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THE CANADA FARMER

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The Field.

Mechi on Deeper Cultivation.

Mr. Mechi still sticks to his text, and perseveres in his sermon concerning deeper culture with all the pertinacity of one of those old-fashioned preachers who discoursed by the hour, and sometimes turned the hourglass the second time before the conclusion was reached. If we have any fault to find with his prelections, it is that they betray in some degree a lack of discrimination. Martin Luther used to say, "He that would preach well, must discriminate well," and sure we are, that it will not do to advocate deep cultivation for all soils indiscriminately. With this drawback held in view, and remembering that judgment must be exercised and adaptation studied, his articles may be profitably read by all and sundry. There is a certain enthusiasm about them which is inspiring and encouraging. The writer evidently has faith in farming, a passion for it, and a high opinion of its possibilities. Even when you cannot quite go with him in his conclusions, you catch the contagion of his earnest spirit, and feel that something must be done, and that with all your might.

In a recent article on his favorite theme, which appeared in the *Scottish Farmer* of June 1st, Mr. Mechie says, with all his old-time energy, "The more I prove practically, after thirty years' trial, and read or reflect theoretically, the more I become convinced that those who deprecate a deeper disturbance of the soil, are doing a great agricultural mischief, preventing improvement and profit."

The article in question is chiefly valuable from its collation of several extracts from Liebig's last great work, "The Natural Laws of Husbandry." Mr. Mechi's appreciation of the distinguished German chemist is highly creditable to him, showing that he is no charlatan or empiric in what he says and does as a tiller of the soil. He refers to Liebig thus: "Liebig knew more of the proper practice of agriculture then any other man then living, and for the first time laid open the secret of Nature's agricultural laws in relation to the soil, the plant, and the food of the plant."

We subjoin the extracts alluded to above, which will well repay attentive perusal:—

"The root fibrils will always extend in that direction in which they encounter the least resistance. Of the cereals, wheat, with a comparatively feeble ramification of roots in the upper layers of the soil, still forms the strongest roots, which often penetrate several feet down into the subsoil. On the length of roots few observations have been made. In some cases it has been found that lucerne will grow roots 30 feet, rape above 5 feet, clover above 6 feet, lupine above 7 feet in length. A proper knowledge of the radication of roots is the basis of agriculture * * * therefore, to secure a favorable result to his labors he farmer should prepare the ground in a proper manner for the development and action of the roots. * * In the second half of the period of development the roots of the turnip plant having penetrated through the arable surface deep into the subsoil, absorb more potash than in the preceding stage If we suppose that the absorbing spongioles of the root reach a stratum of soil poorer in potash than the upper layer, or not sufficiently rich in that material to yield a daily supply commensurate with the requirements of the plants, at first indeed the plant may appear to grow luxuriantly; yet the prospect of an abundant crop will be small, if the supply of the raw material be constantly decreasing, instead of enlarging with the increased size of the organs The vigor with which cereal plants send forth their stalks and sideshoots corresponds to the development of the root. Schubert found as many as eleven side-shoots in rye plants, with roots 3 to 4 feet long; in others, where the roots measured 1¾ to 2¼ feet, he found only one or two; and in some, where the roots were but 1½ feet, no side-shoots at all. * * The true art of the practical farmer consists in rightly discriminating the means which must be applied to make the nutritive elements in his field effective, and in distinguishing these means from others which serve to keep up the desired fertility of the land. He must take the greatest care that the physical condition of his ground be such as to permit the smallest roots to reach those places where nutriment is found The ground must not be so cohesive as to prevent the spreading of the roots. * * All these observations tend to show the great importance of the mechanical conditions which impart fertility to a soil not originally deficient in the means of nourishing plants; and that a comparatively poorer but well-tilled soil, if its physical condition be more favorable for the activity and development of the roots, may yield a better harvest than richer land." Combined with deeper cultivation, we should have that which it facilitates—I mean drainage. Liebig says in his "Natural Laws of Husbandry." p. 290, "The influence of a proper physical condition of the soil upon the produce can hardly be more convincingly proved than by the facts which agriculture has derived from the drainage of land, under which we comprise the removal of the subsoil water to a greater depth, and the quicker withdrawal from the arable soil of the portion circulating in it. A great many fields, unsuited by their constant humidity for the cultivation of cereal plants and the superior kinds of forage grasses, have been reclaimed by drainage, and made fit to produce food for man and beast. When the farmer, by means of drainage, keeps within bounds the amount of water in his fields, he controls its injurious influence at all seasons, and by the speedier removal of the water, which soaks the earth and destroys its porosity, a path is opened for the air to reach the deeper layers of the ground, and to exercise upon these the same beneficial influence as upon the surface soil."

The Oak and the Ash.

England is prolific of weather proverbs bearing on agriculture, and among them there is one about the comparative leafage of the oak and the ash. This is what the Rev. F. O. Morris observes about it in a recent number of the *Times*:—

"The present year will be a singularly good one for proving the truth or otherwise of either or neither of the old sayings as to whether the coming into leaf of the oak before the ash, or of the ash before the oak, is a sign of a wet or a dry summer, for never have I known, or any one else, I should suppose, the former having been the case so very remarkably as it has been this spring.

While the oak trees were well out in leaf, and have been so in a sort of standstill for the best part, if not the whole, of a month during the very cold weather we have latterly had, the ash trees looked, and still look, as they do in the depth of winter, and 10 yards off you could not tell that there was the appearance of even the bud of a leaf upon them.

One of the old saws runs thus:—

The oak before the ash,
A summer of splash;
The ash before the oak,
A summer of smoke.

The other, thus:—

If the oak opens before the ash,
'Twill be warm and dry, with good wheat to thrash;
But if the ash leaves open before the oak,
There'll be cold, and of rain too great a soak;
If the oak and the ash open nearly together,
Look out for a summer of changeable weather

For myself, I do not hold with either of them, but, as I have said on a former occasion, my belief is that the coming into leaf of either of the trees before the other is rather the result of the kind of weather which has gone by than a sign of what is to come, except, indeed, in so far after a very wet spring a dry summer might naturally be looked for, and *vice versa*; but it is not always so." The exception, however, proves the rule that the ash is last.

Intended Experiments in Potato-Growing.

"Gael," an intelligent contributor to the columns of the *Scottish Farmer*, who farms in the south of Ireland, declares his intention, in a recent number, of trying the following experiments "next potato-sowing season." He says:—

"First, I will sow in autumn, planting immediately after lifting, thus adhering to the first law of Nature, which permits all plants in a wild or natural state to shed their seeds, when ripe, over the land, upon which they lie until the season of vegetation sets in, when they strike root, grow, and prosper. Among wild plants, too, are several tubers which lie in the ground from year to year, and grow and thrive each year only too well. It is therefore evident that we have over-tended, over-civilized the potato and that some relaxation from our too artificial cultivation of the plant would be for its benefit. For the same reason as above stated, viz., Nature's laws, I would plant the potato whole, though I purpose, as an experiment, cutting a quantity into sets in the usual way, laying aside each set cut from the lower or best end of the potato, and planting them separate from the others."

"A Satisfied Sewage Farmer."

Under the above heading we find in one of our English exchanges a letter from M.. A. Aird, the well-known engineer who has sewaged the town of Dantzic, an extract from which is of sufficient interest to transfer to these columns. The Government made a grant to the Messrs. Aird of Berlin, of 1000 acres of waste lands near Dantzic, on which to receive and experiment with the sewage of the place. Mr. A. Aird thus writes concerning the success achieved so far :—

"Since I wrote you last we have been doing very well indeed, having now over 450 acres under irrigation Our sugar beet crops of last year proved very satisfactory, although we only commenced irrigating the newly planted land (pure sand) in April. The yield was enormous, and the per-centage of sugar quite equalled the average obtained on the best soils in Germany. The beneficial effects of the sanitary works in Dantzic are so evident (the number of deaths having decreased 700 in the last year as compared with the calculated average) that the Public Health Association of Germany (established last year at Frankfort-on-the-Maine) has decided to hold its annual meeting there (Dantzic) in September, 9th to 12th, to enable the members to view the works and the result of sewage farming. The gathering will be attended by all the great authorities, and you may assure any friend interested in the great question of "sewage farming *versus* manure squandering," that on the part of the municipal authorities of Dantzic, the Public Health Association of Germany, and myself, any visitor to the works will be made most heartily welcome."

Mowing the Road Side---Killing Weeds.

It being a dull day, unfit for haying, and having but little else we could do, I set the men to mow the roadsides adjoining the farm. It has been our practice to do this once or twice each season, during the fifteen years we have occupied the farm A great change has been wrought along our borders Where formerly grew a thicket of wild rose-bushes, briars, thistles, and almost every other kind of weed known about here, we have now a comparatively clean sod. Were it not for the miserable practice of some who let their stock run upon the highways, we could cut more than a ton of good hay to the acre. A hill upon the road whose wash comes upon our land, was formerly covered with white-weed, making the surface during the [illegible] nearly as white as snow. We have been careful to mow before the seed matured, and this year there was not one bloom where formerly there was a hundred, and we have not been troubled with the seed coming up in our fields.

It requires a little care and labor to attend to it each year, yet it has been found to well repay for what we have done. Some people will carefully cut and dig up all the weeds and bushes on the field-side of the fence, and let those on the roadside alone, which furnish roots and seed for the next year. If both sides of the fence had been cleaned it would have made an end of them. Some people have so little public spirit that they permit many things to exist to their own disadvantage, fearing that they may do the public some good which they will not get paid for. It would be well if the surveyors of highways were compelled to keep the roadsides clean from noxious growths. It would be of great value to the agricultural community. Within a mile of here nearly every weed and bush common to this climate is found growing and ripening its seeds without let or hindrance. The burdock, yellow dock, Canada thistle, and a host of others are introduced into our fields on the wings of the wind and other agencies. They may all be killed by repeated mowings during the last of July and in August Some persons are particular to cut during certain signs of the zodiac I have never regarded this, but cut when the scythe was sharp, and when we had leisure to attend to it. Sometimes a single cutting will completely kill out a foul growth. One thing is certain—they do not thrive under a thorough annual cutting.

Our reclaimed tile-drained meadows came up quickly with thistles, to our serious annoyance. Last year, after cutting the crop, a second crop came up, which was also cut; it being a wet season, most of them forgot to come up this year. Dry seasons are favorable to the growth and spread of thistles.

The yellow dock is troublesome in grass-fields; it may be got rid of by pulling, but this is a tedious process. Some recommend cutting the long, tap-rooted weeds at the surface, and applying a few drops of kerosene. Have recently seen the application of oil of vitriol recommended for this purpose. A stick which has been dipped in a bottle containing the oil, and then applied to the crown of the plant, I have no doubt would prove effectual. Care should be exercised in handling, as it is destructive to most substances with which it comes in contact.

A fixed determination to be rid of weeds will generally succeed, if attended with the labor and means usually at hand on every farm. It is needless to expect much success where weeds are allowed to thrive. An unceasing warfare is the only means of getting rid of them.—*Cor. Germ. Telegraph.*

Cultivation.

By the term cultivate, we generally mean that tillage of the soil around and among plants which we perform after the plant is up. The work done in ploughing, harrowing, &c., before the seed is sown or the plants transplanted, we call "preparation of the soil." It may be well to inquire, Why do we cultivate plants? We reply, for several reasons and with a number of objects in view.

1. We cultivate plants to destroy weeds. Somehow, after we have ploughed, harrowed, planted or sown land, in a few days, and generally before the seed we have planted, weeds will come up These weeds may be useful plants in their appropriate place —the best species of grass, for instance—yet, coming up where they are not wanted, they are essentially weeds, and are treated as such by every good tiller of the soil One of the first objects of cultivation is to destroy these. They are robbers of the desired plants, and cannot be tolerated among them. Every practical cultivator knows that the sooner they are attacked after they make their appearance, the easier are they exterminated. At first they have but a slight hold upon the soil. Their small, feeble roots, if brought to the surface, and exposed to the hot sun for a few hours, are withered. In a garden, the steel rake is a good implement to attack them with, because it takes a broad sweep, and while the dirt passes between the teeth, the weeds are drawn to the surface. You cannot get over the ground so fast with the hoe, besides, more or less of the weeds are left covered by it

If cultivation is neglected too long for the rake to be available, the hoe must be used, and the labor is increased. It will render the work much more thorough if, after the weeds are cut up with the hoe, you go over the ground with the rake and rake them out upon the surface. These precepts apply of course to the small garden patches. Where you are cultivating on a larger scale, you use the horse and cultivator, and the sooner you begin. the easier your work. For young, small plants, you undoubtedly use a cultivator, the outside teeth of which are so constructed as to throw the dirt away from the plants. Great care should be exercised in hoeing around young plants, not to dig so deep as to cut off any of their roots, or to catch the hoe into them and pull them up. To this end it is better to pull the weeds near the plant with your hands, and then draw a little fresh soil around the plant.

2. We cultivate plants to aerate the roots, facilitating the entrance of the gases, and the condensation of vapor into water, thereby actually *manuring* the plant. As the soil becomes compacted over the roots, the free entrance of the air is impeded and the growth checked. Loosening the soil over the roots permits the air, freighted with fertilizing gases and vapor, to penetrate below the heated stratum of the surface to the cooler soil around the roots, where the vapor is condensed into water, which, with the ammonia and other gases in solution, is absorbed by the spongioles of the roots, and enter into the structure of the plants.

The best time to cultivate is when the ground is dry and warm, and the sun shines. This is the best time to destroy weeds, one of the objects of cultivation, and the time when plants most need aerating. When rains are frequent, the ground is in no condition to cultivate, and the rain itself answers some of the objects of cultivation; but when the surface becomes dry again, the soil is compacted, excluding the air, but conducting the heat downwards to the roots, drying out the moisture, and raising the temperature too high for healthy growth. Then the operation of the cultivator is necessary to afford relief.

Mulching answers very many if not all the ends of cultivation; and where the plants are large and few, as fruit-trees, may sometimes be substituted for it with economy Mulching smothers the weeds, prevents the rains from beating down and packing the surface, and the sun from penetrating, over heating and drying out the soil around the roots. Where mulching material is plenty, young trees can be kept growing finely without tilling, by covering the ground as far as the roots extend with six or eight inches in thickness of straw and other litter.—*Rural Home.*

Flanking Weeds in Potatoes and Corn.

I have about two acres of early potatoes. A part of them are on as weedy a piece of land as can well be imagined; but I propose to flank the weeds and not to fight them direct. The great mistake in fighting the rebellion was in the tardy manner in which it was done. When Sherman decided to go through it with a dash in a flanking way, it was soon subdued. It true that an army may spring up behind, but only to be easily crushed; and so it is with the weeds. If we go through them at the start, and not let them become strong, we are master of the situation.

