ago we called attention to these diseases, and stated that numerous cases were known to be existing among the horses in several large establishments in the metropolis, as well as elsewhere. Since then our apprehension of the spread of these loathsome maladies has been fully realized, and at the present time glanders is more rife than it has been for the past two or three years.

MEASLES IN PIGS.---The parasitic disease of the flesh of pigs, commonly known as "measly pork," is attracting considerable attention in consequence of the large number of cases which have recently been detected by meat inspectors. Many of the foreign pigs which reach Britain from Eastern Europe (known in the trade as Hungarian pigs) have been found to be affected with this parasitic disease. Much of this kind of meat is converted

into sausages, and sold in the poorer parts of the metropolis. Long exposure to a high temperature in cooking will destroy the parasites, but too often this is neglected, and hence we may look for an increase of cases of tapeworms among the inhabitants of such districts.

The *Society of Arts Journal* reports that an international exhibition of agricultural machines will be held at Arnheim, in June, July and August.

NEW YORK STATE FAIR.—The New York State Agricultural Society announce that they will hold the next fair at Utica, on the 27th to the 30th of September, the week previous to our own Provincial Exhibition. Entries close on August 31st.

NEW BRUNSWICK PROVINCIAL EXHIBITION.—The *Colonial Farmer* contains in full the prize list for the Provincial Exhibition, which is to be held in the city of Fredericton on the 4th, 5th, 6th, and 7th of October next. The list is well arranged, the premiums liberal, and offered with good judgment.

The County of Haldimand Agricultural Society held their Spring Show on Wednesday, April 27th. Notwithstanding the bad condition of the roads, the attendance was very fair, and the number and quality of the stock exhibited, consisting chiefly of horses and cattle, was very creditable to the neighbourhood.

AUSTRALIAN WOOL INCREASE.—The quantity of Australian wool imported into the United Kingdom in 1869 was 158,477,960 pounds. In 1859 the corresponding total was 53,700,542 pounds. In ten years the receipts have thus multiplied three-fold. The growth of Australian population and the establishment of Queensland as a fresh and distinct colony produced, of course, this surprising result. The progress indicated did not experience a single check in any one of the ten years.—*Irish Farmer's Gazette.*

The *Galt Reporter* says:—"The promise of fruit in the orchards in this section of the country is this year something remarkable. The orchards generally are one mass of blossom, presenting a glorious appearance in the bright sunlight of the late superb weather. Unless some severe frosts should set in within next week or so, we may safely predict a large crop of every description of fruit."

A ploughing match took place on the 6th May, on the farm of Mr. Gabriel Wells, 3rd concession of King, Co. York. The day being exceedingly fine, the turn out was fair, and all passed off agreeable. The match was purely a local one, and the prizes awarded subscribed by voluntary effort. The successful competitors were as follows:—1st Class—1st prize, Thomas Ross; 2nd prize, Allen McLean; 3rd prize, James Cairns. 2nd Class—1st prize, Richard Ross; 2nd prize, Thomas Ferguson; 3rd prize, William Norman. 3rd Class—1st prize, William Wells; 2nd prize, Thomas Stevens; 3rd prize, Thos. Ferguson. 4th Class—1st prize, James Gillespie; 2nd prize, Archibald Thompson.

SALT IN WARWICK.—Mr. Peter Graham, Reeve of the township of Warwick, showed us recently two samples of salt evaporated, one by boiling and the other in the sun, from brine that had been procured by Mr. Kingston, of the same township, in boring for oil. The brine is said to be as strong as that found at Goderich, and the salt had every indication of a good commercial article. Samples for analysis have been sent to Professor Croft, and it is the intention of Mr. Kingston to prosecute his discovery, and establish salt works in this new locality.

A correspondent of the *Cork Constitution* calls attention to the fact, shown by the consular returns to the foreign office of the continental States, that the produce of wheat per acre in France is under 14 bushels; Prussia, a fraction over 17; Belgium, 21; the other countries averaging 12 to 15; while that of the United Kingdom of Great Britain and Ireland is 28; but taking the high-farmed districts, it reaches an average of 44 to 48, when the holdings are large and capital expended—the latter being treble the average of France, the United States and the rest of Europe, while it is double that of Belgium.

GUELPH CATTLE FAIR.—The May Fair, on Wednesday, May 4th, was much larger than was expected; farmers being so busy at this time, it was thought very few would be present. Still, there were a large number, and also quite a lot of cattle, among which was a fair sprinkling of fat stock, which had been kept over from the April Fair. These went off briskly at good prices, which for this description of cattle ranged from \$4 to \$6.50 per 100 lbs live weight. The demand for fat stock was good, and fair prices were readily obtained. The working oxen were few and poor. Milch cows were in abundance, the prices asked for them being from \$30 to \$45. Quite a lot changed hands.

WHEAT PRODUCING COUNTRIES.—The *Mark Lane Express* says there are only two countries that are likely to rival each other in the cultivation of wheat for exportation. These are the United States in the West, and Southern Russia and the ports of the Baltic in the East. All other wheat growing countries from whence England obtains supplies incapable of increasing their exporting power to any extent; and, in fact, several of them sent less than usual during the last year. But Southern Russia possesses the means of increasing the wheat to an indefinite extent; and the Russian Government, by the establishment of railways, is providing the means of conveying the produce to the sea-board without the delay and liability to injury to which it has hitherto been subject. This change in the domestic policy of the Russian Government is beginning to be felt already, and the supplies of wheat have been pouring into the Russian Baltic ports all through the season; so that notwithstanding the large quantity shipped from thence during the autumn,

there was in April an accumulation of wheat at Odessa larger than at any period during the winter. With regard to the United States, they also, as in Russia, are extending their cultivation of wheat farther and farther into the regions of the west, where fresh ground is broken up annually, the surplus produce being stored at Chicago, Milwaukee, and other of the lake ports, till the demand arises for it, and the wants of Western Europe are likely to advance the price so as to afford the shippers and growers a remunerative price.

AGRICULTURAL AND ARTS ASSOCIATION.—A Committee of the Council of the above Association, consisting of Mr. Thos. Rykert, M. P. P.; Mr. S. White, Mr. R. Gibbons, Rev. R. Burnett and Mr. W. A. Coolley had an interview with the Walks and Gardens Committee of the City Council at the City Hall on Thursday May 19, for the purpose of inspecting the plans of the alterations which would have to be made in the Crystal Palace prior to the ensuing exhibition. Mr. Coolley presented a statement showing that the following preparations would be required, viz:—154 pig pens, 192 cattle pens, 30 bull boxes, 180 horse boxes, 290 sheep pens; implement shed, 200 by 25 feet, poultry house, 176 by 26 ft., enclosed with pickets; horse ring, enlarged, 400 by 250 ft., fenced picket 4 ft. high; 6 cattle rings 60 ft. in diameter; two forage barns, 24 by 36 ft. each. After a short discussion of the matter, the City Architect was instructed to prepare estimates for the work and hand them in by Thursday, May 26. The Committee of the Association then adjourned to their Board room to consider some tenders for work of a minor nature, but no business of public interest was transacted.

CHEESE IN AUSTRALIA.—We learn from the *Queenslander*, published at Brisbane, Australia, that the manufacture of cheese is beginning to attract a good deal of attention in that far-off region. Farmers have come to the conclusion that their cows can be put to better use than simply feeding them for beef, which is of little value. Excellent cheese has been produced the past season, and at least one factory has been established on the American system. It has the capacity to use the milk of five hundred cows. The prices offered for milk at the factory are a minimum of 4d. per gallon in summer, and 4½d. in winter, with a guarantee that the price of milk per gallon shall never fall below two-thirds of the price of cheese per pound. In many parts of the island all that is required to keep cows is to paddock-feed them, and they give an abundance of rich milk. With this advantage, and the great demand for cheese in all the court towns, it would seem that the dairy business ought to be very profitable.

The Provincial Board of Agriculture of Nova Scotia have decided to import \$10,000 worth of pure-bred stock by the 20th of September. It will consist of horses, short-horns, Ayrshires, Devons, Herefords, Alderneys, sheep and swine.

Poultry Yard.

Judging at Poultry Shows.

To the Editor.

SIR,—Allow me once more to say a few words respecting the unenviable office of judging at poultry exhibitions. The selection of judges is a matter of first importance, and should be done from regard to qualifications for the duty rather than any local considerations. They should be selected men, who know their work, and whose uprightness and integrity admit no question. It is a small idea to have a judge from every place to be represented, many cities have not any competent poultry-fanciers to act in such a capacity, and when ignorant people are chosen they become a perfect nuisance to those that do know their duty. Unless the show is very great, three are ample, two sufficient, and even one enough, if you can get a man to assume the responsibility, giving him time to do his work in. Whatever number you name, time is necessary.

For want of this due allowance of time, I do not think any show in Canada has been properly judged. Birds are generally judged as they look; some few have been weighed, and a few game specimens handled; but has each specimen marked for comparison been taken out of the pen, and examined as to what flight feathers are deficient, etc., crooked breasts, crooked backs examined, etc.? I trow not; but it should be, and must in close competition.

With all this laxity, the judgment of the Ontario Poultry judges has apparently given offence, and many exhibitors have never got over their defeat. I have found it a very unenviable office, making one many enemies; but having been always associated with others, I cannot take all the blame or all the praise. We acted honestly and impartially, saving the Agricultural Society many dollars that under the old regime would have been given to any mongrel called by the name of the class it was entered in, and by acting on the standard of excellence, showed some exhibitors that the same birds they had year by year taken prizes with, though often too old to breed from, could no longer carry on the little game of grabbing dollars for ever. Better men have reared better specimens, and beaten these impostors out of the field.

I shall probably not address you again; as although I have been going for some time, I must take flight very soon. I have to thank you for the kind way you have "noted space for many of my contributions and my friends in general for overlooking my failures. If I have made enemies, it was unintentionally done, and I trust my shortcomings may be overbalanced by any good, however small, I may have done for the poultry cause.

F. C. HASSARD.

March 29th, 1870.

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 prepaid. 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 required.

Precautions against Noxious Insects.

Now is the time of year when the gardener and fruit grower should keep their sharpest look-out upon the hosts of insect foes that threaten with destruction their choicest plants and most valued fruits.

THE CURRANT WORMS—both the Saw-fly and Geometer Caterpillars—are now hard at work upon the currant and gooseberry bushes. Go at them at once, is our advice to all who possess any of these bushes, and wherever you observe any partially riddled leaves or naked stems, shower them with a mixture of powdered white hellebore and water. If you live in the country, and have no druggist's shop near you, apply hot water till you can get some of the hellebore. Let the water be off the boil, but yet too hot to bear the hand in; it will cause the worms to let go their hold and drop to the ground, where they may be easily "stamped out" with the foot or the back of a spade. Look at your bushes at least once a week, for the parent Saw-flies are very active just now, and will continue for some time to lay their eggs, which they do on the ribs of the under side of the leaves, generally low down towards the middle of the bush. The leaves on which the young larvae have just hatched out may be detected at once by their appearing full of little holes; these should, of course, be at once gathered and burnt, before the worms grow larger and scatter over the bush. Children can be employed in this way with much advantage.

THE PINE CURETTO is another enemy who is more irrepressible than the Feman O'Neil, and will be found at his work of destruction when perhaps least suspected. If you want to save your fruit, as probably you do, exercise a little of that "eternal vigilance" which is the price of good fruit, and we may add, the motto of the good fruit-grower. Jar your trees (not merely shake them) at least once a day over sheets or newspapers spread beneath—the huge sheet of the WEEKLY GLOBE, but that it is too good to be used for the purpose, will answer very well—and take care to gather up and burn

all the curculios and immature fruit that fall. Should you feel inclined to make a little money at the same time that you save your fruit, procure a wide-mouthed bottle, partly fill it with sawdust moistened with spirits, and instead of burning the curculios you shake down, put them into this bottle. When it is full, send it (carriage prepaid) to Mr. Wm. Saunders, London, Ont., and the Fruit Growers Association will pay you \$20 if you have collected 2,000 specimens of the plum curculio, \$10 for \$1,000, or \$5 for 500. Even at the risk of overpowering our friend with the labour of counting these beetles, we hope all our readers all over the country will try for these prizes. If all try, we shall soon be free from trouble with this curculio. We must not omit to remind our readers that this insect not only attacks the plum, but also the apricot, peach, nectarine, apple, pear, quince and cherry.

CUT-WORMS are now particularly busy during the hours of darkness, cutting down young cabbage and tomato plants, and in fact almost any other young plants that come in their way. Keep a look-out for them, and whenever you see a plant cut off, dig around it with a trowel, and kill all the Cut-worms you find. You will sometimes catch as many as half-a-dozen together, hiding just beneath the surface of the ground.

TENT CATERPILLARS on the apple and other trees should have been destroyed some time ago; if any are left, see to it that they are put an end to at once. Choose a rainy day when they are all at home in their web, take down the "tent" by twisting it about an old broom, and destroy its inmates by burning or cupping in boiling water.

SQUASH-BUGS should be looked after, and given no quarter; boiling water, strong soap-suds, &c., are the remedies.

THE STRIPED BLEBLE of the cucumber, melon, and other plants, is now apt to be very troublesome. The most effectual remedy is to enclose the young vines in boxes open at the bottom, and covered with millinet or tarlatan at the top; of course see that no beetles are shut in when you put on these frames. They may also be got rid of by an application of white hellebore, as employed against the currant worms.

The foregoing are some of the more common and destructive insects that require to be dealt with now, there are numbers of others that might be mentioned did space permit, but we must defer notice of them for the present.

Should any reader wish information about any insect, whether noxious, beneficial, or neutral, we shall be happy to render it to the best of our ability, provided he sends us specimens by which to identify it. As a rule, we cannot undertake to make out the species and character of an insect from the written description of a non-entomologist; a single glance at a specimen is often worth pages of description, and saves much time and trouble to all parties. We shall always be pleased, however, to receive notes or observations upon insects from any quarter.

How to Collect Insects

A correspondent (A. B. B., of Bayfield, Ont) has sent us a short article on collecting and preserving specimens of insects, which is very good as far as it goes, but as he does not appear to be conversant with the most approved methods usually adopted by entomologists, we have thought it preferable to give some brief directions ourselves. As the world of insects is divided into a number of departments, or orders, the members of which differ very much from each other in structure and modes of life, it is impossible to give directions that will apply to all without exception; we shall therefore take up the principal orders in detail.

BUTTERFLIES AND MOTHS (*Lepidoptera*) are generally the first sought after by collectors, on account of their conspicuous size and beauty. The chief implement required for their capture is a *ring net*, by which they may be taken on the wing, and as they hover over or alight upon flowers, leaves, etc. This is usually made of book-muslin or coarse tartan in the form of a bag, narrowed slightly towards the bottom, and with a strong hem of calico to receive the ring; a very useful size is thirty inches deep, with a diameter at the top of fifteen inches. The ring may be made of cane, or thick iron or brass wire, the ends of which fit into a Y-shaped tin or brass ferrule; the two branches of the ferrule should receive the ends of the ring tightly, while the other part—the stem of the Y—is made large enough to fit the end of a walking-stick, or other convenient rod, three or four feet long. Nets can be purchased with a jointed ring for convenience of packing, and with various contrivances for fitting the end of a rod; one made as we have described will be found, however, to answer quite as well as one of more elaborate structure.

When a specimen has been secured in the net, by throwing the bottom over the ring,—the requisite dexterity for performing this achievement is very soon acquired by a little practice—the next question is, what are you to do with him? How are you to secure him without damage, for the scales that cover his wings and body rub off very easily? There are several ways of doing this. If the specimen is a butterfly, seize the net with the left hand so as to prevent his fluttering as much as possible, and then give the thorax, under the wings, a strong continuous pinch with the thumb and fore-finger of the right hand, which will speedily deprive him of life. *Be sure never to take hold of a butterfly or moth by the wings*; if you do, its value as a specimen is ruined, and it had infinitely better have been left to enjoy its little lease of life and happiness undisturbed. Should the specimen be a moth, secure it from fluttering, as much as possible, and touch its head, through the net, with a drop of chloroform, which may be conveyed on the glass stopper of the bottle that contains it; a single drop will instantly put an end to all fluttering, though the crea-

ture will soon revive if let alone. To destroy its life various poisons may be employed—due care being, of course, taken to guard against accidents; we prefer ourselves a further application of chloroform, as being the quickest, clearest, and easiest agent to employ. Some, however, use a solution of oxalic acid, or of cyanide of potassium, (both deadly poisons,) which they introduce into the body of the insect by means of a pointed quill or steel-pen dipped into the solution, and inserted into the side of the thorax beneath the wings. A wide-mouthed bottle with a little cyanide of potassium secured at the bottom by a piece of perforated card, or a few drops of strong ammonia or chloroform on a bit of sponge, will be found a very useful and effective killing apparatus, half an hour's exposure to its deadly fumes will put a painless end to the life of the strongest moth. Butterflies may be killed in the same way, and with less injury than by the pinching process, which is only mentioned on account of its peculiar convenience.