In the first place, a dressing of manure was applied and the land ploughed, then rolled and planted, using a two-horse cultivator to do the covering. After some days the whole was harrowed, killing a whole regiment of young weeds. Then came a heavy rain, and the surface was crusted over, and another edition of weeds presented themselves, when the harrow put an end to them and mellowed the surface, —not fully, for there was an immense number of small lumps, from the size of a pea to an inch or more. These the iron roller reduced in part, and the next week's storm-wave gave a third series of weeds, and yesterday the harrow and the roller put an end to them, and now the surface is as smooth and finely comminuted as though it had been raked by hand with a garden-rake.

The two-horse cultivator will be ready for the next series of weeds, and will cover the tops of the young plants, and let them push up through this fine covering of earth, and thus cheat the potato-beetle out of his first feast of the young plants.

In the corn field, we have first the plough, next the roller, and then follows the planting. After the planting, things will remain quiet until the corn is about ready to break ground, when the harrow will do its duty. The more I use the Freidman Harrow, the better I like it. It covers a strip 9 feet wide, and a team can harrow 15 to 20 acres a day; but I prefer to lap the harrow one-half, and get over about 10 acres a day The roller follows the harrow, and, after the corn is up, the two-horse cultivator is the implement to make further battle with the weeds

I am well aware that, under this system of management, a man and team cannot get as many acres planted; for this stopping to harrow and roll the potatoes weekly, and stopping ploughing in order to roll and harrow the planted corn, take up time; but in the end, if it is bushels of corn and potatoes instead of a given number of acres planted and dignified with the appellation of farming, the farmer will be satisfied when russet autumn presents him with golden ears and bines of large round tubers.

But there is another reason why I like to roll the land before planting, and that is so that it may be planted at a shallow, corn depth. Early in the season, when the ground is cold, we hear a great deal about poor seed-corn, just as though we did not know that corn deeply planted in that condition would not rot rather than grow. Peas will bear deep planting, for they will germinate at a low temperature; but not so corn, which only needs a thin covering, moisture and warmth. Many of the planters run too deep, and, if the soil is loose, so much the worse; but with a smooth, low surface, and a shoe on the planter runners that regulates the depth, we can plant at the desired depth.

I use a Keystone planter, and set it so that the hills are 20 inches apart, putting two grains in a hill In this way one hand is dispensed with in doing the work, as the machine is automatic. With this plan of culture, check-row planting is of no particular advantage.—*Rural, in Chicago Tribune.*

Too Many Fences.

I notice many farms of from fifty to two hundred acres, upon which the matter of fences must be about as much an encumbrance as would be a heavy mortgage. Indeed I have sometimes thought that the removal of at least one-half the fences upon these farms, would be one good step towards removing the debts under which some of our most industrious and hard-working farmers are laboring. Not only this, but it would also lighten the demand that is constantly being made upon their time and patience to repair fences. Dividing a farm all up into fields of from one to five acres, seems to me to be useless. Good line fences are generally a necessity But after that fences to inclose pasture-land ought to about end the fence matter.

Of course, circumstances may require a few extra fences, as about garden, orchard, &c., yet I think many of the inside fences might be dispensed with to great advantage.—*Cor. Germ. Telegraph.*

Grasses and Forage Plants.

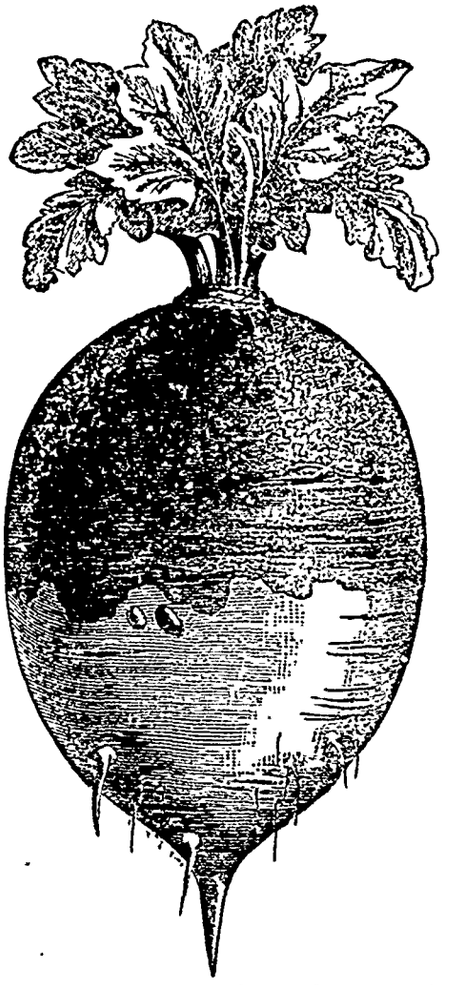
Swede versus Yellow Turnips.

At a recent meeting of the Kelso Farmers' Club, Mr. G. S. Douglas, of Riddletonhill, read a paper on "The Best Varieties of Turnips," in which he deprecated a too exclusive use of Swedes, especially for lambs and calves not exceeding twelve months old. He thought yellow turnips best adapted for use in the early part of the season, and altogether in the cases he had mentioned He spoke highly of the feeding qualities of the yellow and white varieties and considered that they were usually underestimated. The Fosterton and Dale's Hybrid were specified as excellent varieties of the yellow turnip. In the course of the discussion that followed the reading of the paper, Mr. Jack, of Mersington, said he had little experience in feeding, but the experience he had had was sufficient to show him the great mistake of putting hoggs too early on Swedish turnips It was better to put them on yellow turnips until the beginning or middle of February, and then they could be put on Swedes He had some that he put on Swedes, and the result was that in the beginning of March they stopped eating them altogether, and were dependent on artificial food, and after all they did not turn out well. Mr. Hume, Sunlawshill, disagreed with Mr. Jack when he said that stock did not thrive on Swedish turnips. This year they had not thriven, but that was exceptional, as there had been no frost. If the weather had been severe, what other turnips could have withstood? As for different varieties, what suited one kind of land did not suit another The Fosterton hybrid was very good for one, Aberdeen for another, and so on Mr Usher, Stodrig, thought that a great thing in feeding was to begin with some such turnips as were easily digested He was not surprised at Mr Jack's disappointment in beginning with Swedes, and stock would not go on improving without the aid of extra feeding stuffs. Mr. Borthwick, Roxburgh, Newtown, enumerated Greystones, white globes, green tops, and Lincoln reds as in his opinion the best descriptions to sow—Lincoln red being, he thought, a very valuable turnip. After these came the hybrids. The longer young sheep were kept on some turnips he thought they throve the better afterwards. He did not prefer the above mentioned turnips to Swedes, owing to their not being able to withstand the frost. The chairman, Mr. Purves, Linton, Burnfoot, thought the greystone a very valuable turnip, as he himself had had no less than 35 tons of it to the acre. Next to this turnip he liked the Lincoln red, although they did not produce so much bulk to the acre. He had had a good deal of experience with the different varieties of yellow turnips, and he believed the Fosterton hybrid to be the best. There were many other hybrids, but he had found that they were all inferior to the Fosterton. The Aberdeen was also a very fair bulb, as it stood the frost very well, and was very nutritious. After February there was nothing like the Swede, however. Mr. Usher asked if he was to understand the chairman to mean that he came entirely to Swedes for feeding stock, but not for breeding stock. The chairman said he held that Swedish turnips were unsuitable for ewes until after they had lambed.

Rennie's Prize Purple-Top Swede Turnip.

Great improvement has been effected in the Swede turnip of late years by skilful crossing and careful culture. It is perhaps too much to say that perfection has been reached, but certainly a very high order of excellence has been attained, leaving but little to be desired or attempted hereafter. We have all the main qualities that the most exacting tiller of the soil can require, in several of the varieties now before the public—smoothness and size of bulb, vigor of growth, simplicity of culture, goodness of flavor, and enormity of yield. What more can be asked of a Swede turnip?

Rennie's Prize Purple-top is one of the best whether for table or for stock use. It is a heavy cropper, very juicy, solid, hardy, and, to a reasonable degree, frost-proof. These excellent characteristics will at once commend it to the notice and approval of Canadian farmers, than whom there are no better growers or judges of turnips in the world. Nowhere perhaps, all things considered, is the cultivation of this valuable bulb more skilfully carried on than in those parts of this country which are inhabited by Old World farmers, who learned before they came here the important fact that root-husbandry



is the sheet anchor of modern and remunerative agriculture. The scarcity and costliness of labor here has led to the adoption of short-hand methods of cultivation, unknown to the farmers of Great Britain; and yet we are able to equal, if not out-rival, the crops which have been the pride and boast of Old Country agriculturists Our virgin soil, quick growing season, and the change of air, which seems to invigorate vegetable as well as animal life, have all played their part in promoting the success of the turnip crop, which is now so established that the wonder is any of the farmers of Canada can remain willing to be innocent of the ownership of a turnip patch. In those parts of this Province where turnip-growing is largely practised, it is one of the keenest competitions of the season to have the neatest, best-looking, and most productive turnip-field.

The turnip herewith illustrated was originated by Mr. William Rennie, seedsman and agricultural implement dealer, of Toronto. He will do well to imitate the example of the Messrs. Sharpe and others, who have introduced varieties of their own production, in offering premiums for the finest samples and heaviest yields grown from this particular seed.

There is still time for any of our readers who have not embarked in turnip culture to prepare a piece of land and sow it the present season. The seed of the particular variety under consideration is advertised to be sown from the middle of June to the 20th of July. Even when it is too late to get in the Swede, the Yellow Aberdeen and White Globe turnips can be sown to advantage. They are less productive and poorer keepers than the Swede, but just as "half a loaf is better than no bread," a supply of inferior turnips is better than the total want of them. They are of so great value as furnishing a toothsome, succulent food for stock, at a time when there is nothing else but dry fodder to be had, that every effort should be made to secure enough of them to mix in with the less juicy stores laid in for late fall and winter use.

The *modus operandi* of turnip culture has been so many times described and illustrated in these pages, that it is well nigh superfluous to say anything further in regard to it. A few brief hints, however, will make a fitting conclusion to this article. Turnips flourish best on rather light, new soil, but will give a good account of themselves on any land that is in a sufficiently productive state to enable them to make that rapid growth which is essential to their success in a climate and season like ours. It is downright waste of time, toil, and land to sow them in poor, exhausted ground. Select the best piece of land on the farm for them; top-dress with plaster and ashes, sprinkle with superphosphate after sowing; thin the plants in good time, keep them clear of weeds in the early stage of their growth; and they will take full possession of the ground, shading it with their broad leaves, and filling it with their juicy bulbs. They must be pulled and housed before severe frosts come. It is usual to store them either in cellars or pits, and, if sufficiently ventilated, they will keep well either way.

Hay.

All observing stock-keepers know that all animals subsisting on pasture and hay are fond of a variety; that all animals, however liberally supplied with the best of hay or the richest and most succulent pasture, will eat more or less of coarse, woody and unpalatable grass and hay. It is common to see horses and cattle, and even sheep, that are liberally fed with the best of hay, eat straw and corn fodder with avidity for a change.

It has long been a general practice to mix clover and timothy, also clover and orchard-grass seeds, for both pasture and meadow. It is claimed by many that the last two mature so nearly at the same time that they are adapted to being grown together for hay; but I have not found such to be my experience. They do not reach the most profitable stage for hay simultaneously, and to cure them most profitably they require an entirely different process.

My greatest success in curing clover hay has been mainly by fermentation, with very little sun or air, but in making orchard grass hay I have been most successful when I have thoroughly teddered and aired it, and I have never succeeded in making a good quality of hay of it by curing it in the cock. The same is true of clover and timothy when grown together, the clover matures much earlier than the timothy, and the former being generally the greater crop of the two, the first year it is cut for the clover, and the timothy has very little weight or value that early.

When each variety is sown separately each may be harvested in the proper stage of growth without loss by cutting another variety prematurely. The hay of the various kinds may be stored separately so that all may be accessible, and thus the feed of animals may be changed as it is desirable.—*Cor. Germantown Telegraph.*

ALFALFA AMONG TIMBER.—The *Sacramento Record* says that a man living on the river eight miles above that city sowed alfalfa in a field of second growth white oaks averaging about twelve feet apart. The seed grew well and the clover had constantly improved since—four years. The clover under the trees is not quite so stocky as in the sunshine, but yields plenty of good feed.

Implements of Husbandry.

Agricultural Implements.

Models.

It frequently happens that manufacturers' agents, travelling through the country, carry with them models of the various machines or implements they may desire to sell Mistakes of a serious nature might often be avoided, and gross impositions prevented, by a proper understanding of the difference between a mere light, smoothly-going model on a miniature scale, and the working of the full-sized article which it is intended to represent. It is a very common and widespread mistake that a nicely-constructed model presents a perfect representation of the strength and mode of operation of the machine itself. Let a few unalterably fixed principles of mechanism and matter be borne in mind, however. When anything is enlarged, the strength of each several part is increased according to the *square* of the diameter of that part: for instance, the axle of a common wheelbarrow is increased in diameter to double its former size; the strength in that case is four times (2^2) as great. If it has been increased to three times its former diameter, the strength is increased (3^2) nine times, and so on. But again, when anything is enlarged, its *weight* increases according to the *cube* of the diameter. In the case mentioned of a wheelbarrow axle enlarged to twice its former diameter, whilst the strength, as we have already stated, is increased fourfold, the *weight* is at the same time increased (2^3) eight times. If the diameter be enlarged to three times its former dimensions, the weight becomes (3^3) twenty-seven times as great as it was before.

From these principles, it must at once become evident that the larger any machine or portion of a machine is made, the less able it becomes to support its own still greater increasing weight. Suppose a model to be, say one-tenth the size of the machine which it represents, then its different parts, when enlarged to full size, become one hundred times stronger, but they are at the same time one thousand times heavier, and further, if the motions were increased in speed in proportion to size, strength and weight (which, however, is not necessarily the case) all its parts would move ten times faster, which, added to their thousandfold weight, would increase their inertia and momentum ten thousand times. For these reasons a model will often move perfectly when constructed on a small scale; but when enlarged, the parts become so much heavier and their momentum so vastly greater, from the longer sweep of motion, as to fail entirely of success, or to become soon racked to pieces.