When the specimen has been effectually deprived of life, the next business is to prepare it for the cabinet. First, take an insect pin of suitable size, and thrust it for two-thirds of its length through the middle of the thorax of the specimen; then transfer it to the setting-board, and expand its wings in the manner which we are about to describe. This process should be performed as soon as possible after the death of the specimen, otherwise the wings and legs become so rigid in a few hours that it is impossible to alter their position without a further operation of relaxing. A convenient setting-board is made of smoothly-planed pine, with a longitudinal groove wide enough to receive the body of the insect; different sizes will, of course, be required to suit all descriptions of specimens. The insect is pinned in the groove in such a way that its wings can lie flat upon the surface of the board, they are then drawn out to the required expansion by means of needles inserted in little wooden handles, and kept in their places by narrow strips of glass, or braces of card pinned to the board. Care must be taken to keep the specimens during this process from dust and the attacks of insect enemies. After a few days—more or less according to the condition of the weather, and the size of the specimens—they may be removed from the setting-board to the cabinet, the body having become dry and rigid, and the wings set in the desired manner.

An insect-cabinet is a case of well-fitting shallow drawers, usually furnished with doors in front; it may be of any size, workmanship, or material desired; resinous woods, such as cedar, should, however, be avoided. The drawers should be fitted with movable glass frames, lined with sheet-cork, and neatly papered; their depth should be proportioned to the size of the pins employed. The objects of a cabinet are, to keep the specimens from light, which would soon cause them to lose their colours, and from dust; to exclude insect

depredators, and for convenience of classification and reference. Any kind of boxes however, may be employed, so long as they are tightly made, to exclude dust, and have well-fitted lids to keep out the light. Should any specimen become affected by mites or other minute pests, immerse it in benzine for a moment, being careful always to remember that this liquid is highly inflammable and explosive. When cork is too expensive for lining, or cannot be obtained conveniently, strips of pith of various woods, the stalks of Indian cork, or "inodorous felt," may be employed as tolerable substitutes.

Butterflies may be captured from early spring to late in the autumn—different species at different times—during the hours of sunlight about flowers, on muddy spots, in meadows, etc. Moths are, for the most part, nocturnal in their habits, and must, therefore, be lured to us, as we cannot see to follow them. The process called "sugaring" is very effectual for many families of moths, and may be thus employed: Mix together some coarse brown sugar and beer, adding, if possible, a little rum, and making the whole about the consistence of treacle; daub some of this, about sunset, on the trunks of trees, fence posts, palings, etc., on the margin of woods, in parks or gardens; and after dark visit the sugared places with a bull's-eye lantern. If the night be favourable, moths will continue to come for hours to the sweet repast, and may be easily captured. A warm damp evening is usually the most productive. Light may also be employed to lure "the silly moth," either through the open windows of our dwellings if in the neighbourhood of woods or gardens, or by means of a lantern suspended over a white sheet on the ground. The best means of all, however, for obtaining good specimens of both butterflies and moths is to rear them from the caterpillar state; this involves trouble, care, and attention, but the amount of knowledge of the creature's habits thus acquired well repays the student's labor, to say nothing of the value and excellence of the specimens in the end. Many small moths, we should mention, may be captured by sweeping with the net, grass, clover, etc., and by beating over it the branches of trees and shrubs, flowers, etc.

BEES, WASPS, HORNETS, ICHNEUMONS, ETC., (*Hymenoptera*) may be captured, killed, pinned and set in much the same way as the foregoing; but it should be borne in mind that though they may be touched with the fingers, the hairy species must never be wet with any liquid. It is needless, we suppose, to caution the collector against any rash handling of these fierce, stinging creatures; but we may assure him that with a little care he can almost always avoid being stung. Though we have taken thousands of specimens, we have not ourselves been once stung for many years.

BEETLES (*Coleoptera*) may be captured with a net when flying, by sweeping in the mode already described, by beating foliage and flowers over an inverted umbrella, and espe-

cially by the hand. No one need ever be afraid of taking hold of even the most ferocious looking beetle, for not one of the vast tribe possesses the power of stinging, and few are able to bite hard enough to wound the fingers. They may be found literally everywhere—under stones, bark, logs, on flowers, leaves, grass, and everything else; in fungi, excrements, water, mud; about dead animals and old bones, and even in ants' nests. The simplest and best apparatus for collecting and killing them is a wide-mouthed bottle about two-thirds filled with fine sawdust, moistened with alcohol or spirits of any kind, the purer the better, and with a few fragments of camphor in it. Drop the beetles in this: they will burrow into it, and die in a few minutes. There they can remain for weeks, months, even years, and can be taken out and set at any time. In setting, pass the pin through the right wing-cover, a little before the middle, but never through the thorax. Draw out the legs and antennae to their natural positions; wipe off any adhering sawdust with a camel's hair pencil; let them dry thoroughly, label and replace in the cabinet. Minute specimens should be collected in small vials partially filled with alcohol: in setting they should be gummed to the points of triangular pieces of cardboard, the pins being passed through the bases.

BUGS (Hemiptera) may be collected in the same way as beetles, but in their case the pin should be passed through the middle of the thorax.

DRAGON-FLIES, LACE-WINGED FLIES, ETC., (Neuroptera), may be killed with spirits of chloroform, and set like butterflies.

GRASSHOPPERS, CRICKETS, LOCUSTS, ETC., (Orthoptera), like the preceding.

TWO-WINGED FLIES (Diptera) may be treated as the smaller Hymenoptera; the extreme delicacy and fragility of many species render them difficult objects to preserve.

Should any collector desire further information on any point, we shall be happy to render it to him to the extent of our ability: we have collected many thousands of specimens during the past ten years, and fancy now that we are up to the best "dodges" in catching, killing, and preserving insects. We may mention that the best German insect pins, English sheet-cork, and jointed net-rings are usually kept in stock by the Entomological Society: lists of prices can be obtained by addressing the Secretary (Credit, P. O. Ont.) Wide-mouthed bottles and nests of pill-boxes can be procured at any druggist's

Value of Entomology.

It is well known that elm trees, as well as apple trees, in certain localities in the United States, are sometimes eaten almost bare by that common looping caterpillar called the Canker-worm, and that these worms have been checked and controlled by those who are acquainted with their peculiar habits, by

fastening leaden troughs of oil round the butts of the trees. Like the larvæ of many other moths, this worm buries itself under the ground to change into the pupa state; but unlike the great majority of moths, the perfect male has wings, and the perfect female has no wings at all, and is therefore compelled to crawl up the trunks of trees to deposit her eggs, instead of flying on to the trees, as almost all insects have the power of doing when in the perfect state. Hence the philosophy of the practice above alluded to, which depends for its efficacy on this trait in the natural history of the canker-worm. Not very long ago, the elm trees which ornament the city of Baltimore were attacked by a larva that stripped them bare. Supposing it to be the notorious Canker-worm, the corporate authorities spent a good many hundred dollars in fixing leaden troughs filled with oil, after the most approved fashion, round their trees. They might just as well have built a tight board fence round a cornfield to keep out the crows and blackbirds. The insect that was afflicting their trees was not the Canker-worm, but the larva of a beetle (*Galeruca californiensis*) imported by some chance or other from Europe, where it often strips the elm trees in the same way; and, unfortunately for the city fathers of Baltimore, the female of this beetle has wings, and was not in the least inconvenienced by the oil-troughs. A little time spent in investigating the habits of this beetle would have saved them all their trouble.

A similar instance of just such entomological folly occurred a couple of years ago in southern Illinois. A certain fruit-grower in Union county, for lack of a proper knowledge of the habits of that little pest the Curculio, took it into his head that this insect had no wings and could not fly, and that it could only reach the fruit, in consequence, by climbing up the tree. Hence he very sapiently went to work and fixed a band of wool around every tree in a large orchard, containing about ten thousand. Now, as the Curculio has ample wings, and can fly with the greatest ease, this procedure was of no earthly use in protecting this worthy fruit-grower's peaches. He might just as well have wrapped the wool round his stove-pipe under the delusive idea that he could thereby keep the flies and mosquitoes out of his house.

There is a small timber-boring beetle, called *Lamcydon navale*, or in English the Naval Timber Pest, which is very common in the oak forests of the north of Europe, and occasionally occurs in such numbers in the Swedish and French dockyards as to do a considerable amount of damage. About one hundred years ago the Swedish Government found out that this insect was doing millions of dollars' worth of damage in their dockyards, by boring the timber full of holes, so that if it had been put into a ship, it would have let the water in like a sieve. The

Swedish Government concluded that it would not answer to incur such a heavy annual loss, and they did the very wisest thing that they possibly could have done. They applied to the celebrated Linnaeus, the father of the science of entomology, though to many, perhaps, he is only known as a great botanist. Linnaeus took the matter in hand, and having investigated the habits of the insect, discovered that it came out of the timber in the perfect or winged state in one particular month only (June), when it flew around, paired, laid its eggs on any oak timber to which it had access, and shortly afterwards perished. So he said to the Swedish Government: "Gentlemen, all you have to do is to sink all your oak timber under water during the month of June, so that the female beetle may not be able to deposit her eggs on it, and you will be no more troubled for a great many years to come with *Lamcydon navale*." The Government did so, and the result was just what Linnaeus had predicted. Dr. Harris informs us that not very long afterwards the insect occurred in similar profusion in a French dockyard, and although a naval officer, who was also a good entomologist, suggested the Linnaean remedy to the authorities, they neglected to apply it, having perhaps the common unfaith in science, and thinking with the vulgar that the study of bugs was all a humbug. As might have been expected, they reaped the reward of their ignorance, and suffered an immense amount of valuable timber to be destroyed by this insect, which might just as well have been saved.—*American Entomologist and Botanist*.

Bot-flies.

There are many kinds of bot-flies, constituting the family *Estridae*, all of which pass their larvæ or grub state in the bodies of herbivorous quadrupeds. They are well known to inhabit the horse, the ass, the ox, the sheep and the deer; and they have also been found in the rhinoceros, the rabbit and the badger.

Three kinds of bot-flies infest the horse. One lays its eggs on the lips, another under the throat, and the third on the fore legs. The last is much the most common, and the only one of any practical importance. The female deposits her eggs or nits whilst on the wing, attaching them to the hairs, one by one, by means of a conical tube at the end of her abdomen. So persistent is she that though repeatedly knocked down, if not actually crippled, she will as often return to the task. Her touch is so slight in performing this operation that the horse would not be conscious of her presence if he did not hear the buzzing of her wings. Yet he exhibits great alarm at her approach, probably confounding the bot-fly with the horse-flies (*Tabanidae*) which inflict a sharp wound. The horse licks off these nits—whether by accident or by special instinct it is difficult to tell—and swallows them. They hatch in

the stomach, and produce footless grubs, which attach themselves to the coats of the stomach by means of two little hooks, one on each side of the mouth, and here they adhere, drawing their nutriment from the juices of the stomach, till they arrive at their full growth, when they loosen their hold, and are carried along with the contents of the bowels and finally discharged. They then burrow a few inches into the earth, change to pupae, and in periods varying much according to temperature, emerge in the perfect or winged form. It is possible that those which enter the earth late in the fall may pass the winter in the chrysalid state.

It is a disputed question whether bots injure horses. All horses which run at pasture in the summer undoubtedly have bots in their stomachs. Yet so few suffer any apparent inconvenience from them that it becomes a question whether they are ever injurious. If they are so, it can be only in very rare cases, where they exist in unusual numbers. Mr. Bracy Clark, who was one of the first and most elaborate writers upon these insects, and who had had a large experience as a veterinary surgeon, held the opinion that they are actually useful by assisting digestion. There is no doubt that most, if not all the deaths of horses, attributed to bots, have been produced by colic or some other disease, and as we have seen, the discovery of bots in the stomach after death proves nothing to the contrary. We have heard of more than one case in which it was said that the stomachs of horses which had been supposed to have died from bots, and which had been examined after death, were found full of holes. But the statement rested on no good authority. It is true that the bot-grub is furnished with a pair of teeth or mandibles, but they are very small and straight, and not shaped like the mandibles of gnawing insects. Besides, it is evident that it is not the nature of these insects to subsist by gnawing the stomach, but simply by imbibing its secretions, and perhaps also the fluid contents of the stomach, by which they are surrounded.

If it be thought necessary, the nits can be scraped off with a knife, or washed off by repeated applications of hot soap and water, or they could undoubtedly be destroyed much more expeditiously by wetting with spirits of turpentine or kerosene oil. - *Prairie Farmer*,

How to Destroy Ants.

Mr. C. Turner, of Davenport, states that his lawn is covered with large ant-hills, and wishes to know how to get rid of the pest. If any of our correspondents can inform us of an effectual remedy for them, we shall be very thankful to receive it. At a former residence we were much troubled with ant-hills on our lawn, and never succeeded in subduing them, though we tried many methods. Since that time we have met with the following modes, recommended in the columns of our exchanges

as being thoroughly effectual; they are worthy of a trial, though we cannot vouch for their value, as we have not had an opportunity of putting them to the test.

1. Pour, copiously, hot water—as near the boiling point as possible—down their burrows and over their hills; and repeat the operation several times.

2. Entrap the ants by means of narrow sheets of stiff paper or strips of board, covered with some sweet, sticky substance; the ants are attracted by the sweets, and sticking fast, can be destroyed as often as a sufficient number are entrapped.

3. Lay fresh bones around their haunts; they will leave everything else to attack these, and when thus accumulated can be easily destroyed by dipping in hot water.

4. Pour two or three table-spoonfuls of coal-oil into their holes, and they will abandon the nests.

5. Bury a few sliced onions in their nests, and they will abandon them.

Gall on Wild Raspberry.

We have received from J. McL. a specimen of a gall found on a wild raspberry. It is a dark reddish-brown excrescence, taken apparently from the end of a twig, of a corky consistency, and filled with a number of little cells. It is a deformation caused by the punctures of a minute black-bodied four-winged fly, belonging, most probably, to the genus *Diastraphus*. We shall send the specimen to Mr. Bassett, of Waterbury, Conn., who makes a special study of these curious and interesting productions, and hope to receive some further account of its inhabitants from him. We shall always be thankful to receive from our readers specimens of any kind of galls or excrescences found on trees or plants; they occur on all sorts of plants, and vary wonderfully in size, shape, and colour, as well as in inhabitants.

To Destroy the Currant Worm.

James M. Wardner writes to the Essex Co. *Republican* that he saves his currant bushes in the following manner, which we can heartily recommend:—

“Keep close watch of the bushes after they are fully leaved out, examining very closely the lower leaves on the new shoots, and as soon as you see one that is perforated with small holes, pick it and drop it into an old pail, and so go over all the bushes carefully every other day, as long as the worms continue to hatch, which will be about two or three weeks, and burning the leaves plucked. Be sure and pick each time going over the bush every leaf gnawed by the worms. I have about seventy-five as fine bushes as you often see, while most of the currant bushes in this vicinity are entirely destroyed. I have had to be vigilant and persevering, but I have conquered so far, which is some satisfaction, as well as the pleasure of having all the nice currants I want to use.”

Apiary.

Bees—Their Nature and Habits.

WORKERS.

The workers may be considered the “bone and sinew” of the hive, as they do all the labour—providing for the wants of the brood, building comb, storing honey and bee-bread, guarding the hive, and labouring for the general interest of the whole colony.

As has been already stated, they are produced from impregnated eggs laid by the queen in the small or worker cells. They are developed from the egg to a perfect bee in about twenty days. If an Italian queen is introduced into a colony of black bees, by examining the combs about twenty days after, young Italians may be seen issuing from the cells, but only here and there one. They do not, however, often go out of the hive until several days later. It is also better to wait until the twenty-fourth or twenty-fifth day before examining the combs, when larger numbers will be issuing from the cells, and they can be more readily discovered, and the purity of the queen be determined. If the queen be a pure Italian, all the young bees will be marked with yellow bands; but if she be impure or hybrid, some of the young bees will not show the yellow bands, but be entirely black, like the native bee.

Workers do not, as a rule, go to the field immediately after issuing from the cell, but remain in the hive for several days. It has been stated by some apiarians that the workers are divided into companies or detachments for special purposes; some attending to the gathering of honey, while others nurse the brood, and others again build comb; but I am not satisfied that such is altogether the case, inclining rather to the belief that one and all attend to whatever is to be done. It is true, however, that all do not produce wax at the same time, but I have no evidence that any or all may not produce it when necessary. Wax is secreted by the workers in a manner somewhat similar to that in which tallow is secreted by the ox, and exudes from between the rings of the abdomen in small scales. Almost any time when the bees are building comb rapidly, numbers of the workers may be seen with the scales of wax projecting from between the rings of the abdomen. This is sometimes removed by the bee that produces it, and sometimes by other bees that are building the comb; the workers producing the wax also assist in building the comb. The scales of wax are taken in the mouth, cut up, and moulded into cells. Often large numbers of these scales are dropped by the bees, and may be found on the bottom board of the hive. Small fragments of old comb are also used in building comb. Often combs the size of a man's hand are entirely constructed from old combs.