All parts of creation illustrate the same principles. Large spiders will spin thicker webs than smaller ones, in comparison with their own respective diameters. Again, enlarge a gnat until its whole weight be equal to that of the eagle, and, great as the enlargement would be, its wings would still scarcely have attained the thickness of common writing paper, and, instead of supporting the weight of the enlarged animal, would bend down from their own weight. A common flea will leap about two hundred times the length of its own body, and some assert that a man, proportionably agile, could vault over the highest city steeple. Now, if the flea were increased in size to the dimensions of a man, it would become a hundred thousand times stronger, but thirty million times heavier, that is, its weight would become three hundred times greater than its corresponding strength. Hence, of course, the inference that, under these circumstances, the common flea would be no more agile than a man, or that if a man were proportionately reduced to the dimensions of a flea, he would be in every respect equally agile.

Illustrations such as these serve to show in a striking manner the difference between the tiny models and the more massive structures they represent; and farmers should be ever careful, whilst admiring the "toy, to consider and calculate the "full grown" article before ordering or purchasing.

Steam Drilling.

The following is a very interesting account by an eye witness of the construction and mode of working of the English Steam Drill: —

The drill itself was originally a common Suffolk drill, 8 feet in width, and a steerage apparatus in front. This drill was bought for being drawn by horses, and it is still used as a horse-drill when required. The difficulty to be overcome in adapting any drill to steam power would of course consist in the turning at the ends of the land. This operation has been so far overcome by Messrs. Howard as to make the process of drilling by steam power easy and accurate as well as expeditious. The first point is to carry the slack rope evenly with the draft rope, while the drill is travelling, and then to extend it sideways when the end is reached, so that upon the draft being reversed, the drill may be brought round This is accomplished by a jointed arm, which is thrown up to hold the slack rope over the drill-box when the machine is started, and when the end is reached the arm is thrown down and straightened into a long lever projecting at the side of the drill, the slack rope being still held in the pulley of the arm. Thus, when the slack rope becomes the draught rope, the drill is drawn round in a way similar to the manner in which a cultivator is turned. But that the drill may be brought round, and the outer wheel of the last track be left in the same place, or in a correct position for returning in the track in which it came up, the outer wheel during the turning has to be blocked, so that it remains in the same place, and the inner wheel of the last drag made to describe a semicircle and take a position for being the outer wheel of the next drag. This operation is effectually accomplished by a shoe upon an arm attached to a lever, the main axle being the bearer of both the arm and the lever When the drill is travelling, the lever is held down by a catch, and the arm with the shoe carried well off the ground behind the wheel; when the headland is reached, the lever is thrown out of its catch, and the shoe falls to the ground As soon, therefore, as the slack rope becomes the tight rope, the weight of the drill is lifted upon the shoe, the latter acting as a turn-table till the drill has come round to its proper position; the moment it is drawn forward, of course the bearing upon the shoe or turn-table is lost; the shoe is then brought to a riding position as before, and so it remains till it has got back to the same end, and is again required for the same purpose. There are some details of an ingenious character, but we need not stop to particularize. The turning at the ends was done more accurately than a drill is usually turned with horses; the work was, of course, done far more expeditiously To the rear of the drill is fixed a platform, guarded with an iron railing for safety, for the man to ride upon while he sees to the seed falling regularly, and the coulters being kept clear and otherwise in correct order. The steersman rides in front of the wheel, and his work was as straight as a cord; for drilling by steam power, when everything is in order as it was here, may be looked upon as the perfection of mechanics applied to husbandry. To the hind part of the platform on which the drillman stands is attached an ordinary set of harrows, light or heavy, as the case may be. The attachment for these harrows consists of a ring and chain, the ring being upon an iron rod of about 3 feet in length, which is fixed to the platform. By this arrangement the harrows drop back as the drill turns round, and when they are brought evenly to work again, by the drill going forward, a foot or so of the fresh drilled work is left uncovered, so that the steersman may see the exact line of the last wheel. The plan adopted at the headlands is to take the drill two or three bouts with horses before the steam power is applied. So far as we could ourselves actually see, this drilling could not be well surpassed. The hands employed were, with the drill, the steersman, a drillman, and a boy to signal and aid in turning at the ends; as the land was long, 30 chains being the length of the far side, two porter-boys were in attendance. There were also two men at the engine and windlass, one of which may be dispensed with by the system to be noticed below. The field drilled measures 23 acres, and it narrows towards the position in which the engine was placed. The whole field was encompassed at one setting down, the ropes at starting having been run diagonally, in consequence of the great length of the far side. The drilling was begun on Wednesday, when 17 or 18 acres were finished, and could have been completed entirely by 10 o'clock on Thursday. This step towards saving time and manual labor is certainly a very gratifying prospect under the present condition of the labor market.

The new arrangement of engine windlass and rope, to which we referred above, is a very striking one. The novelty of this application consists in placing the windlass at the rear of the engine instead of at the side or in the front, and in the snatch blocks being placed on the fore-carriage of the engine, whereby the engine is made the anchor from which the draught of the implement is taken. Indeed, the engine is made the anchor both for windlass and snatch blocks the shafts of windlass are simply hooked on to the back of the firebox. On the shafts is placed a small light stage or platform, and a box for coal, the whole forming an arrangement similar to the tender of a locomotive, which enables one man to attend to both the windlass and engine with ease. The ropes pass from the drum completely under the platform and firebox of the engine, and take their next bearing upon the pulleys carried by the fore-carriage. The arrangement is extremely simple The points gained are greater expedition in setting down, taking up, and removal; one man less is required, a smaller space in the field is taken up by the apparatus, and we were informed that the first cost of a complete set would be £70 less, which is an important feature

Root Pulper.

Like Elisha's plough, rustic implements will continue to be manufactured so long as there remain backwoods in Canada, and so long as immigrants continue to clear them up. We have repeatedly given in these columns "home methods of constructing "rollers," "seed-drills," "harrows," &c. The following is a simple plan for a root pulper, which we clip from one of our exchanges.

It consists of a cylinder of hard wood, 16 or 20 inches in diameter, turned exactly round and smooth, and of whatever length may be desired. This is mounted upon gudgeons and armed with steel teeth made of half-inch square steel. The teeth are ground to a chisel point, and are screwed into the cylinder with the bevel of the points upwards and projecting half an inch. This toothed cylinder is fitted into a box of hard wood plank, and the box is supported upon a stout frame, which should be firmly bolted to the barn floor. The front of the box is brought snugly up to the teeth of the cylinder. The roots are shovelled into the box at the top, and are rapidly reduced to a fine pulp by the action of the sharp chisel points. The pulp is thrown out at the bottom of the box, where it is received upon an apron of plank, and from that it falls upon the floor or into baskets placed to receive it. A driving pully is affixed to one of the gudgeons, so that it may be worked by a belt from a horse-power. It is too heavy a machine to be worked by hand, although a small machine might be constructed upon the same plan if thought profitable to do so.

Machine of all Work

A new agricultural machine, worthy the ingenuity of a live Yankee, is the recent invention of a clever Irishman of Dublin. It performs the operations of rolling, sowing and harrowing simultaneously. The roller is of wrought iron, riveted on cast-iron wheels, forming a cylinder six feet in length by three feet in diameter Immediately above the roller is a sowing apparatus, by which the seed is rapidly delivered, a star wheel of four points keeping the conductors in constant motion As the seed is strewn a harrow of four rows of oblique teeth set in a central axis turns up the earth over the seed. The harrow is kept in motion by an endless chain or belt which passes round the extreme end of the largest cylinder, and fits the groove of a small wheel at the corresponding end of the harrow. Every time the large roller turns over the circular harrow turns nearly five times, causing the teeth to tear up the soil about twenty times at each of the revolutions. Meantime the seed-conductor and distributer rises and falls twelve times during each of these revolutions, and there is a contrivance by which the quantity required to be sown can be regulated. A lever is also connected with the supports of the harrow, and rests upon a fulcrum placed at a suitable part of the frame of the machine. By means of this lever the harrow portion of the machine can be raised off the ground and the roller only used; and the distributer or sower may be worked simultaneously by means of the chain-band, which can be closed and the flow of seed stopped.

Horticulture.

EDITOR—D. W. BEADLE, Corresponding Member of the Royal Horticultural Society, England.

THE ORCHARD.

Common Mistakes.

What a common mistake it is, amongst even some of our most intelligent men, to select low, sheltered, warm places, if possible, whereon to lay out their orchards, quite forgetful of the fact that by so doing they are laying their fruit and other trees all the more liable to the ravages of frost. This may seem paradoxical; but let us examine the philosophy of it. On hills, where the wind blows freely, it tends to restore to plants the heat lost by radiation, which is the reason that hills are not so liable to sharp frosts as are still valleys. When the air is cooled it becomes heavier, and rolling down the sides of the valleys, forms a lake, so to speak of cold air at the bottom; this adds to the liability of frosts in low places. The coldness is frequently still further increased by the dark and porous nature of the soil in low places, radiating heat faster to the clear sky than the more compact upland.

A knowledge of these properties, therefore, teaches us the importance of selecting elevated localities for fruit trees and all crops liable to be cut off by frost; and it also explains the reason why the muck or peat of drained swamps is more subject to frosts than other soils on the same level. Therefore, corn and other tender crops upon such porous soils must be of the earliest ripening kinds, so as to escape the frosts of spring by late planting, and those of autumn by early maturity.

Seasonable Hints.

Newly Set Trees.—Continue to break the crust and to maintain a clean, mellow surface for several feet around the base of the stem. Nothing contributes more to a free and healthy growth. Mulching may be applied in such places as this mellow cultivation cannot be given. Never water young trees—depend exclusively on cultivation, and, if necessary, mulching added.

Pruning young and newly set trees after the leaves are out is wrong. They want the benefit of all the foliage they have opened and carried so far. The only exception is where a moderate pruning is given for the sake of a proper form. Lopping off leaves is always a check to transplanted trees; the injury is less to trees not removed, and least to such sorts as quickly reproduce shoots, as the peach, for example. Stopping the growth by pinching off the ends of shoots is the true way to impart a good shape.

Young Grafts.—Rub off all starting shoots below the graft on their first appearance, the larger they become the greater will be the check to the tree by the loss of the leaves. The same care is needed for buds set last summer.

Suckers which have been permitted to spring up at the foot of the stems in apple orchards, may be now taken off to best advantage. If small enough, grasp the upper ends with both hands, place the foot between them and the tree, and a jerk will remove them to the base. If too large for this treatment, cut them out with a gouge and mallet, carefully leaving no stub to sprout again.

Thinning fruit on young trees, by removing all defective specimens, and as many more as will prevent overbearing, will prevent exhaustion to the tree, and give finer and handsomer fruit. Trees that are full should have at least two-thirds taken off, and they will still be likely to bear as many bushels, that will sell at much higher prices. It is much easier to strip off poor specimens now, than to pick and assort (and get poorer returns) after the crop has grown and ripened.—*Country Gentleman.*

Horticultural.—An attempt was made in Kincardine to organize an Agricultural Society and poultry exhibition, but the project failed, and it was resolved to confine all efforts to the formation of a horticultural society.

Securing Apples for the Off Year.

One of the most successful agriculturists in the country is Robert Pell, who has a 1,200 acre farm in Ulster County, N. Y., all in the highest state of cultivation. One feature is an orchard of 200 acres, planted exclusively with the Newton Pippin and the produce of this orchard is famous in England and Europe as well as at home. To attain his present perfection in fruit culture Mr. Pell studied the art of pomology, and learned how to assist nature in her efforts to support mankind. Commonly speaking the apple tree bears every alternate year. Mr Pell determined to have an annual harvest, and to give his orchard a handsome start, he sacrificed the crop of a bearing year. All the apples were picked while green. He discovered that the germ of next year's fruit was in existence at the time of the apple harvest, but that the tree would be so exhausted that this germ would fail of development, and a year of rest would follow before another crop could be produced. Having stopped his trees from fruiting in the manner I have mentioned, he was sure of a crop on what was generally the off year, and determined to follow this up by a treatment which would abolish the year system. He learned that trees require a variety of food, the chief of which is found in potash, lime and soda, and his orchard has been thus fed with all the success that could have been anticipated. The potash is found in wood ashes, lime is obtained from oyster shells at low cost (stone lime being undesirable), while soda is supplied by common salt. Orchards thus fed and judiciously pruned cannot fail of success, and although this season is generally short of apples, Mr Pell's crop is of usual abundance. —*New York Tribune.*

The Apple Worm.

M. B. Batcham, after referring in the *Ohio Farmer* to the numerous traps for catching the codling worm, falls back on the old remedy of pasturing the orchard with hogs and sheep as the most efficacious. He says:

"There is one fact of importance which I have observed, and which has not been set forth, I think, by any writer on this subject, namely, that the first brood of the worms nearly all fall to the ground in the young apples which they inhabit, and hence if these first wormy fruits are eaten by hogs or sheep before the worms escape therefrom, there is little need of any of the traps referred to. My advice to orchardists is to try the hog and sheep remedy."

This has been questioned, many believing that quite a proportion of the worms leave the apples before they fall, and consequently traps applied to trunks of trees fail to catch them, and again, a good many of the apples do not fall at all, but continue to grow to nearly the full size of the apple.

To Prevent Suckers.

The season has now arrived for what appears to be a successful method of destroying trees which are given to the nuisance of suckering from the roots, and to do it in so effective a way as to prevent their roots from forming any sucker progeny. Some sorts of poplars, locusts, &c., are maddening in neat grounds, owing to this habit, and can only be tolerated in ground devoted to wood.

The method referred to is simply to cut through the bark all around at or near the ground, and then to tear the bark off as far up as can be conveniently reached. This is easily done when the bark peels freely. The effect on the tree is complete extinction.

Even the pruning of a tree at this season of free flow of sap, and of great demand for it by the leaves, is very weakening, especially if done before the leaves have fully expanded, for then they cannot yet relieve the gorge of sap by their rapid evaporation. Consequently the wounds "bleed," they cannot dry or sear or heal over, because of the continual flow and pressure; hence the sap, which ought to go to the leaves for preparation, is wasted. If the wounds are very large all the ascending sap escapes on the way, and the tree becomes entirely exhausted. The leaves exhaust the top. Supplies from the roots are lost before reaching the leaves, and the roots themselves no longer receiving any prepared sap by which to extend themselves, can neither repair or advance the feeding rootlets, nor build up the projections which we call suckers. Of course, all suckers that are already formed should be cut off or prevented from leafing, when the mother tree is stripped of bark.

Under certain conditions this method may fail of its object, it may even improve the condition of a tree. For if the bark is stripped off as late as midsummer, and so nicely as to leave the layer of cambium (the thin forming layer of new bark and wood, as yet only a mucilage) uninjured, and if no heavy rain or drying wind or burning sun strikes it before it has crystallized into form, a very thin but perfect new bark will cover and seal up the vast wound, and the tree will grow and swell out all the more freely.