J. H. THOMAS.

German Bee Convention—Italians.

At a large gathering of bee-keepers held at Nuremberg, on the 14th of September last, the chief topic of discussion was the effect of crossing with the Italian bee. Mr Vogel opened the discussion, detailing his experiments in crossing the Black and the Egyptian bees with the Italian. He was followed by Mr. Kaden, formerly Commissioner of Police at Mayence, who commenced by stating that having heard nothing but praise of the Italian bee, and feeling convinced that nothing in this world was absolutely perfect, he determined to watch for their shortcomings; but at the same time he is a great admirer of this bee, and since the year 1859, when he received his first Italian queen from Dzierzon, up to this time, he has had them sent from no less than seventy different sources.

Mr. Kaden has convinced himself that Italian bees have three principal faults, or weak points. The first he noticed was the frequent change of queens. In one hive, without swarming, this change was observed three times in one summer.

The second fault was, that in every kind of swarm, even in artificial ones with young queens, drone comb is constantly built in the first season, which does not occur with the black bee; and further, the Italians sometimes commence at once with drone brood.

A third disadvantage is, that Italian stocks are generally weaker in spring than others, this has been also noticed by many leading apiarians. One might then be asked, "Why do you keep on sending for Italian queens if you find such faults in them?" And Mr. Kaden replies: (1), For their beauty and gentle disposition; (2), In order to raise a mixed offspring, which he considers of very great value. He then read passages out of letters from two distinguished apiarians, the first declaring absolutely that it was a fatal mistake to try to keep to pure Italians, and the second stating that he had almost made up his mind to discontinue his labours in this direction. He then concluded with an anecdote regarding the purchase of an Italian stock, which showed that as a matter of business the selling of Italians might be very profitable, even if they have no further advantage.

Mr. Dzierzon, who was received with a storm of applause, next addressed the meeting. Whilst he was quite willing to allow that the Italian bee has its defects, like everything else under the sun, he still thought it the best bee we have. He did not think that the rapid change of queens was a rule, except so far as the Italian queens are certainly shorter-lived than their black sisters, but then they are much more fruitful. In a short life they produce as numerous an offspring as the others in a long one. With respect to the alleged weakness of Italian stocks in the spring, which would unfit them for localities with early honey harvests, Mr. Dzierzon thinks that this is connected with one of

their chief advantages; for it arises from the fact that they cease breeding earlier than the black bee, and thus, aided by their extraordinary diligence, they often furnish plentiful supplies of honey in only moderately good years. This excessive diligence has, of course, its shady side in the fact that an Italian hive often becomes dangerously weakened by the continual self-sacrifice of its demizens in bad weather; but if they only reach the beginning of the fine season, their extraordinary fruitfulness soon makes up for the loss. The next disadvantage is the tendency to breed drones; now Mr. Dzierzon himself has found the reverse to be the truth with perfectly pure Italians, and has at times been obliged to insert drone combs into Italian stocks, when for purposes of propagation he wished to be sure of a plentiful supply of drones, the Italian bees of themselves not furnishing a sufficient quantity. Mr. Dzierzon must, therefore, maintain that the Italian bee is the best of all known varieties, and in itself already the sought-for breed.

NOTE.—Though I believe there is considerable truth in Mr. Kaden's remarks, yet it is saying much for the Italians when so eminent an apiarian as Mr. Dzierzon allows them to be the best of all known varieties.—*J. H. T.*

Bees dislike any quick movements about their hives; more especially any motion which jars their combs.

Artificial colonies should not be made except when forage is plentiful and bees gather honey freely, unless the owner is prepared to feed them liberally.

Bees are always more irascible when their hives are disturbed after it is dark; and as they cannot see where to fly, they will alight on the person of the bee-keeper, who will be almost sure to be stung.—*Langstroth.*

Bees are endowed with an instinct that teaches them to avoid certain plants that might be dangerous to them. Thus, they neither frequent the Oleander (*Nerium oleander*), nor the Crown Imperial (*Fritillaria imperialis*), and they also avoid the *Ranunculus*, on account of some noxious property; and although the *Melanthus major* drops with honey, it is not sought.—*Schueckard.*

The use of woollen gloves when operating among bees is objectionable, as everything rough or hairy has an extremely irritating influence on bees.

BEE STINGS.—A correspondent of the *Bee Journal* gives a curious list of no less than thirty-one "remedies" for bee stings, from the most absurd of which we select the following homœopathic prescription: "Catch as speedily as possible another bee, and make it sting on the same spot." Here is another, very explicit and highly rational: "Select three species of plants, either trees, shrubs, or herbs; take one leaf from each, and bind them on the wound." No wonder empirics flourish, if there are fools enough in the world to put faith in such rubbish.

Household.

A Washing Fluid.

A receipt in all respects like the following from the *Country Gentleman* was given some time since in the *CANADA FARMER*. For the benefit of readers who may not have seen the previous receipt we give it again. It is said to have proved very successful in extracting the dirt from cotton and linen, and the proportions are such that they cannot injure the clothes:—

- 5 lbs. of sal soda.
- 1 lb. of borax.
- $\frac{1}{2}$ lb. fresh unslaked lime.
- 4 oz. salts of tartar.
- 3 oz. liquid ammonia.

Dissolve the soda and borax in one gallon of boiling water; when well mixed pour in the liquid ammonia and salts of tartar. Boil the half-pound of lime for five minutes in one gallon of water; set it aside to settle, and when clear pour it off carefully, not allowing any sediment to mingle with it. Pour the two gallons of solution together, and turn upon them eight gallons of cold water. Put into a cask or jugs.

The night before washing, take six table-spoons to a tub filled with clothes, mixing it with four pails of warm water. Soak them over night, next morning add hot water enough to wash the clothes with good soap-suds. Boil the clothes. Wash out another tub full of clothes in the same water used for the first boiler.

One trial of this fluid will show its good effects.

An excellent soft soap can be manufactured from this compound. Take one quart of the fluid, slice into it three pounds of yellow bar soap, and add to it two pounds of sal-soda. Boil it in three gallons of water for ten minutes, and it will make four gallons of soft soap, which will prove unequalled for all purposes wherein soap is needed.

In using these receipts for washing, the clothes do not need to boil more than half an hour, and in many cases persons prefer to pour boiling water upon them, and let them stand until it is cool enough to wring out. By thus doing, it is thought, the clothes are whiter.

These receipts have been sold through the country at high prices, and a good deal of money has been made from their manufacture.

MENDING BROKEN CHINA.—Diamond cement for glass and china is made in the following manner:—Take isinglass 1 ounce; distilled water 6 ounces; alcohol $1\frac{1}{2}$ ounces; warm in a water bath till dissolved, and strain the solution. Add to the clear solution, while hot, a milky emulsion of gum ammoniac $\frac{1}{2}$ ounce, alcoholic solution of gum mastic 5 drachms. This possesses great adhesive qualities.—*Scientific American.*

Incidents and Habits of Rat Life.

FOR THE YOUNG FOLKS.

We had been much troubled with rats in the house, and had succeeded in catching two that were nearly full grown. The children, in merriment and fun, about six o'clock in the evening, had dressed the rats in paper ornaments, with frills around their anoles and wrists, and placed them in a dish, intending to have them both served up, in mirth, for supper, to entertain particularly an old friend who rather objected to such fare in any form, alive or dead, rats being his especial horror.

The dish, which had also been decorated very prettily, was, with its contents, put away in the pantry, which was cellar and pantry combined. At nine o'clock there was some quiet creeping on the part of the little ones to secretly get their plate of rats, when, behold, nothing but the skin and feet of one, and the head and skin of the other, occupied their place. The paper ornaments, however, round the feet were but little disturbed, nor were the remains removed from the dish. It seems that their friends and acquaintances had, with cannibal voracity, and in a very short time, eaten up their brethren, notwithstanding their being dressed and ornamented as they were, and that too without removing them from the dish on which they were lying. Nothing else larger than a rat could have done it; no cats were about or kept in the house, and there was no outlet for others to come in. The pantry was a general rendezvous all the evening for the rest of the rat fraternity. They were there in numbers. The word had evidently been passed that a feast was prepared, and all came to participate who were in the neighbourhood. To test the fact we left the remaining portions for half an hour longer, and in returning to see the result, found all was gone. It is quite unusual for rats to be so bold, especially where there was plenty else to eat, and we had not suffered by their voracity previously, and I can only account for the fact in this instance, from the cannibal propensities of the vermin. If they would carry this practice to the extent of eating each other until only one remained, we should be most pleased to introduce the survivor to the tender mercies of the cat, if we especially obtained a tabby for the purpose. C.