A disadvantage of this process is that it requires some weeks of time; the trees standing the while pitiably stark and staring white. An incidental advantage comes in, however, which is, that if the stems are wanted for stakes, posts, or other use, they are so much the harder, stiffer, and more durable for their deprivation of sap.—*Cor. Country Gentleman.*

How to Treat Fruit-Trees.

In considering the growth of organisms, the action of the alkalies is to be looked upon as scarcely less important than that of air and water. Lime is the great animal alkali, and potash the vegetable one; its old name of vegetable kali expressed that fact, and all the potash of commerce is well known to be derived from wood ashes. The importance of potash as manure has been frequently overlooked by farmers, who rarely know the large amount of this material found in grass, grain crops, leaves, barnyard manure, roots, and fruits. How potash acts in plants, in conjunction with carbon and silex, to form woody fibre, starch, sugar, and oil, is yet unknown to chemical observers, but the fact of its action is beyond a doubt. Liebig long since pointed out that the chief cause of barrenness is the waste of potash carried off by rich crops, especially tobacco, with no replacement by proper manure. How many millions of pounds of potash have been sent to Europe from the forests of America, and in the grain, tobacco, and hemp. Luckily one alkali may be replaced by another, and we have received a considerable quantity of soda from European sea-weed, and in the shape of salt. Latterly, nitrate of soda from natural deposits in South America is brought to us at a cheap price.

The point to which we now call attention is that our farmers and fruit-growers have ignored, or rather been ignorant of, the importance of wood ashes as a vegetable stimulant and as the leading constituent of plants. Even coal ashes, now thrown away as useless, have been shown, both by experiment and analysis, to possess a fair share of alkaline value. According to our observations, if the practice of putting a mixture of wood and coal ashes around the stems of fruit-trees and vines, particularly early in the spring, were followed as a general rule, our crops of apples, grapes, peaches, &c., would be greatly benefited in both quality and quantity and the trees and vines would last longer. We will relate only one experiment. Some twenty-five years ago, we treated an old hollow pippin apple-tree as follows: The hollow, to the height of eight feet, was filled and rammed with a compost of wood ashes, garden mould, and a little waste lime (carbonate). This filling was securely fastened in by boards. The next year the crop of sound fruit was sixteen bushels from an old shell of a tree that had borne nothing of any account for some time. But the strangest part was what followed. For seventeen years after the filling, that old pippin tree continued to flourish and bear well.

Let us call attention to still another point of importance in fruit-raising. This is the bearing year for apples and fruit in general in New England; probably it is also in some other parts. Now when such years come, the farmers rejoice too much at their prosperity and abuse it, as nearly all people do the gifts of fortune. We should be temperate as to the quantity of our fruit as well as of our fruit juices. By proper trimming and plucking, the apple crop in bearing years may be reduced to but little more than half a crop as to number, but the improvement in size and price, and in the future effect, will more than balance the loss. Next February, March, or April, according to latitude, let the tree-trimmer stimulate and nourish his trees and vines with a fair supply of ashes, and in nearly every case he will have a good crop of fruit in the non-bearing year.—*Scientific American.*

The general belief is that the present year will show a yield of fruit in Niagara never paralleled. The prospects were never more favorable for such being the case, especially with pears, apples and plums. The peach crop, also, bids fair to be much larger than usual. As for the small fruit, there is no fear but there will be an ample supply. The apple crop is of course the most important of any. Last year the apples shipped from Niagara county were valued at over $1,000,000. The knowing ones express themselves as confident that the amount will be more than double this season.

THE FLOWER GARDEN.

The Cultivation of Roses.

READ BEFORE THE GERMANTOWN (PA.) HORTICULTURAL SOCIETY, BY CHARLES H. MILLER.

The Soil.

The best of all soils is a strong loam. If rich, so much the better; if not, it should be enriched with good rotten manure. It must be understood that to have roses in perfection, they must be planted in rich, stiff soil, well drained and manured. I do not mean wet clayey ground; for in that they will not thrive. We need an open, airy situation, and loamy soil for such as the hybrid perpetuals and other strong-growing kinds. On the other hand, a protected situation and a somewhat lighter material for Teas, Bourbons, and Chinas. But, as all our gardens are not thus favorably circumstanced in regard to soil and situation, and cannot be made to suit the roses, the roses must be brought to suit the gardens. And, as the varieties are so numerous and their habits so different, there should be very little difficulty in that respect.

Hybrid Perpetuals

Of all the hardy kinds this group is the most desirable and deservedly the most popular. They thrive under common treatment, and are generally suited alike for all soils and situations. Whatever the rose-grower fancies for a collection of other kinds, he must grow these in quantity, and rely principally upon them for display. They are the best for all the various purposes to which roses are applied in garden and lawn decoration.

In this group are the best kinds for bleak hills and for confined city yards and gardens, or soils of questionable character. Of the strong and more robust kinds of this extensive section we find many varieties well adapted, and indeed, the best for training to pillars and trellises, or for growing in pots, for forming rich masses in the flower garden, or for forcing in pots, and also for exhibition.

Planting.

Roses may be planted either in spring or in autumn. If in the autumn, they require some protection. Plant as early as possible, that the roots may take some hold on the soil before winter sets in. The early part of November is a good time to plant any of the hardy kinds, and the best protection is rotten manure heaped around the stem of the plant to the height of from six to ten inches. To prevent the radiation of heat from the ground, it is desirable to cover the whole surface of the bed with the same material. Dry leaves heaped among or around the plants and kept down by branches of cedar or pine boughs, is also one of the best modes of protection.

When the operation of planting has been deferred until spring, they may be safely put out as late as the early part of April;* and if the plants have been kept in pots all winter, they may be planted any time during the spring and summer, providing it is done during suitable weather. A cloudy day is the most desirable.

When the roses are ordered from a nursery, everything should be in readiness for their proper planting as soon as they come to hand. If they have been some time out of the ground, the planter should have a bucket of water, in which the roots should be dipped and a little dry earth thrown over or shaken among them. Then plant immediately. Choose a dry day, if possible, and the drier the ground the better. Be careful to press the soil firmly around the roots. This is also very important.

The Care of the Plants.

If all these things are well done, the roses will flourish for years without change of soil, with the additional top-dressing of manure once a year. If, however, sometimes happens that, with all the care bestowed on your favorites, some of them will become unhealthy, when the only remedy is to take them up in the fall or spring, shake all the soil from their roots, and replant in fresh earth, after examining them and cutting away any decayed roots and branches.

Early in spring, just as the plants begin to bud out, remove the top soil around each plant and lay a little manure as a top-dressing. They should also have a top-dressing of manure or bone-dust immediately after the first bloom is over, and all useless shoots and decayed flower stalks should then be cut away, preparatory to a second.

Tea-scented Roses

This group is the most choice and refined of all the families of roses. They are *par excellence* the diamonds of the race. Their odor is delicious, and closely resembles in bouquet the flavor of high-class teas, from which they are named.

They are easily distinguished by their large, thick petals, their elegance of form, and also the delicate tints of their flowers. Nothing can surpass in fragrance and beauty the half-expanded buds of the creamy Devoniensis, or the apricot-colored blossoms of Safrano, the combined colors of the new *Ma Capucine*, *Le Nankin*, and many others.

But, beautiful as these roses sometimes are in favorable locations out of doors, they are not to be compared to those grown under glass. There they are to be seen in perfection, and amply repay the cultivator for the extra trouble bestowed on them.

The Tea Rose was first introduced from China, about the year 1810; and the old Double Yellow Tea from the same country in 1825. From these a large number of excellent varieties have been raised.

* Or they may be planted as late as the early part of May in spring, and by the middle of October in fall.

Dendrobium Pierardi.

Almost everybody nowadays who has the means—even where no special houses exist for their cultivation—is anxious to grow a few orchids. Doubtless, the discovery that many of the most beautiful orchids will flourish in a greenhouse temperature during a considerable portion of the year, and that they are not nearly so difficult to manage as was formerly supposed, has had much to do with their increasing popularity. Of course, comparatively few can afford to make a specialty of them, although, taking into consideration the high prices often realized at orchid sales, they must, one would think, in many instances prove a not unremunerative investment. For beginners, few families are more useful or beautiful than the Dendrobiums. D pierardi makes a beautiful basket plant, which may be had in good condition with as little trouble as many of the commoner creeping plants used for that purpose. We have a basketful of it literally covered with its soft, velvety-looking flowers; it has been in this condition more than a month, and there are still many buds to open. Two years ago, when it was a very small plant on a block of wood, it was placed in a wire basket lined with moss, and the interior of the basket was filled up with moss interspersed with pieces of charcoal and two or three pieces of very fibry peat. The basket was hung up near the glass, and was well supplied with water during the growing season; afterwards it was rested by gradually withholding water and by exposure to the sunlight, not absolutely to dry it off so as to cause shrivelling. The great thing is to hang the plant near the glass, so as to get the growth well ripened. Where shall we find any stove or greenhouse plant that will yield as much floral beauty with so little trouble as the common but beautiful dendrobium nobile? It may be had in flower at any season of the year where there are several plants in stock, by inducing them to make their growth at different periods; and, during their period of growth, heat and moisture are essential, accompanied by bottom heat if possible. Much, however, of the success is due to the proper maturation of the pseudo-bulbs near the glass, altogether exposed to the sunlight, or at first with only the thinnest possible shade over them, to be removed altogether as soon as the plants get inured to the sun. I think this class of plants are often too heavily shaded, and as a consequence they do not flower so well. For the purpose of experiment, I placed a large plant of dendrobium nobile, early in August, out in the open air at the foot of a south wall. My object was to see if exposure alone, even in a warm spot, without the aid of glass, would mature the pseudo-bulbs so as to produce a good bloom. The experiment, however, was a failure, for the flowers are few and far between, whilst other plants placed on a greenhouse stage near the glass have flowered well. It appears that a plant that requires an Indian summer to mature its growth must in England have the aid of glass; but I know that many stove plants will flower all the better for being placed in the open air in a warm sheltered place for a month or so, to complete the maturation of their growth.—*E. Hobday.*

In a moral point of view, the life of the agriculturist is the most pure and holy of any class of men; pure, because it is the most healthful and vice can hardly find time to contaminate it; and holy, because it brings the Deity perpetually before his view, giving him thereby the most exalted notions of supreme power, and the most fascinating and endearing view of moral benignity.—*Lord John Russell.*

THE VEGETABLE GARDEN.

Transplanting Beets.

Transplanting beets may be done with perfect success. The cause of so many failures is by taking the plants when small, like a cabbage or turnip plant. Beets should never be transplanted until the roots are formed, and are at least a fourth of an inch in diameter. I have transplanted them when three inches in diameter with good success. From one-half to one inch is the most suitable size, I would take the most favorable time after the plants reach one fourth of an inch in diameter. Last year I took plants from the same bed at different times and of different sizes, and transplanted as follows: June 8, plants ¼-inch in diameter, yield per acre, 40½ tons; June 14, ½-inch in diameter, yield per acre, 40½ tons; June 19, ¾-inch in diameter, yield per acre, 40 tons; June 25, 1 inch in diameter, yield per acre, 37½ tons. There were two reasons why the crop on the last plot was not as good as the three first. The last was the most unfavorable time to transplant, as there was less moisture in the ground, and the plants were thick in the bed and had started a spindling growth, much to their injury. When plants are thick in the seed-bed, the sooner they are removed after reaching a suitable size the better, all other conditions being favorable. Plants are checked in their growth a few days by transplanting, therefore, to insure success, they should be started as early as possible. The chances are four to one that there will be a more favorable time to transplant with early plants than with late ones. I would not recommend transplanting beets as a general practice in their culture, but would do it to fill vacancies that may occur by defective seed, unfavorable time for it to germinate, or a destruction of plants by insects; also on very weedy land, and for a second crop after early vegetables. On land filled with weeds, by the transplanting system the harrow does all the early work of hoeing and weeding at a very cheap rate, and the plants that are set out being finely started, soon grow vigorously, and before weeds can get ahead they will be ready for horse and hand hoeing, the same as corn and potatoes. Plants should be ready to transplant the last half of June or early in July. As the plants are pulled, the tap root is cut off, and the leaves shortened to within one or two inches of the beet. The leaves will soon die if not taken off; the first growth will be indicated by a new set of leaves springing out of the top of the cone of the beet. It is a good point in all cases of transplanting to preserve the fibrous roots in a flexible state; for this reason the greatest care should be taken to keep them moist. As the plants are pulled and prepared I place them in a pail of water. The planting is done with a sharp stick about a foot in length. When the plant is set in its place, a side thrust with the stick presses the dirt against it. The land should be marked in rows 30 inches apart; set the plants 18 inches apart in the rows. In transplanting beets never bury the collar of the plant. It takes 11,000 or 12,000 plants for an acre, a good man and boy should set out 4,000 in a day.—*Honey Lane, in New York Tribune.*

Wireworms.

The true wireworms are the offspring of the elaters, or click-beetles, which lay their eggs in the field, which they hatch, become larvæ or wireworms, and are transferred into pupæ, and from these the perfect click-beetles emerge. It is believed that the female elater, of those species so injurious to field crops, after pairing with the male, lays her eggs upon or beneath the surface of the earth, they are small, round or oval, and yellowish-white. The almost invisible worms which hatch from these immediately attack the crops, whether of corn, turnip, mangel wurzel, potatoes, cabbages, or grass, and during the five years they are arriving at maturity they no doubt mould their horny skins several times. When full fed they form, generally in July or August, an oval cell deep in the earth, and casting off the last coat, they are transferred to delicate white pupæ, and in about a fortnight they become perfect beetles. Wireworms are not much unlike meal worms, but they are more active, burrowing into the soil with great facility when laid upon the surface. The different kinds resemble each other considerably, the greatest dissimilarity existing in the form of the tail. Sometimes the common wireworm will ascend into the stem of a plant to feed, and come forth at night, or in a dull day, to revel upon the leaves, but they prefer keeping beneath the soil, as they cannot endure the sun or dryness; and as they dislike cold, in severe winters they retire too deep into the earth to do any mischief at that season. Rooks, starlings, sea-gulls, lapwings, pheasants, wagtails, robins, black-

birds, thrushes, fowls, and especially moles, keep down the wireworms. There are even insects which destroy them—one a ground-beetle, named Steropus madidus, and probably many more of the Carabidæ; also a small kind of ichneumon fly (Proctetrubes viator), which is very abundant, and examines every chink in the earth to find a wireworm to pierce it with its short ovipositor, laying 20 or 30 eggs in its victim, which produce maggots that feed on the wireworm and destroy it. The remedies to be employed are numerous, and can only be alluded to here. It seems that turning in sheep and cattle to feed off clovers by treading down the soil, and saturating it with ammonia prevents the beetles from leaving their cells, and kills the worms. Heavy rolling is also beneficial in the spring. Top dressings of soot, lime, gaslime salts, nitrate of soda, are more or less preventatives. Hand-picking is a certain remedy, and 12,000 wireworms have been thus collected from one acre of turnips. Slices of potatoes, turnips, carrots, &c., kept moist under the surface, will decoy them. A crop of wood, or white mustard, will starve and banish the wireworm.—*Morton's Cyclopædia of Agriculture.*

Duration of the Germinating Power of Seeds.

A correspondent of the *Revue Horticole*, who has had ample opportunity to make observations, says the following are trustworthy estimates, as ascertained from his own experience. They represent the periods of time after which the various seeds mentioned have been found perfectly good, and will be found of some service to gardeners who are uncertain whether to throw away packets of seeds or not.

Seeds.	Yrs.	Seeds.	Yrs.
Artichoke (Globe) last's good for	5	Melon	5
Asparagus	4	Mustard	4
Basella	3	Nasturtium	5
Basil	6	Onions	2 to 3
Beans (French)	6	Onions (Welsh)	2
Beans (Kidney)	2 to 3	Orach	3
Beet	5	Parsnip	1
Burnet	2	Parsley	3
Cabbage	5	Peas	4 to 5
Cardoon	7	Pepper (long)	4
Carrot	7	Pumpkins	3
Cauliflower	5	Purslane	3
Celery	7	Radish	5
Chervil	2	Rampion	5
Chicory	8	Rhubarb	4
Corn Salad	4	Salsify	2
Cress (Garden)	5	Savory	4
Cress (water)	3	Scorzonera	2
Cucumber	5	Sorrel	4
Dandelion	1	Spinach	5
Egg Plant	7	Spinach (New Zealand)	5
Endive	8	Strawberry	3
Fennel	6	Thyme	2 to 3
Gourds	5	Tomato	5
Leeks	2	Turnip	5
Lettuce	5		

A Handy Garden Roller.

Take a joint of stove-pipe, 6, 7 or 8 inches in diameter; set one end upon an inch board, and with a scratch-awl or pencil mark around *on the inside*, reverse the pipe and mark the other end. Then with a pair of compasses find the centre of these two wheels, and strike around their circumference, allowing for the thickness of the iron. Saw or cut them true and round; bore a hole with a bit in their centres, to receive a shaft of half inch round iron about three inches longer than the length of pipe. Now fit in one of these heads and upset the sheet-iron pipe over it enough to hold it firmly in place. Put the shaft in, and set the whole on end on the ground, taking care that the shaft stands true; and lastly put in a quart or two of dry sand, and tramp it hard with a suitable rammer, repeating the operation till the pipe is full to within one inch of the top. Fit in the other head with the shaft in place; upset the iron over it as before, and you have a roller as serviceable as one of all iron, and at almost no cost. To fit it for use, make a box of inch stuff; fit a handle to it, sloping at an angle of 20 degrees from its bottom board: put a cross head to the end of it, and for a garden or walk roller this cannot be beaten. If wanted heavier, it can be loaded with brickbats or earth; and for wheeling stones or rubbish off garden or lawn, or newly ploughed or spaded grounds, it will be pronounced by all who try it "tip-top." Any man or boy who can use a saw, plane and hammer, can make one in a few hours, and with decent care it will last as many years.—*Cor. Country Gentleman.*

THE Grand Duke Alexis has sent to the "Park of Fruits" at St. Louis 250 cuttings and 23 varieties of grapes grown in the Russian Empire. They are known by names so thoroughly Russian that the *Democrat* dares not venture to put them into English.

THE FRUIT GARDEN.

Blackberries for Market.

(*To the Editor of the* CANADA FARMER.)

SIR:—Having intentions of going into the cultivation of blackberries, and having noticed the success of one Mr. Ohmer of the Indiana Agricultural Society in the cultivation of the Kittatinny, I would like to know through the columns of your most valuable paper—1. Whether it would be suitable for this climate; 2. The cost of the plants, and where they could be procured, and 3. If not adapted to this climate, what variety you would recommend. Locality twelve miles north of Toronto.—I am, &c.,

A SUBSCRIBER.

[If "A subscriber" is disposed to make the experiment of growing blackberries for market, we believe that he will find the Kittatinny variety the best for his purpose of any of the varieties in cultivation, yet we advise him to proceed cautiously, and not allow the brilliant success of the man in Indiana to dazzle his mental vision. He can procure the plants of any of our Canadian nurserymen at very reasonable prices by the hundred, and put out a small plantation of one or two hundred plants, and test their adaptation to his soil and climate at a small outlay; and if, after a couple of years' trial, he finds the plants endure the climate well and seem likely to yield good crops, he can then increase his plantation with confidence in his ability to raise the fruit. If, on the other hand, the plants will not yield a satisfactory return, the disappointment will not be so serious as it would if there had been a large outlay.

We are by no means certain that he will find the growing of blackberries for market to be a very lucrative business in this country. The fruit does not seem to be as popular in our markets as it should be to secure liberal sales. By the time blackberries will ripen "twelve miles north of Toronto," the early fruits of more southern latitudes will have become abundant in the Toronto market, and blackberries will have to be sold in competition with these. In view, then, of the contingencies which pertain to all experiments, we say to "A subscriber" make haste slowly, try the matter on a small scale, and see if you find it to warrant more extensive planting.]

Picking and Marketing Strawberries.

The season of ripe strawberries has again returned; and while no directions are necessary to enable the family to pick and dispose of those growing in the family fruit garden, some inexperienced *market growers* may be glad to receive a few hints as to the best methods of picking, assorting, and marketing their crops.

Picking Strawberries.

To pick strawberries to advantage we want first, a good strong, rightly shaped basket or box. If a box is used, its length, breadth, and height should be about equal, such a shaped box looking and packing away in the crate to best advantage. The American basket, as it is called, is as good a basket for the market grower, perhaps, as any he can use. It is a splint box, with two or three splints to a side, crossing one another on the bottom. It is nearly square, a little larger across the top than bottom, so that when empty they will pack into one another. In packing the filled baskets into crates, the layers of baskets will have to be separated by thin hasps.

As it is quite a loss of time and labor for the picker to carry every box to the crate when it is filled, stools, or "handies" as they are sometimes appropriately called, holding six or eight boxes, should be provided. A four-legged stool, with a piece of hoop bent over the middle for a handle, and narrow strips nailed round the sides to keep the boxes from sliding off, is all that is necessary.

Thus prepared, the picker can place the stool within easy reach in the row, and commence picking the luscious berries from the plants. And in this operation there is a right and a wrong way. The careless or inexperienced picker will seize the berry between the thumb and finger, and pull until the stem breaks off, or the hull (calyx) cleaves from the berry. Fruit pinched in that way will not keep long, but will soon rot. The picker who knows how to do it will take hold of the stem of the berry, and cut it off with the thumb nail. Berries picked in that way will not be bruised, but will bear handling and keeping. A plantation should be divided into two parts, and one picked one day and the other the next.

Assorting the Berries.

We are confident that it will always pay to assort the berries, even though you should get nothing for the cullens. This is the way to do it:—Out of the six or eight boxes on the stool, reserve one or two for the cullens, and, as you pick the berries, throw the small or defective ones into the reserved boxes, and the larger, fairer ones into the others. In most markets the assorted ones will sell for more than all together would, and you gain a reputation that will make your berries always in quick demand. We consider this way of assorting much better than picking them over in the packing house, as it consumes much less time, and does not injure the berries so much. In fact, after pickers become accustomed to assorting as they pick, it takes but little more time than it does to throw them all in together.

Packing.

In a large plantation it is a good plan to have a cheap packing house near the centre, so that the stools may be taken there and unloaded when filled, and not left exposed too long to the sun. Crates holding about thirty-two quart boxes are the most convenient size for handling, and good, strong, well-made crates are the cheapest in the long run, even where you ship your berries to a distant market, and are obliged to pay return freight on the crates. Before packing the boxes, the packer should see that they are full, and that the hulls of the top layer, in every box, are turned downwards, so that, as the boxes are exposed for sale, the hulls and stems shall be invisible. This greatly improves the appearance of the fruit, and will often make a difference of several per cent. in the price they will bring.

After the berries are carefully packed in the crates, and the lids securely fastened, they should be handled with care and transported to market, or to the depot if to be shipped, in easy spring waggons. A layer of three or four inches of hay under the crates will lessen the jar very much, and a careful driver who drives slowly over rough places will save them many a jolt.

If you are located near the market where your berries are sold, it is a good plan to go in with those picked in the forenoon, and the early part of the afternoon, so as to deliver them to your grocer before four o'clock so that he can furnish them to his customers for tea. There is a better demand for fresh berries for tea than for any other meal. Those picked in the latter part of the afternoon can be taken in early in the morning.—*Rural Home.*

The Oakville Strawberry Crop.

The following interesting particulars of the mode of culture adopted by Oakville strawberry growers, and the probable yield of strawberries in that vicinity for the present season, are taken from the *Argus* of the 19th ult. The writer says:

On Wednesday afternoon we made a tour over the district and inspected the strawberry fields of the principal growers, both east and west of the town. The prospects so far are excellent, in fact, were never better. The lateness of the spring, and the recent cold wet weather has retarded the ripening of the fruit, so that it will be gathered late, but will be much finer than usual. We observed that no two growers agree exactly as to the best mode of culture. The quantity of land under strawberries, within three miles of Oakville, is probably a little under 100 acres, besides those grown in gardens. This is somewhat under the average, but superior cultivation and care will more than make up the difference, and the total yield will probably exceed that of any former year. We picked ripe fruit from Mr. Martin's vines, but it will probably be the end of next week, if the weather continues favorable, before there will be a sufficient quantity ripe enough to ship. The best fruit will not be ready before the 1st of July. Below we give the results of our inquiries among the principal growers.

Messrs. Jones & Lackie—About 8 acres, 5 in bearing. It will suffice to say that these gentlemen were adjudged the first prize for the best three acres, offered by the Messrs. Chisholm.

Mr. Skelley—about 11 acres planted—2½ in bearing. One patch, about two acres in extent, is very fine. He has recently adopted the hill system of cultivation, which he is confident will yield better results than running rows. Certainly, to judge from

present appearances, his finest fruit will be gathered from the hills.

Mr. Alexander Robertson, whose lot adjoins that of Mr. Skelley, we found busy spreading bone manure, which he informed us he used at the rate of nearly nine tons to the acre. His plants have suffered severely from the attacks of a large white grub, which feeds upon the roots of and kills the plants. He has a out four acres of fruit, which will yield equal to any we saw.

Mr Martin has about 11½ acres of strawberries He does not manure so heavily as Mr Robertson or Mr Skelley, but he has a field which promises to equal the average of either This field is very picturesquely situated, being surrounded on three sides with bush. Mr. Martin has taken advantage of the favorable location to plant it with peach trees

Mrs Robertson—Five acres, all in bearing—will yield a full average.

Mr. Brymer—One acre. Yield equal to past years

Mr Balmer—One and a half acres. Crop, full average

Mr H Baker—Five acres. One patch of about 2½ is remarkably fine, clean and well cultivated Yield, probably a full crop.

Mr. W J Galbraith—About 2½ acres Crop, full average.

Mr. Ezra Kenny—Nearly three acres Crop, average.

Capt. Falen About 5 acres. Crop, over the average.

Mr. Reynolds—About 3½ acres. Crop, equal to last year

After summing up the results of inquiries, we have no hesitation in saying that the total yield will more than equal that of any former year, and the fruit will be of very superior quality The most important duty now is to make preparations to pick the fruit at the right time. The wages given to pickers is one cent per quart, and good hands can make large wages at this rate. We understand that entire crops have been already bought up at eight and ten cents per quart, delivered at Oakville station.

Fruit-Growing in Sheds.

A year or two ago I gave an account of a glazed shed built by Mr Foster, of Beeston, and planted with apricots. It is five years since it was planted, and it has every year had a fine crop of fruit. This season it is worth going a long way to see In my experience I have seen nothing in fruit culture so remarkable as the uniform success of this fruit shed. Who would have thought that a shed open to the north-east would have produced crops five years in succession, as this has done, in spite of unfavorable seasons? Last year, when no one here had apricots, Mr. Foster gathered 25 dozen beautiful fruit from two trees which had been loaded every year since they were planted. One plum—a Rivers Prohtie—produced when it was cleared 35 pounds, and it was estimated that 10 pounds had been previously gathered. A Pitmaston orange nectarine bore 12 dozen beautiful fruits, and now every tree in the shed is as full of fruit as it is possible for it to be When it is added that these trees have never been watered since they were first planted, that they have never been syringed at all, and that the only trouble taken with them has been to train them to the wires, thin and gather the fruit, I think few will deny that the success of this plan of growing fruit is very remarkable Whoever before heard of a plan of growing fruit under glass when a week or a month's absence of the gardener made no difference, when a frost of 14 deg. when the trees were in flower—as we had when apricots were in bloom—did not require to be guarded against, and did no harm? No wonder people are building similar sheds all over the country; for one thing is quite certain, that no plan of growing unforced fruit has ever been tried to be at all compared with this either for certainty or economy Nobody, after seeing this shed, would for a moment think of building shed for pots and soil and covering it with slates or tiles instead of glass.—*The Garden.*

BLEEDING OF THE VINE.—A neighbor belonging to one of the learned professions, on seeing us pruning a vine a little later than usual, remonstrated with an air of superior knowledge, "Why, don't you know that you are killing that vine?—it will assuredly bleed to death!" We had occasionally done the same thing for thirty years without detriment. We have lately seen a statement of an experiment that do not now remember the authority, where the owner of a vineyard of fifty vines, pruned one vine a day for fifty successive days in spring without discovering any difference in the subsequent growth of each.—*Country Gentleman.*

The Dairy.

Dairymen's Convention at Indianapolis, Indiana.

Address of Mr D W Dake

The National Butter Makers' Convention was called to order at Masonic Hall, Indianapolis, at 10 o'clock a.m., of Wednesday the 17th ult In the absence of President Dake addressed the convention on the subject of butter-making, cows breeding as a scientific as well as a practical study.