There are three very essential things to remember about butter making; in the first place you must have a good cow, in the second you must have a good milkman or maid, and in the third, you must feed the cow well. Any one of these items being wanting, hinders success.

HOW TO CLEAN MARBLE.—It may be of some value to housekeepers who have marble top furniture, to know that the common solution of gum arabic is an excellent absorbent, and will remove dirt, etc., from marble. Brush the dust off the piece to be cleaned, then apply with a brush a good coat of gum arabic, about the consistency of thick office mucilage;

expose it to the sun or dry wind, or both. In a short time it will crack and peel off. If all the gum should not peel off, wash it with clean water and a clean cloth. Of course if the first application does not have the desired effect, it should be applied again. 2. Make a paste of soft soap and whiting. Wash the marble first with it, and then leave a coat of the paste upon it for three or four days. Afterward wash off with warm (not hot) water and soap.—*Scientific American*.

Poetry.

Step by Step.

BY DR. J. G. HOLLAND.

Heaven is not reached by a single bound,
But we build the ladder by which we rise
From the lowly earth to the vaulted skies,
And we mount to its summit round by round

I count these things to be grandly true
That a noble deed is a step towards God—
Lifting the soul from the common sod
To a purer air and a broader view.

We rise by the things that are under our feet,
By what we have mastered in greed and gain,
By the pride deposed and the passion slain,
And the vanquished ill we hourly meet

Only in dreams is the ladder thrown
From the weary earth to the sapphire wall;
But the dreams depart and the visions fall,
And the sleeper wakes on his pillow of stone.

Heaven is not reached at a single bound;
But we build the ladder by which we rise
From the lowly earth to the vaulted skies,
And we mount to its summit round by round.

The Loved Not Lost.

BY JOHN G. WHITTIER.

How strange it seems, with so much gone
Of life and love, to still live on!
Ah, brother, only I and thou
Are left of all that circle now—
The dear home faces whereupon
The fitful firelight gleamed and shone.
Henceforward, listen as we will,
The voices of that hearth are still.
Look where we may the wide world o'er,
Those lighted faces shine no more.

We tread the path their feet have worn.
We sit beneath their orchard trees;
We hear them like the hum of bees,
And rustle of the bladed corn.
We read the pages that they read;
Their written words we linger o'er.
But in the sun they cast no shade,
No voice is heard, no sign is made,
No step is on the conscious floor.
Yet love will dream, and faith will trust,
Since He who knows our need is just—
That somehow, somewhere, meet we must.
Alas, for him who never sees
The stars shine through his cypress trees!
Who, hopeless, lays his dead away,
Nor looks to see the breaking day
Across the mournful marble play
Who hath not learned in hours of faith
The truth to flesh and sense unknown,
That Life is ever Lord of Death,
And Love can never lose its own.

Miscellaneous.

Mad Animals.

At a recent sitting of the Academy of Sciences in Paris, M Bouley, one of its members, read a paper on the number of deaths caused by the bites of mad animals. According to M. Bouley, who admitted, however, that the statistics from the different departments were not so complete as might be wished, there were, from 1863 to 1868 inclusive, 320 persons bitten in France; of these 320, 129 died, i. e. there was a mortality of 40 per cent. Of the 320 persons bitten 38 per cent. escaped without any further effects. The remaining 22 per cent. failed to report the consequences of their being bitten; probably they also escaped unharmed. Much fewer women than men were bitten, a fact which M. Bouley does not hesitate to ascribe to their petticoats and crinoline. Of the bites by animals afflicted with rabies, 284 were caused by dogs, and only 26 by bitches; 5 by cats, and 5 by wolves. M. Bouley's report shows that, as it has long been asserted by men of science, the idea that canine madness is more prevalent in summer than in winter is a mere vulgar error. In the spring of the different years over which his researches had extended, there were 89 cases reported; in the summer, 74; in the autumn, 64; and in the winter, 74 cases. The period of incubation was generally about two months; after that time has elapsed any one who had been bitten has strong ground to consider himself out of danger. When madness supervenes it is generally fatal on the third day. Bites in the face would seem to be the most dangerous; out of 32 persons bitten in the face 29 died, 3 only escaping. As to the remedies to be adopted, M. Bouley did not hesitate to affirm that the hot iron was the only one on which any reliance could be placed. Out of 134 wounds which were cauterized, there were only 42 fatal cases; while of 66 wounded persons who neglected cauterization, no less than 56 died, only ten escaping. Other remedies should only be used when the hot iron cannot be immediately applied, but they should only be regarded as a makeshift. Marshal Vaillant made some interesting remarks with regard to the use of the muzzle, and related the following anecdote: "At Dijon," said Marshal Vaillant, "the Mayor, M. Vernier, who is now a member of the Conseil d'Etat, was so persuaded that the muzzle only predisposed dogs to madness, that he forbade its use. No cases of madness appeared when the use of the muzzle was not enforced. His successor had the rule as to the wearing of muzzles re-enforced, and cases of madness were immediately reported. In Constantinople (continued the Marshal) the muzzle is never used, and they do not know what madness among dogs is. In Prussia, the less the muzzle is used the less madness is there." Baron Larrey agreed with his colleague in denouncing the use of the muzzle. M. Bouley promised to give some more information shortly on this subject.—*Pall Mall Gazette*.

Clippings from a Farmer's Account-book in 1750.

The following extracts from a manuscript book of farm accounts, kept by a Mr. Robert Elliot, of Liddlesdale, about the middle of the last century, will give some idea of the rate of wages and farm produce in those days, as well as of the mode of doing business, which will strike many a "smart" and "cute" farmer of the present generation as somewhat simple as well as honest—rather "clever," as an American would say, meaning just the reverse of what an Englishman would understand by the term:—

1750—Hyred Jean Hyslop from Whitsunday to Martinmas, for a stone of wool, a pair of shoes, and 14s.

June 23—Sold to Dick Watson my wool. He is to give 5s. 6d. the stone, and to have five guineas again; and if the market prove well he is to give 6s. the stone, and seek nothing again.

December 1—I agreed with John Little to let his meare run at Erntage for 10 shillings, till Whitsunday, and I am to buy her if he do not need her, or he will give me a gift of her, if I wad accept of her.

July 1—Bought from James Laidlaw, in Pickertown, an ox stirk of the good wife's at the mill, for £1 13s.

1751—Hyred Jean Hislop to keep the barn between Martinmas and Whitsunday, for a pair of shoes and 12 shillings. Hyred Will Nickle to caw the pleugh from Martinmas till Whitsunday, for a pair of shoes. 2s. that he put in my will, and I offered him one of them, if he was a good servant; the wage 13s.

1752. Jullce 20—Bargained with Robert Kerr for my wool. The bargain is—I asked 4s. 6d. the stone, and he had 4s. the stone, and is to give as much more as the market can afford.

How to Paint Brick Buildings

The moisture of our winter atmosphere, with the changes of temperature, are continual causes of the disintegration of exterior brick surfaces. The water which during a thaw or winter rainstorm finds its way to all the exposed interstices of a wall, and the freezing temperature which so quickly succeeds, destroy the cohesion of the particles. The great desideratum in this connection is some material which, being applied at not too great a cost, shall render the exposed portion of the surface entirely waterproof.

Up to this time oil painting is the only process which has been in any degree successful, and this brings us back to the important question, "How to paint exposed brick surfaces?" Pure white lead is of all known pigments the most expensive and least durable for this purpose. It soon disintegrates under the influence of sunshine and storm, and loses whatever waterproof character it may have possessed when first applied, there-

fore it should not be used on brickwork, except when a white surface is absolutely required.

It must be borne in mind that paints are durable mainly because of the waterproof quality of the oil in which they are used. The natural pigments, called ochres or earth paints, do not in any degree act upon the oil, while others, as white lead and the chromates of lead, do affect the oil chemically, and impair in a measure its tenacity or waterproof quality. When work is painted simply to preserve it from the action of the weather colour and appearance are frequently unimportant considerations, and whichever material will most economically realize the desired result is most desirable. The deposits of ochre were deposited in ages long past, and it is reasonable to suppose that if these materials had been liable to change, the change would have taken place during the ages that they remained unappropriated to the use of man, but experience teaches that they are not subject to those changes which belong to most of the artificial products used in painting.