"The subject of butter making" said Mr Dake, "considered in detail would be far from complete if we were to pass by unnoticed the subject of stock and stock raising Upon this point I will venture the assertion that by proper care and judicious management, even our native cattle may be improved as to be brought to a state bordering on perfection 'Tis in this way the Ayrshires, the Devons, the Durhams, the Galloways, the Jerseys, and the Short horns have been brought to the present state of excellence I would not detract from them in advising the breeder to improve the native stock, but would rather try to encourage the milking qualities of each type pure and distinct as far as possible, and through them raise to a high grade the native stock We need to learn of the wild animals in some respects The instinct of the male creation for mastery one over the other is wisely designed to perpetuate the healthy, the robust, the strong In the beginning they were created perfect, every one after its kind, and pronounced good but we find them at this day degenerate Some contend the many breeds of cattle have all sprung primarily from the lank wild bull and ungainly cow, which, by a persistent and judicious crossing and recrossing, with always a certain object in view, have developed Short-horns and Devons cattle well adapted for beef, Ayrshires, Jerseys, etc., those more especially adapted for the dairy. It matters not which of these theories is nearest correct; we have to deal with things as we find them, and turn them to the best account Our country is stocked with a grade of cattle which can be improved.

The Practical Question

is how to improve them I will cite you to a better essay on this subject than I am capable of giving. It will be found in that Book of books where the story of Laban, his daughter Rachel and servant Jacob, is so beautifully told It will interest you all to read it. It savors of romance, of love, and of earnest serious life and is as practical to-day as it was then The dairyman who carefully studies the policy of Jacob, may learn of him how to become rich in flock and herds If it is desired to have cattle ring straked and speckled, sheep brown, and goats spotted, some Jacob must see that when they go to drink they do not conceive from the weak, the black, or any other than the ring-straked bull, the brown ram, or the spotted buck. This law of nature is as true to day as it was then, and if the mass of farmers would very materially improve their stock, more care must be taken by them This is a subject to be kept constantly before your minds Raise no calf from a poor cow, or which was sired by any but the best stock Sound generative organs, vigorous constitution, faultless form, perfect health, early development and marked qualities either for milk or beef, are indispensable in the animal to the successful breeder The more marked these characteristics in the parents and their ancestry, the more certain they are to perpetuate like qualities in the offspring. The practice of

Breeding in and in

tends to a distinct and permanent type of breed, but it should not be carried to the extent where disease or constitutional weakness is liable to be engendered. In such case it is better to introduce blood from another family of the same type It is a well established fact that, by following the principles of even common sense to say nothing of scientific knowledge and experiments, a common breed may be greatly improved by judicious management, and contra, the best breeds by mismanagement will deteriorate in a very short space of time, and defects be produced which may take years to eradicate The stalk of the wild apple may be made to bear the russet, the greening or the golden pippin. The Ayrshire breed for the dairy cow shows no doubt a better record than any other breed, and as a distinct type dates back nearly a century. Its name is taken from Ayrshire, Scotland, in which it originated According to Professor Low, they were brought to their present state of excellence by judicious crossing or union of their native stock with the blood of the Taswate, Short-horn, Dunlop and Alderney. The principal objection to them is their size, which the same author classes as the fifth or sixth of British breeds. I do not make mention of this particular breed with the idea of recommending it in preference to all others, but rather to call your attention to the circumstance of its origin, believing that America can and will educate her people in the science of stock raising so that hers shall become the breed of breeds. It will be done when every farmer takes the matter home to himself and weeds out the poor and cultivates the good. Don't wait for a $14,000 animal to breed from, but do the best you can, and better results will surely follow.

A Good Cow

Costs but little, if any, more to feed and keep than a poor one The difference in the value of their product should be credited to her as so much interest on her estimated valuation To illustrate: If a cow simply yields enough to pay her way and nothing more, she is worth only what she would bring from the butcher If another yields a net profit of $20 a year more than her keeping, she is as good as $200 at interest; if $40 more than her keeping, she is worth as much as $400 at interest. Still, farmers are sometimes so negligent of their own interest as to sell their best cow for a mere trifle more than one that is nearly worthless. This is not as it should be; and so long as the practice is continued, the stock of the country will deteriorate. A good sentiment is expressed in the couplet:

Rear a poor cow ever,
Sell a good one never.

One cow of a herd may be dear at $20, another cheap at $200. Different cows in the same herd with same feed and treatment everyway, often vary 100 per cent. in their profits. Weed out the poor, perpetuate the good. I will cite you a few of the fundamental principles to be observed without which no one may expect to have more than a partial success in stock-breeding and dairying.

1. The male should be known to be of the type you would perpetuate, sound, healthy, and in every other way as nearly a perfect animal as is possible, even if his use has to be paid for while an interior one could be procured gratis.

2. The female is nearly of as much importance in this respect as the male, and therefore none but the best should be bred from, and their offspring should never be slaughtered before they have been proven to be of little or no value as future breeders.

3. The comfort of the female through pregnancy is of great importance. The science of physiology is as applicable to animals as to man. The offspring of a second pregnancy is often marked by the getting of the first, and during gestation marked impressions are made on the offspring by the associations to which the female is subjected. Quiet contentment, kind treatment, regular and ample feed, pure water, moderate exercise, shelter from winter's shivering blasts, spring's drenching rains, summer's scorching rays, and autumn's changing moods, are all important to nature satisfied.

4. Parturition is facilitated by this system of special care. Through the period of gestation many a valuable animal has been lost from causes of the nature of abuse in a thousand different ways, and if not lost the offspring is affected. Whether it shall be amiable or ugly, docile or nervous, vigorous or weak, depends very much upon the treatment which the female receives through that period.

5. Imported cattle, or cattle taken into an entirely different climate from that in which they were bred, seldom show the same degree of excellence as they possess at home unless given special care. Old cattle frequently die before getting acclimated. This is strikingly illustrated by shipping them South, especially in the spring of the year if the animal is fat. The arterial system first takes cognizance of the change, the pulsation increases to twice its normal rate, fever is engendered, and death ensues. Cattle to be taken from the far South to the North should be shipped in May or June, from the far North to the South, in September or October; for the reason that the change of temperature is not so radical as it would be to reverse this order. The animal gets acclimated more readily and thus risk is lessened. The younger the animal, if old enough to wean, the less danger from these causes, and that danger is soonest past To avoid this necessity of transportation and consequent risk, some enterprising farmer in every neighborhood could with profit and at reasonable rates raise bulls from pure stock of the different types or breeds for the accommodation of the wants of the farmers of his vicinity.

6 No animal should be required to drink water which the owner himself would refuse, and especially so if that animal is the cow from which you hope to make good butter. It is sufficient on this point to

say that pure water is an indispensable article to the success of the dairyman, for good butter or cheese cannot be made where good water cannot be obtained.

7. In considering the subject of food, it seems proper for me to say, that the nourishment of the animal system is obtained principally through the agency of the blood, and the composition of the blood is chemically very nearly the same as milk, which is the nearest approach to a perfect diet, being prepared in the laboratory of Him who is the author of all chemistry. It will therefore be of interest to study its composition, and as like produces like, to feed such food to produce bone, or sinew, or flesh, or milk, as shall approach nearest its composition in them.

8 The best food for most animals, should be so mixed as to approach as nearly as possible to the chemical properties of milk, and especially so for the cow. Milk must go in at the mouth if you would draw it from the udder. The subject of feed, properly considered, would more than occupy the time which I propose to give to the whole matter before us, still it is of so vital importance that I hope you will not fail to give it your serious future attention and study, and that scientific and practical men will tell us more of the effects of different modes of feeding. It is a well-established fact that meal or bran should never be fed separately or alone, for when swallowed by the cow it goes directly to the fourth stomach and is but partially digested, whereas if it were mixed with cut hay and moistened or steamed, 'twill pass into the first stomach, be raised to the mouth in the *cud*, remasticated, more thoroughly digested, and therefore do the animal more good. Many farmers feed their cattle corn in the ear, and depend on their droppings to support their swine, when if ground and fed with hay it would have been thoroughly digested by the cow, and the pig would have probably had a breakfast at first hand. The practice of cooking or steaming food has been demonstrated to be of great utility. Some contend that the returns are not commensurate with the outlay of muscle and money. They are usually men, however, who study their own convenience and comforts, and consider them of more importance than all other matters combined. My own experience has been very limited in cooking or steaming food, and as the subject is very well understood, and my time limited, I will not go into detail at this time.

In connection with the subject of feed, the

Pasture

holds a very important position No one variety of grass, however valuable, can alone fill the requirements of a first-class pasture. A variety that in May blooms in its prime and juicy sweetness, withers and fades in July, becomes brown and woody in August, and, ere the frosts of September, decays. Most grasses are congenial in their natures, and in order to secure a good turf, ever fresh, ever green, through all the warm months, several varieties of seed must be used. An early variety shades a tender coming plant of a later one from the scorching rays of the sun, which would suck the life sap from it, and when its prime is spent in decay, nourishes it. In their turn the later varieties shade the roots of those before them, as the dutiful child, remembering the many kindnesses received in youth, returns them again to the giver And when the last varieties are nipped by the frost, they too spread their protecting folds above all these before them from the chilling blasts of the coming winter; and in case they should not give sufficient protection to insure a certain return in their order another season, kind nature has provided that above them shall be spread a pure and virgin white mantle of snow. A thin coating of straw, evenly spread through the summer and fall, will greatly assist nature in this respect and cannot be too highly recommended. It serves the same purpose that the decaying grass does, keeping the earth moist and cool in summer and warm in winter, and while it protects it nourishes as well. Should any part of the pasture seem to be failing, seed should be sown there, and with a sharp-toothed harrow scarify it well and cover after with a thin coating of straw. Timothy, red white, and alsike clovers, red top, blue and June grass are all desirable and well adapted to most pasture lands. The late summer or early fall is the best time to secure the desired results, although the early spring may sometimes do as well If you would have a good pasture be sure that no weeds shall escape the scythe and go to seed. Gypsum, or land plaster, wood ashes, salt, lime, and other fertilizers should be used when the soil is deficient in them. Your measure of success will depend very much on the knowledge you gain of the wants of your own soil and supplying them. No rule can be given by which you may know in what point your soil is deficient, except you gain that knowledge by actual experiment, as what one soil has in over abundance, another may lack.

Tethering.

In this connection it will not be out of place to speak of tethering, as it is useful in economizing feed or making a less number of acres support a greater number of cattle. The advantages gained are so apparent that to simply mention a few of them will suffice. As good a device as has come within my notice consists of a leather strap with a ring sewed into it, to buckle around the horns, a chain of suitable length and strength, with a spring snap at each end; a piece of inch iron with a ring in one end and the other end pointed and spiral form, similar to a corkscrew. This can be easily and firmly screwed into the earth at any desired point in a very quick time; snap one end of the chain into the ring in the strap which is around the animal's head, and the other into the ring of the tether-post, and the animal cannot roam over pasture, meadow, or grain Hundreds of dollars can be saved alone in the item of fencing, which to the west is a great desideratum. No one of you would think of allowing your cattle to roam at will through your fields of wheat, or rye, or corn, even if muzzled so that they could not eat of it. Why? Simply that they would tramp it down and destroy it. You should not allow them to trample and destroy the pasture for the same reason And further, if they do not need the whole pasture, part can thus be mowed, cured and preserved for winter use. If the pasture shows signs of failure, so that the stock are likely to lose in flesh, feeding should be resorted to at once and not wait for snow fall, for what is lost to the animal at that season of the year is next to impossible to be regained through the inclemency of winter. Young stock show the bad effects of mismanagement in this respect far more than the older ones, still the principle is the same in both. A good rule is to keep the animal in a thriving condition always, summer and winter, from the time it is born.

Soiling.

I beg you to consider a few of the many advantages of soiling or half soiling. I am fully convinced that no branch of farming pays a better dividend. Sweet corn sowed or, which is better, drilled in rows so that the cultivator can pass between, stands first in favor with the greater number who practise soiling. Other kinds of corn, sorghum, oats, peas, etc., etc., are each good in a degree, to supply the shortcomings of the pasture in July and August, while the residue—if any is left more than is needed. and there always should be, for it is a better crop than hay—can be cured and preserved for winter's use. The time for putting in the seed is immediately after planting. The comfort and quiet of the cow is essential to good milk. Abuse, the annoyance of flies, racing by children, worrying by dogs, etc., tend to heat the blood, create a feverish condition, and so impair the quality of milk. A quiet repose beneath some shady tree, or what is better, a cool stable so constructed as to give ample fresh air without a draft, where the weaker ones lie unmolested by the strong, where with screens the flies are excluded, where the cow can chew her cud in peace, and remasticate her food in quiet contentment; where, after filling herself she can repair through the heat of the day to promote her health, is very essential to good milk. Professor Baron Liebig reports having churned excellent butter from milk which had been kept twelve months. M. Mabrun was awarded by the French Academy of Sciences 1,500 francs for his

Process of Preserving Milk,

which is very similar to the usual methods of preserving fruits in tin cans, subjecting it to a moderate heat, to expel the air, and closing with solder. The properties of fresh milk were thus retained for months. Improvements on this method have resulted in great good, and tons are now yearly condensed and given to the trade, where it answers a good substitute for newly-drawn milk. Perfection in the art of butter making is to be acquired only by patient, persistent, persevering care in every detail. The milk should be drawn by the same careful, cleanly person, at regular hours night and morning, and care taken that no filth of any kind is allowed to fall in the pail. The pail, of course, is presupposed to be kept scrupulously clean, in common with all other utensils used in the dairy. This subject has become threadbare by repetition in one form of speech or another, still, it is yet one of, if not the worst evils that cry for redress. The practice of straining milk ought to be unnecessary. 'Tis useful only to remove dirt and filth, which can never be fully separated from it if once in. It should never be permitted to get in, and then there would be little use for the strainer, which serves only to catch the cow hairs and coarse dirt. The flavoring extracts are there still. The old saying, "the broth of the devil is no better than his meat," applies well here.

Handling Milk.

At this point I propose to digress somewhat from the usual manner of handling the milk in the West, and institute a radical change. On the subject of milk I spoke at some considerable length at our meeting in Beloit, and also intimated this proposed change. I then said in substance, 'et any one or more persons—as many as can work harmoniously together—fix up a first-class milk room and churning depot. Take your milk there, have it weighed, set, skimmed, churned, handled entirely by one competent person; take your butter so handled, and as soon as churned, to a central depot to be worked and prepared for market by one competent person. He can pay you the cash for it as I do, and take to his own account our work for a consideration or per cent. I know from my own experience in the matter, that butter so handled can be sold for a good profit over that handled the usual way, and my faith is strong in further raising the grade 20 per cent. above what I can now attain, if I can get the full co-operation of the farmer; so that all of the milk can be handled in the best manner known. Only a few attain to that perfection which is possible, and they should have the charge of the milk rooms and churning depots. I believe this system, which in many respects is similar to the cheese factory system, properly carried into effect, will be more popular among the farmers than the former, for many reasons, among which are:

1. The cost on first outlay need be but trifling in comparison with a cheese factory.
2. The product of a small number of cows can be worked as well as a large number.
3. The depots can be located at or near the farm where the cows are kept.
4. Being near by, the milk can be delivered and returned with less expense.
5. The sour milk is of great value for feeding, whereas whey is not.
6. Under the charge of a competent person, with better conveniences than would be obtained singly, a finer grade of butter would be produced.
7. A great amount of labor would be saved to the farmers' wives.
8. A large number of depots, massing their product at some central depot, could command better prices for it than if operating singly.
9. A growing reputation would follow them, and the butter-consuming world would know where to find butter at a smaller expense than now, and would be able to pay more.
10. Larger lots can be disposed of to dealers to a better advantage than small ones. They could not be induced to travel from New York or Philadelphia, or any distant market to buy one dairy of butter, but would come by the dozens to such a depot.