These premises being admitted, it follows that the natural pigments are not only the most economical but the most durable for painting brick houses. It is an important question how and where the proper materials can be obtained with a fair prospect of tolerable if not absolute purity. As a rule, the respectable, established master painters of the cities use the very best materials, but outside the cities the services of city skilled workmen are not readily obtainable, and the owner must avail himself of such labour as he can command. It is not safe to purchase a package of paint which does not carry with it the name of some respectable manufacturer as a guarantee of its quality.

The writer's experience demonstrates the fact that the most durable paint for brick painting is a mixture of finely ground French yellow ochre mixed with an equal quantity, by weight, of American white zinc. The colour is a soft shade of buff, most pleasant to the eye, and permanent to the last degree both in colour and material. Venetian red, an artificial ochre, or red oxide of iron, is in common use, but it does not hold oil like the yellow ochre, and makes a coating far less waterproof. It is a seemingly durable paint, because the stain which it imparts to a porous surface remains long after the oil has been washed away. It cannot be used with white zinc, because of the unsuitable pink tint which it produces, and because this pigment (Venetian red) when tinted with white, becomes highly fugitive in colour.

The condition of the wall is also very important in painting brick surfaces. The work should be done in dry warm weather, when the moisture which bricks absorb during the winter and spring seasons has dried out, otherwise the paint will not be apt to adhere tenaciously, but will scale or peel off. The joints in the stone coping on brick walls re-

quire constant looking after. These should be made absolutely impervious to water by the application of a mass of soft paint skins both on the top and edges, and when this hardens to the point of cracking, it should be removed and renewed. Mortar and cement for such purposes are altogether useless. The joint, too, between the wall and the coping underneath should be well filled with paint skins before painting, for no matter how waterproof the surface may be, if the water be allowed to percolate through the joints in the coping, the integrity of the wall will be destroyed.—*Manufacturer and Builder.*

Charring Timber to Promote Durability.

As charcoal will endure for ages in places where timber would decay speedily, the practice of charring the surface of fence posts and other timber has been repeatedly recommended in books and ephemeral publications, as eminently worthy of universal adoption.

The theory on which such a recommendation is based would seem to warrant a confident expectation of satisfactory results in practice, but repeated experiments with charred timber have furnished conclusive assurance that this process will not promote its durability. Indeed, numerous experiments have shown that charring promotes premature decay. Two posts split from the same log may be set side by side in the ground, the surface of one being charred and that of the other not, and it will be seen that the charred post will perish before the other.

The same is true of railroad ties, and all such timber as may be exposed to the alternating influences of wet and heat. Could the entire timber be changed from its perishable condition to one solid piece of charcoal, the durability would be promoted to a surprising length of time, but the strength of the material would be destroyed. When fence posts or other sticks of timber are exposed to the rapid action of wet and heat, the surface will decay first. One might suppose, therefore, that when timber is enveloped by a layer of charcoal, the durability of the entire piece would be greatly promoted. And such would be the case, were it not for the fact that the charcoal is not impervious to water, and as water reaches the timber beneath the charred surface, decay will commence soon after the grain of the wood has been exposed to the influences of the weather.

When the change has once begun beneath the charred surface the durable covering of coal will be of no service whatever in preserving any portion of the wood. Taking this practical view of the subject, it will be perceived that if only half an inch of the outside of a post be charred the post will not endure so long as if the same thickness of wood has been left uncharred, to waste away by slow decay.—*Manufacturer and Builder.*

GLUE.—A solution of shellac in alcohol has been used and highly extolled as a substitute for common glue. It forms a tolerable liquid cement, but is far inferior to glue. Any of the common recipes will afford a liquid glue which will answer well enough for purposes where no great strength is required: but we know of no cement which is more convenient than common glue, and yet which will unite wood with anything like the efficiency of that article.

BAG HOLDER.—A very convenient arrangement for holding bags while filling them may be easily made as follows:—Take a piece of plank about twenty inches long and a foot wide, bevel off the sides a little, and nail strips of thin boards, that will spring, six or eight inches wide, to it for uprights. The plank base should be bevelling enough to make the uprights about fifteen inches apart at the upper ends. The bag is placed between these, and the upper end folded over the ends of the shoulders two or three inches. It will be held firm, and in a convenient position for filling. The uprights should be just long enough so that the bag will rest upon the plank when being filled.

AN OLD FARMER'S EXPERIENCE.—That the success of farming is in experience.

That to ask a man's advice is not stooping, but often of much benefit.

That to keep a place for everything, and everything in its place, saves many a step, and is pretty sure to lead to good tools and to keep them in order.

That kindness to stock, like good shelter, is a saving of fodder.

That to fight weeds is to favour grain, and to do justice to your neighbors.

That in making home agreeable, you keep your boys out of the city.

That it is a good thing to grow into farming—not jump into it.

That it is a good thing to keep an eye out on experiments, and note all, good and bad.

That it is a good rule to sell your grain when it is ready.

PREVENTION OF RUST.—Captain Ross, of the Artillery, has recently taken out a patent for a composition which, applied to the clean surface of iron or other metals, chemically combines with it to form, in the case of iron, a coating of iron itself, but changed in character, and said not to rust or oxidize, even if steeped in water for a week. This discovery has been officially submitted by the inventor to the British Commander-in-Chief, and the Deputy Adjutant General Royal Artillery himself experimented on some delicate steel articles, which had been treated with the composition, by putting them in the rain and keeping them out on the wet grass all night, which ordeal they sustained without a speck of rust. The composition is so delicate that it can be applied even to the finest needles and small clock-work wheels. We are informed that watch springs are not affected by it, and will never rust after its application; nor does it alter, but, if anything, improves the temper of knife or sword-blades. It turns the surface of steel implements to a whitish grey colour; is capable, perhaps, of receiving as high a polish as steel itself.

KEEPING TIRES ON WAGGONS.—A mechanic gives the following method of so putting tire on waggons that they will not get loose and require re-setting:—"I ironed a waggon some years ago for my own use. Before putting on the tires, I filled the fellos with linseed oil, and the tires have worn out, and were never loose. My method is as follows: I use a long cast-iron heater, made for the purpose. The oil is brought to a boiling heat, the wheel is placed on a stick, so as to hang in the oil, each felloe an hour. The timber should be dry, as green timber will not take the oil. Care should be taken that the oil is not made hotter than a boiling heat, or the timber will be burned. Timber filled with oil is not susceptible to injury by water, and is rendered much more durable by this process."

Wood casks are now rendered almost as impervious as glass, by Mr. Scally's process of steeping the staves, before the cask is put together, in hot paraffin wax. This material permeates the pores of the wood, and renders it proof against the action of spirit, water, or acids. For preserving vinegar in casks this invention is most valuable.

If we were only half as lenient to the living as we are to the dead, how much happiness might we render them, and how much vain and bitter remorse might we be spared when the grave, the "all atoning grave," has closed over them?

A ROLAND FOR AN OLIVER!—"My dear Polly, I am surprised at your taste in wearing another woman's hair on your head," said Smith to his wife. "My dear Joe, I am equally astonished that you persist in wearing another sheep's wool on your back!"

These are good words of John Ruskin:—"It is only by labour that thought can be made healthy, and only by thought that labour can be made happy."

Advertisements.

ST. CATHARINES NURSERIES. NOTICE.

NO travelling agents are sent out from these Nurseries. The following dealers have engaged to purchase all their stock of trees and plants for the fall of 1870 and spring of 1871 at these nurseries, the same to be of first quality only. Parties ordering trees, &c. of any of the under mentioned dealers will correspond with the parties from whom they order. Their names and address are as follows, namely:

- C. P. WALDOCK, Westminster, London P. O.
- ROBERT GORDON, Goderich P. O.
- JAMES STEWART, Goderich P. O.

v2-6-21

D. W. BEADLE.

Why Does Everyone go to White's to buy Sewing Machines?

BECAUSE they can get the best Machine in the Dominion, warranted for five years, and W. A. WHITE & CO take American Silver at Par. Call and see them at

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VINEGAR. HOW MADE FROM CIDER, WINE, Molasses or Sorghum in 10 hours, without using drugs. For circulars, address F I SAGE, Vinegar Maker, Cromwell, Conn. v2-1-61.