The Cheese Factory System.

It will be unnecessary to go further in this line than to cite to you the success that has accompanied the cheese factory system, and with an increased production of cheese nearly tenfold, there has been an increase in price of nearly threefold. Our exports of cheese in 1849 and 1850 were estimated at 12,000,000 pounds, and sold, from fair to strictly fine, for six to six and three-quarter cents. There was no very important increase either in quantity or price until about 1860, when the factory system began to come into repute by the superior article produced over the usual manner of operations at the farm houses. This system was inaugurated by Jesse Williams, a farmer near Rome, Oneida County, N. Y., in 1851, who, beingan experienced and skilful cheese maker, and having a reputation on the market for making a superior article, contracted his cheese at seven cents a pound. This price was considered very high, and in order to make a good thing out of the contract, he had the milk from his son's farm brought daily to his milkhouse, where he manufactured it into cheese. From time to time neighboring dairies were added, more apparatus supplied, buildings enlarged, etc., etc. From this small beginning, note the change that has been made.

> Facts are stubborn; to them theories must yield,
> Either in senate or council, in forest or field.

To-day factories are established all through the dairy sections of the country, in which nearly all the cheese that is manufactured for market is made. English dairymen acknowledge the superior merits of the American factory system, and Sweden and other European countries are fast adopting it.

The French, in hot weather, cover the milk cans with textile wrappers wet thoroughly. The evaporation keeps the milk cool, which can thus be transported long distances without serious deterioration. I have practised the same principle in collecting

butter in waggons from the farms, with better results than by the use of ice. I believe that the principle can be applied to shipping butter by rail to the eastern markets, with great success, and much cheaper than by the use of ice. There are three requisites at least to produce the desired result: shade, draft of air or perfect ventilation, and some open porous fabric or substance which will take up and hold moisture until evaporation shall dry it, when more water should be showered upon it. The principle of evaporation is very well understood, and known to be cooling. The West should, and I believe will, in no far future day, be the best dairy section of America.

The Sun should never be allowed to Shine on Butter,

or a package containing butter More butter is injured from the farm house to the village store, and in transportation by careless, unthinking or wilful parties, than from all other causes combined. The farmer has an easy and effectual remedy:—an old umbrella for a shade, green grass or wet flannels or any other substitute whereby a rapid evaporation can be affected for the cooling arrangements, and you can carry your butter for miles to market in good condition.

So long as dairymen travel through the country, pick out the best milkers, and keep them for milk till they grow old, without raising a single calf, no improvement of our milking stock may be expected.

MILK ESTABLISHMENT IN SWITZERLAND. — The *Utica Herald* states that an American company is establishing a milk-condensing factory near Lake Zug, in Switzerland. The machinery has already arrived there, and the necessary buildings will be completed during the present season.

WHOLE dairies, says the *New York Tribune*, are now reported as yielding large quantities of butter, and generally the profit on each cow is $100 a year, considerably more than the profit on a hired man. This is because farmers are raising cows for their own use, and more care is taken in the selection of dairy stock.

THE Butter and Cheese trade is constantly increasing in volume and influence, and already exceeds in value that of any other line of agricultural products. Its value is greater than that of hay, wheat, or cotton, and whatever is done to affect so widespread and powerful an interest should receive the most earnest attention.

AT Belleville there is a decided decline in the cheese market, though quotations are very unsettled Latest sales have been made at 11¾c. It is impossible, at present, to predict what the future tendency of the market may be. The factories are in full running order, and pastures being better than known before in years the yield of milk is much above the ordinary seasons.

AS I have been asked by a number of friends if the Butter Inspection Act requires any alteration in the size and make of tubs, for the information of those interested I would state that the new Inspection Act requires new kinds of packages; but the compulsory clause having been struck out, it is quite a dead letter, and no one is required to get it inspected; therefore, it is not required to alter the packages. —*Correspondence Peterborough Times*

ANNATTO.—In the two French colonies of Martinique and Guiana, there are more than 6000 acres under culture with annatto (*Bixa orellana*), the annual produce being 3,000,000 lbs. Although French Guiana has nearly five times the extent of land under culture with this plant that Guadaloupe has, it only produces about two-thirds of the whole quantity. The production of annatto now exceeds the demand, as no fresh uses have been found for this coloring substance.

WE find the following in the *New Westminster* (British Columbia) *Herald*. Mr. Harris is an old Ingersollonian, having left here a few months since to reside in British Columbia. "The necessary apparatus for a cheese factory, manufactured in this city, will be shipped this morning to Mr. Wellington Harris of Keatsey, who expects shortly to be able to supply the home market with first-class cheese, equal to the prime Canadian article."—*Chronicle.*

WHEN milk is selling for 6 cents a quart cheese should bring 30 cents a pound. It would be as profitable to sell milk at 3½ or 4 cents a quart, as to make it into cheese at present prices, and this reduction in price would double the consumption and supply a better article of diet than any form of cheese which is little used by the people at large. It is too indigestible and expensive. As an article of diet milk is used too little. Less meat, lard, butter and pastry, and more milk would be better for almost everyone.—*Little Falls Journal.*

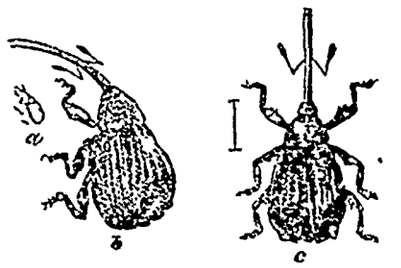
Correspondence.

The Apple and Pear Curculio.

(Anthonomus quadrigibbus Say.)

Mr James R Cook, of Mount Albion, Ont., has sent us some specimens of the above named insect, with the complaint that he has found them piercing his young pears, and that they have destroyed most of his "Anjous."

Four years ago we described and figured the insect in the CANADA FARMER, and shortly afterwards gave an account of it in the *First Report of the Entomological Society of Ontario*—in both instances referring to it as one of the pests of the apple. It is quite as injurious, however, to the pear, if not even more so. Happily it is not very abundant throughout the country, and consequently not very generally known, but here and there it makes its presence apparent by the injuries it inflicts upon the young fruit.



The accompanying illustration represents the insect highly magnified—*b*, a side view; *c*, a back view; while *a* exhibits the natural size.

In size it is very similar to the well-known Plum Curculio *(Conotrachelus nenuphar Herbst)*, but it may easily be distinguished from it by its much longer and more slender proboscis, its dull brown or reddish color, and the four prominences on the wing covers behind the middle. Its natural food is the fruit of the hawthorn and wild crab and other allied indigenous trees; but it frequently, as in the case before us, finds its way from the woods to the gardens and orchards, and takes only too kindly to the various varieties of apples and pears. It makes round punctures in the fruit, not the crescent-shaped marks of the "Little Turk," and produces in pears hard, woody spots that very much impair the beauty and value of the fruit. The only reliable remedy for its attacks is vigorous and persistent "jarring."

Leaking Teats.

(To the Editor of the CANADA FARMER.)

SIR:—Could you give any information to a constant reader of your valuable paper as to what can be done in the case of milk leaking out of the teats of cows between milking times?—I am, &c., J. C.

[The following reply to a similar inquiry, propounded by a correspondent of the *Western Rural*, is so applicable, and covers the ground so fully, that we quote it verbatim :—

"The teat, both in its shape and office, somewhat resembles a funnel, and possesses considerable elasticity It is formed of the skin and muscular fibre, the cuticle not only covering the teat, as in the other parts of the body, but the cuticle also turns upward and lines the interior as far as it is contracted, and is terminated with a frilled edge. The rest of the teats and the ducts are lined with a mucous membrane. If the milk were allowed to run down directly into the teats, it would soon overcome the resistance of the contraction at the extremity, and pass out; therefore, each main duct, as it enters another, has a contraction or valvular apparatus, so that each is a pouch or sack, which together hold the body of the milk. Consequently, in the act of milking, it is necessary to give motion to the udder, or lift it, in order to produce a flow. Thus the milk, being displaced, flows into the teat and is pressed out; and from the peculiar formation of these valves, it is prevented, to a great degree, from again returning.

When the udder becomes over distended, the motion of the animal will cause the milk to flow into the teats, and when this takes place to such a degree as to overcome the contraction of the teat, the milk escapes. This contraction, in some cows, is so slight that the milk is apt to leak at all times, and it is not unusual to see the milk escaping from the teats of an extra milker when driven home for milking, during the full flow of milk.

Various devices have from time to time been resorted to to overcome this. India rubber bands have been used around the teats, or collodion has been applied to the ends of the teats, to form a film over the ends of them, but so far as we know, none have proved satisfactory. The only real and perfect remedy we know for such extra milkers, or those having weak valves, is to milk three times a day, and to drive carefully from the pasture to the milking yard. There are very many cows whose udders are not capable of holding for twelve hours the milk secreted. If not drawn, the milk supply will gradually diminish to such quantity as she can hold. We should not advise mechanical means, for, by the undue distension of the udder, inflammation, garget and other troubles are apt to arise. The reason why the hind teats leak first is, that the portion of the udder connected with them secretes more milk than the forward parts, and sooner becomes over loaded. The longer the udder continues to be distended, the weaker, in all probability, will become the power to retain the milk."]

How to Construct an Ice-House.

(To the Editor of the CANADA FARMER.)

SIR:—Could you advise me in your columns of the best way to construct an ice-house in an economic manner? It seems in this country where the heat in summer is so great, to be absolutely necessary, if anything like good butter is to be turned out, that ice should be provided; and a description of the manner in which it could be cheaply stored and kept would no doubt be appreciated by many.—I am, &c.,

A NEW SUBSCRIBER.

[On page 31 of the CANADA FARMER for January 15th, of this year, will be found a cheap and simple method of constructing an ice house, which, for the benefit of "A New Subscriber," we reproduce. It is as follows:

"No excavations are needed, nor double walls with expensive roofing for an ice-house; any out-house, however cheap, may be used. In fact, for two years I have used a part of an outer wood-shed, and my ice has kept perfectly.

"Now for the manner of storing. Sprinkle the earthen floor with saw-dust, and you are ready for operations. Saw the blocks of ice as large as can be conveniently handled, and as nearly square as possible. Place them neatly together, leaving a space of ten or twelve inches from the boards. Eight feet by ten or twelve feet is large enough for an ordinary family When one layer is completed, fill all the cavities with pulverized ice; then place another tier, and so on until your block is four or five feet high. Then enclose the remaining two sides, leaving, of course, the space from the ice. This fill with saw-dust, covering the top the same depth, and your work is completed. This may seem too simple, but experience has taught me that a building through which you can 'throw an old hat' is as good as one costing hundreds of dollars."

A BRITISH COLUMBIA correspondent wishes to know whether there are any Jersey cattle in the Dominion, and at what figures they may be obtained. Will breeders please take the hint?

A Windfall.

(To the Editor of the CANADA FARMER.)

SIR:—During the prevalence of a heavy gale of wind recently, a large old tree, the hollow trunk of which had been the nesting place for many years of swallows and other birds, was blown down, and on examination the base of the trunk was found to be almost full of an accumulation of droppings and the remains of eggs, young birds, &c., of which I send you a specimen.

Would you be good enough to state, through the CANADA FARMER, whether the compost is of any value as a garden manure; and if so, in what manner you would recommend it to be applied?—I am, &c.

AN OLD SUBSCRIBER.

[The substance is valuable alike for garden or field crops. Its effects, at the rate of two or three hundred pounds to the acre, on the cereals would doubtless be astonishing, and sown with any garden seeds, the result would be almost equal to what follows an application of guano. For ordinary garden purposes we would recommend equal parts of it and bone dust. —ED. C. F.]

Destroying the Potato Bug.

(To the Editor of the CANADA FARMER.)

SIR:—Having heard and read of a good many methods of exterminating the potato-bug, will you kindly allow me space in your valuable columns to state the plan pursued with great success by myself last summer. The remedy is within the reach of all, and can be applied by children equally as well as by grown up persons.

I took the bottom of an old fashioned chamber candlestick, narrow at the top and wide at the bottom, like a flanged dish, and filled it to a depth of half an inch or so with coal-oil. Setting this on fire, I then went through the potatoes when they were about six inches high and scorched all the tops, turning them gently with the hand in order to get at the *under side* of the leaf, where the eggs are invariably found, and these I committed, leaf and all, to the flames. The full grown insect was usually discovered on the upper sides of the leaves, and a light tap with the fingers made them share the fate of their progeny. This course I pursued day by day and sometimes twice a day, and the result was a splendid crop.—I am, &c., STANHOPE.

[The plan adopted by our correspondent is undoubtedly a "scorching" one, too much so we fear for the potato tops, and especially liable to prove so when the operation is conducted by children. Besides, the process is altogether too slow a one, forcibly reminding us of the reply made by the vendor of a bed-bug exterminator on being asked how to apply the article. "Take them by the nape of the neck and dust it in their eyes." When time and labor are no object, hand picking and various other methods may be employed quite effectively, but on the whole we think the Paris green remedy the best yet.—ED. C. F.]

Old Sores.

(To the Editor of the CANADA FARMER.)

SIR:—Last fall I had a valuable colt whose head became inflamed, commencing on each side of the bridge of the nose. I enclosed eight grains of arsenic in each of two small paper parcels; made an incision on each side of the animal's head about five inches below the eye, inserted the arsenic packages, and sewed the incisions carefully up. In a short time two large scabs formed which I decided to remove, but upon doing so discovered that all the adjacent parts were loosened from the bone and the bone itself very much affected.

Can you recommend any course of treatment that will produce adhesion of the parts to the bone, or is there any probability that in course of time a new growth of flesh will take place?—I am, &c.,

Madison Co., Montana. A SUBSCRIBER.