THE FIFTY DOLLAR PRIZE BUTTER ESSAY

Prize given by the Proprietors of the Blanchard Churn, and awarded by the Editors of the AMERICAN AGRICULTURIST. Will be sent free on receipt of 3 cent stamp. Every intelligent farmer in the country should have it. Address PORTER BLANCHARD'S SONS, Concord, N. H. v2-6-11

BEDFORD, MARCH, 1870.

BUSINESS AGENCY. FARM, ESTATE, OR GARDEN.

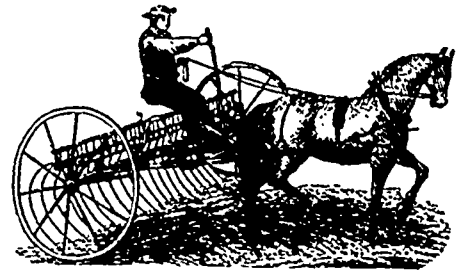
MR. T. BOWICK has the pleasure of introducing good Men to fill all duties in connection with the above. No one is recommended whose antecedents have not been thoroughly enquired into.

Mr. Bowick has sent good and tried persons, for various duties, to Canada, United States, the West Indies, &c.

Reference to Mr. A. WILDMAN, Portage du Fort, and other gentlemen.

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Steel Tooth Sulky Horse Rake

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

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JAMES SOUTAR & CO.,

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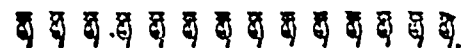
Wishing to give more attention to the raising of bees and queens, I offer the following inducements till the close of the coming Provincial Fair:—

To any person sending \$3, I will send my single boarded hive with improved entrance, price \$3, or an individual right, price \$3, and my dollar book on bee culture, soon to be published; tickets will be sent for the book. For \$5, both hive and right, or an Italian queen, and the book. For \$10, or the highest bid above that during the next six weeks, a township right and the book. For \$12, or highest bid above that, a township right, one hive, and the book. For \$400, or highest bid above that, a right for the entire Province of Quebec, with the exception of two or three counties that are sold; this right is worth \$2,500. For \$200, or highest bid above that, I will sell a patent for a Self-oiling Buggy Hub, lately introduced; specimen carriage to be seen at Brooklin, Ont.; this patent is worth \$2,000. Sale of townships not to interfere with sale of hives upon the above conditions.

J. H. THOMAS,

v2-5-11.

Brooklin, Ont.



TO THE WORKING CLASS.—We are now prepared to furnish all classes with constant employment at home, the whole of the time or for the spare moments. Business, light and profitable. Persons of either sex easily earn from \$10 to \$25 per evening, and a proportional sum by devoting their whole time to the business. Boys and girls can nearly as much as men. That all who see this notice may send their address and test the business, we make this unparalleled offer: To such as are not well situated, we will send \$1 to pay for the trouble of writing. Full particulars, a valuable sample which will do to convince, with a copy of THE PEOPLE'S LITERARY COMPANION—one of the largest and best family newspapers published—all sent free by mail. Reader, if you want permanent, profitable work, address E. C. ALLEN & CO., AUGUSTA, MAINE.

DOMINION OF CANADA



EMIGRATION TO THE PROVINCE OF ONTARIO.

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

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

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

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

All Persons over 15 years of age can obtain a FREE GRANT OF 100 ACRES.

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

Registers of the Labour Market

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

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

Also to the Emigration Agents in Canada, viz:

John A. Donaldson, Toronto, R. H. Rae, Hamilton, Wm. J. Willis, Ottawa, Jas. Macpherson, Kingston, L. Stafford, Quebec, J. J. Daley, Montreal, E. Clay, Halifax, Nova Scotia, Robert Shivers, St. John, and J. G. & Layton, Miramichi, New Brunswick, from whom pamphlets issued under the authority of the Government of Ontario, containing full particulars in relation to the character and resources of, and the cost of living, wages, &c., in the Province, can be obtained.

JOHN CARLING,

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

Department of Immigration, Toronto, October, 1869.

v2-2-12t.

Markets.

Toronto Markets.

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

FLOUR AND MEAL.

In consequence of the rise in the English markets, our details exhibit a decidedly upward tendency in price, but in this market comparatively little business has been done since our last report. Present rates are as follows:

- Flour—Superfine, \$4.50, Spring Wheat, Extra, \$5, Fancy, \$5 to \$5.25. Oatmeal—\$4.20 to \$4.25. Cornmeal—\$3.75 to \$4. Bran—\$10 to \$11.

GRAIN AND SEEDS.

Rates continue to advance. Stocks are low, and mostly held in expectation of a further rise.

- Wheat—Souters', \$1.18 to \$1.20, Trudwell, \$1.15 to \$1.20; Spring, \$1.03 to \$1.05. Barley—Inferior, 45c. to 50c., Bright, nominal. Oats—38c. to 40c. Peas—65c. to 70c. Rye—68c. to 70c.

HAY AND STRAW.

The price and demand have fallen considerably since our last report.

- Hay is quoted at from \$6 to \$11. Straw at \$4 to \$6.

PROVISIONS.

- In Pork but little business is transacted. Live Hogs sell at from \$7 to 7.25 per 100 lbs. Butter—Wholesale price is quoted at 11c. to 15, selling retail at 20c. and upwards. Eggs—Per dozen, 10c to 11c. Potatoes—Per bag, 30c. to 50c. Apples—Per bbl, \$2 to \$3.

CATTLE MARKET.

For this season of the year, the demand may be considered active and quite equal to the supply. The following are Toronto prices, dressed weight:

- Beefers—From \$5 to \$8. Sheep—From \$3 to \$6. Calves—From \$3 to \$7 50. Lambs—From \$2 to \$3. Hides—From 6c. to \$1.2c. Calfskins—Green, 10c. Cured, 12c. Sheepskins—Green, from \$1.25 to \$1.60. Dry, from 45c. to 75c. Wool—From 26c. to 28c.

New York.—Flour—10c to 15c better, receipts, 7,000 bbls, sales, 10,000 bbls at \$5.10 to \$5.25 for superfine state and western, \$5.00 to 5.25 for common to choice extra state; \$5.40 to \$6.10 for common to choice extra State and Western. Rye Flour, Dull. Wheat, 1c to 2c better, receipts, 37,000 bush., sales, 82,000 bush. Rye, Quiet; receipts, 4,000 bush. Corn, Shade firmer, receipts, 32,000 bush.; sales, 23,000 bush. at \$1.04 to \$1.05 for new mixed Western. Barley, Dull and nothing doing. Oats, Steady, receipts, 16,000 bush. sales, 30,000 bush at 65c to 66c for Western; 69c to 71c for Ohio and State. Pork, Firm at \$30.75 to \$31. Lard, Dull at 15c to 16 1/2c for steam; 16 1/2c to 16 3/4c for kettle rendered. Butter, Dull at 15 1/2c to 20c for Ohio, and 15c to 37 1/2c for State. Cheese, Quiet at 7c to 15c.

PROVINCIAL MARKETS.

Montreal.—Flour—Extra, \$5.75 to \$6. Fancy, \$5.25 to \$5.35. Welland Canal Superfine, \$5 to \$5.10; Super fine No. 1 Canada wheat, \$4.00 to \$4.25; No. 1 Western wheat, \$4.00 to \$5. No. 2 Western, \$4.40 to \$4.50; Bag flour 100 lbs \$2.20 to \$2.30. Wheat, Canada fall, \$1.14 to \$1.15, spring, \$1.10 to \$1.12 1/2; Western, \$1.10, Oats, per 32 lbs. 35c to 36c. Barley, per 45 lbs., 45c to 47c. 80c to 87 1/2c. Butter, dairy, 16c to 17c, store, packed 15c to 16c. Ashes, pots, \$5.15 to \$5.50, pearls, \$7.15 to \$7.25. Pork, Mess, \$27.50 to \$28, primo mess, \$20; prime, \$21.

Port Hope, June 6.—Flour, extra, \$5.25, fancy, none, strong bakers, \$4.75, No. 1, \$4.50, bag flour, per 100 lbs., \$2.30. Fall Wheat, choice, \$1.12 1/2, ordinary, \$1.05, spring, 95c. Oats, 33c. Peas, 59c. Rye, 50c. Cheese, 12 1/2c. Butter, 15c. Potatoes, 20c. Wool, 26c.

Collingwood, June 8.—Spring Wheat, \$1.05 to \$1.08; Fall Wheat, \$1.10 to \$1.15. Barley, 40c to 42c. Peas, 40c to 50c. Oats, 33c to 34c. Butter, 14c to 16c. Eggs, 10c. Potatoes, 25c. Hay, \$9 to \$9.

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

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

GEORGE BROWN, Managing Director