[You have permanently injured your horse by the useless and, we may say, cruel treatment adopted. We can only recommend as a palliative to dress the parts daily with an application of carbolic acid and linseed oil, in the proportion of one part of the former to sixteen of the latter.]

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The Canada Farmer.

TORONTO, CANADA, JUNE 15, 1874.

Scientific Agricultural Education.

A second edition of Mr. Milne Home's pamphlet on "Agricultural Schools and Experimental Farms" has been issued, containing in an appendix practical proposals which the author intends submitting to the directors of the Highland and Agricultural Society of Scotland. Mr. Milne Home has for many years been a prominent member of this great National Society. He is also an extensive landed proprietor in the South of Scotland, and has long held a foremost place as one of the most eminent scientific and practical agriculturists in that highly cultivated country. The Professor Wilson alluded to is the noted Professor of Agriculture in the University of Edinburgh, and Mr. Jamieson is the Lecturer on Agriculture in the University of Aberdeen. A great portion of the following extracts are particularly valuable to us in Ontario at the present time, when our Provincial Agricultural College is in operation, especially if the country at large is to reap the full benefit such an institution is expected to afford. We print the principal portions of the appendix as follows:—

"There are three distinct lines of procedure which have been suggested to be followed by the Highland and Agricultural Society, with a view to advance the interests of agriculture. 1st, To encourage schools and classes for teaching the principles of agriculture, so far as these principles are known. 2nd, To institute experiments and investigations for the purpose of discovering principles and processes not at present known. 3rd, To afford, or assist in affording, protection to the farmer against imposition or mistakes in the manufacture of fertilizers. With regard to the first of these objects, there are two points to be noticed:—What need is there for giving the encouragement referred to? If more should be given, how may it be given?"

Referring to Professor Wilson and Mr. Jamieson's views on the subject, Mr. Milne Home proceeds:—

"These gentlemen evidently point to the need of seminaries or institutions where agricultural students, before coming to the university class, should be instructed in the sciences, which are the foundation of agriculture in its present advanced state. When the professor has to explain the chemical substances which enter into the compositions of different plants and of different soils, he has to use language and refer to matters utterly unintelligible to students not previously instructed in a certain amount of chemistry and botany; and therefore it is that young men who have not obtained that preliminary instruction anticipate that it will be of comparatively little use for them to attend the university class.

This fact also explains why the agricultural students at the university are less numerous than formerly. In former days, little or no reference in the teaching of agriculture had to be made to chemistry, botany, geology, or other such sciences. The lectures were confined almost entirely to an explanation of the simple practices then pursued by the farmer; and no attempt was made to give such scientific explanations as are now necessary. Whilst the absence of all preliminary instruction in the sciences to which Professor Wilson refers sufficiently accounts for the small number of students now attending his agricultural class, it also explains why so few students obtain the Highland and Agricultural Society's diplomas. There are no schools in Scotland where the instruction can be obtained which can enable them to face the examination prescribed by the society's Educational Council.

The instruction required might be given in two classes of schools—elementary and middle-class schools. (1.) In the elementary schools, attended by boys up to the age of fourteen, very little of such instruction can be given. But it may be given to some extent, and with much advantage. Chemistry certainly cannot be given, unless apparatus for a few simple experiments is supplied. But a little botany and geology might easily be taught, with the help of diagrams, and also specimens of plants, flowers, rocks, and minerals, which the scholars might themselves gather and bring to the school. Such extra subjects might be taught once or twice a week—even in elementary schools, without in any way interfering with the ordinary branches.

(2.) But it is in the middle-class schools, adapted for boys above fourteen years of age, that instruction in the sciences bearing on agriculture could be most effectually given. In all our large towns, and even in some rural districts, there are grammar schools and academies which afford the means of such instruction. In some of these schools there are even now classes for chemistry, botany, mechanics, and mensuration. It would be easy for the teachers in these institutions to introduce into their teaching of these subjects such portions as bore more particularly on agriculture, and suited to lads from 14 to 18 years of age. There can be no doubt that in many middle-class schools throughout Scotland classes would be at once opened for these objects, were an appeal made to the managers by the Highland and Agricultural Society.

(3.) If it be said that the appointment of teachers, qualified to give instruction in chemistry, botany, geology, mechanics, and other sciences bearing on agriculture, would be impossible unless funds were forthcoming to pay teachers, and also to defray the cost of a laboratory, an answer is at once supplied by the Kensington Department of Science and Art. That department, as its directory for 1873 explains, gives most liberal encouragement to science classes. Grants are made for erecting new buildings, and adapting existing buildings, at the rate of 2s. 6d. per square foot of internal area, up to £500 on each application. Grants are made for fittings of laboratories and lecture-rooms, and for the purchase of apparatus, diagrams, &c., to the extent of 50 per cent. of the cost. Grants are made of £1 yearly towards the expense of each student working in a laboratory. Schools for science instruction are materially aided. In these circumstances, the fear of any want of funds to indemnify managers of middle-class schools for affording instruction in the necessary subjects, to qualify for a profitable attendance on the lectures in the university, need not exist. It might, however, be right for the Highland and Agricultural Society, in carrying out the objects of its educational charter, to give some pecuniary help in certain cases.

The Royal Agricultural Society of England is at this moment making arrangements to have the sciences bearing on agriculture taught in a number of middle-class schools in English counties, and with that view is proposing to give handsome bursaries. It is felt that the mere granting of diplomas by the society is not sufficient encouragement when there are no schools where the necessary instruction can be obtained.

The second object aimed at, is some plan of carrying on experiments and investigations with the view of discovering new principles and processes in agriculture. The Highland and Agricultural Society has long aimed at this object, but in a way which it is now generally admitted has proved a failure. The only plan which has a likelihood of success is that begun in Prussia, and since introduced into Austria, France, Italy, and America. The only obstacle in the way is the expense. Each station is said to cost from £500 to £700 yearly. Surely the agricultural

interests of Scotland, if rightly appealed to, ought to be able to raise that sum. It is very probable that the Kensington Department would assist largely not only in fitting up a building and laboratory, but in remunerating both teachers and students. If not far from Edinburgh, the institution might be put under the joint charge of the Professor of Agriculture and the chairman of the Chemical Committee of the Highland and Agricultural Society. With reference to this matter, it deserves notice that there are in different parts of Scotland institutions of an educational character, which, having land attached to them, might be of considerable service were the managers disposed to assist. If at any of these institutions a chemical laboratory were provided, with a class-room for pupils and a few acres of land, there would be all the elements of an experimental station similar to those in Germany.

As regards the third object adverted to at the outset—viz., protection to the farmer against inferior manures and feeding stuffs—Mr. Milne Home says: "Were there an experimental station, with a laboratory, and a class-room for pupils, there would be ample work to occupy the whole time of a chemist; and his services would be very useful to the society in many other respects. The most desirable plan, therefore, would be to consider whether such an institution could be obtained in Scotland. The money hitherto spent on the society's chemical department would be spent in a way much more advantageous to agriculture, and with less risk of dissatisfaction, were it employed in creating experimental stations, superintended by a chemist competent to make analyses for farmers."

Short-horn Sales.

From a comparison of the short-horn sales of the present year and 1873, there are a few striking facts to be eliminated which, either as a basis upon which to make calculations for the future or as a simple result of chance or accident, prove interesting items of information. After the great New York Mills Sale of last year, several United States contemporaries, with considerable apparent force, maintained that the enormous figures then obtained predicted certain depreciation, and consequent injury to other breeders. The idea was strongly controverted by other writers, but as time alone could solve the dilemma, argument ceased until experience should prove the correctness of either the one view or the other. That time has come and gone, and with it the various sales in widely separate parts of the United States and Canada, which we find tabulated in the *Country Gentleman* as follows:

AMERICAN SALES OF 1874

	Number sold.	Average.	Aggregate
Genesee Valley	32	$175 00	$5,611
Messrs. Bedinger	24	98 62	2,367
G. J. Hazerty	45	312 88	14,305
C. E. Collin	48	481 14	23,095
C. C. Parks	76	720 67	54,705
W. S. King	79	1607 91	127,025
Parker and Blake	3	163 67	490
Meredith and Son	47	468 62	21,790
Spears and Son	42	758 10	1 840
J. H. Kissinger	49	425 25	17,010
W. H. Hanson	25	729 40	8,235
Taylor, Pickrell, & Elliott	76	358 20	27,170
Total	538	$620 38	$337,765

CANADA SALES

J. In. Craig	23	$393 50	$7 255
S. Lee	16	968 75	15,500
Wm. Thompson	29	253 50	7 352
R. J. Stanton	19	250 50	4,935
Snell Estate	50	258 40	12,920
Hugh Thompson	25	475 20	11 880
Thos. S. Smith	17	129 00	2,188
Montreal Sale	16	111 50	1,785
Total.	195	554 95	60,215
American Sales as above	538	620 38	333,763
Grand total	733	549 76	$402,685

The foregoing all took place subsequent to Mr. Campbell's. Let us now, for the purpose of comparison, take those that came off previous to the New York Mills Sale

SALES OF 1873, PREVIOUS TO MR. CAMPBELL'S

	Number sold	Average	Aggregate
79 Sales in United States	1,238	$375 63	469,976
9 Sales in Canada	212	293 09	62,741
Aggregate	1,450	$367 32	$532,717

From this latter it will be observed that the average price realized previous to Mr. Campbell's sale, in round numbers was $367, whereas from the former the average was $549, showing, instead of a decrease as anticipated by many, an actual increase of about fifty per cent. Taking United States sales alone, from the two statements, we find an increase of over sixty per cent. on the average, whilst those of Canada show an increase of about nineteen and three-fourths per cent. Lest this advance, however, may be considered due either to the selection of but few sales, or to the fact that fewer sales took place last year than this, another table is furnished of all the leading sales of the present year, up to the date of our last issue, and comparing the best nine of these with an equal number of those which ranked highest previous to the Campbell sale, we find as follows:—

NINE BEST SALES IN FIRST EIGHT MONTHS OF 1873

	No. sold	Average.	Aggregate.
W. B. Doige	48	$432	$21,200
C. C. Parks	36	649	24 360
George Murray	30	805	24,180
Edward Dix	38	914	34,705
W. Stewart	36	540	19 435
J. H. Kissinger	42	536	22,695
G. M. Bedford	36	869	31 300
Hampton Estate	68	665	38,125
A. Van Meter	49	396	19,125
	388		$235,125

Average on the 388 head $606 27

Observe that these are the highest nine selected out of thirty, whereas this year we have but twelve out of which to make an equal selection—a fact which is undoubtedly in favor of the preceding year. Also that the best nine of 1874 cover 479 head, against but 388 last year—telling again against the comparison for this year—and yet the difference in average is for this year $679, and for 1873 $607, showing an increase of 12 per cent.

From the figures above given, and practical results deducible therefrom, there seems to be no doubt that the short-horn interest leads in this country at the present time. We can also learn from these deductions that prices, instead of depreciating, are decidedly looking in the opposite direction. Whether the animals are intrinsically worth the prices given or not, it is certain that those belonging to "special families" particularly will continue to command very large figures, as will also any other extra good animals of the breed. And another feature particularly noticeable is, that color seems to be becoming a subordinate consideration, or, at all events, it is not regarded as it once was. Good roans will soon be quite as popular as reds, and even whites are looked upon in some instances with favor.

The West Dereham Abbey Short-horns.

The third catalogue of this famous herd, owned by Mr. Hugh Aylmer, Norfolk, England, is to hand. The herd has been established for about twenty-five years, the earlier selection being made from Bates' Booth and Colling blood, but for a number of years past Mr. Aylmer, fully convinced of the superiority of the Booth tribe, has used the best bulls obtainable at Warlaby, so that the herd has largely assumed a Booth character, which has been further enhanced by the occasional purchase of some of the finest Booth cows as they have come into the market. Besides the Mantalini, Fame, Bliss, Golden Beam, Calomel, Hecate, and Phillis tribes, the catalogue contains many animals of the Easthorpe, Gwynne, Strawberry, Gem, Roseleaf, Full, and other choice strains, which from long and practical experience, have been found adaptable to the climate, to be good milkers, small consumers, and quick growers of the finest quality of beef. Foreign buyers have for some time extracted extensively from this herd at handsome prices. Sixty-nine cows and heifers and twenty bulls of excellent pedigree, comprise the herd just now, and make a very creditable catalogue.

Mr. Arch has consented to accompany a party of agricultural laborers to Canada, and the Union has granted $5,000 to assist in defraying immigration expenses.

Agricultural and Arts Association.

The Council of the Agricultural and Arts Association of Ontario met on the 19th ult., at their Board room—Sheriff Gibbons, of Goderich, President, in the chair. There were present, Rev. Messrs. Burnet, Aylesworth, Bethune, Messrs. Chas. Rykert, M.P.P., Hon. D. Christie, J. Young, M.P., S. Wilmott, A. Wilson, Ira Morgan, (Warden of Carlton), J. McNab, Prof. G. Buckland, S. White, L. Shipley, (Warden of Middlesex), Thos. Stock, (Warden of Wentworth).

The minutes of the last meeting were read by Mr. Thompson, Secretary. Several unimportant communications were also submitted.

The Secretary brought before the notice of the Council a paragraph from the GLOBE, containing a resolution passed by the City Council of London, providing for the sale of sixteen acres of the present fair grounds, lying before Wellington and Waterloo streets in that city.

In view of the fact that the Agricultural and Arts Association have a claim upon such land, it was moved by the Rev. Mr. Burnet, seconded by Hon. D. Christie, and resolved, "That the Secretary send the Solicitor a copy of the bond from the city of London to this Association, with instructions to take such proceedings as may be necessary to protect the rights of the Association in respect to the Exhibition Grounds at London in the event of the City of London attempting to dispose of the said grounds."

The Secretary read the resolution of the Exhibition Department as amended.

Mr. Wilmott brought up the matter of fish culture, and a somewhat lengthy discussion culminated in the following resolution:—Moved by that gentleman, and seconded by Rev. Mr. Bethune, "That with a view to encourage and aid the new industry of fish culture now fully established in this country and throughout the Continent of America, a list of premiums be awarded by this Association to such competitors as may be desirous of exhibiting the products of the water, either living or preserved, and who may be anxious to make the approaching exhibition of their Association both attractive and instructive on this important subject, amounting to the sum of $150, and that Messrs. Bethune, Wilmott, and Graham be a committee to arrange such list."—Carried.

Mr. Wilson introduced the subject of ploughing matches in the following resolution, which was carried: "That whereas the Provincial ploughing matches of last year were highly successful and gave general satisfaction to the agriculturists of Ontario, therefore, resolved that the sum of three hundred dollars be granted to each of the four ploughing match districts as established by the Association last year, and that the members representing each district have the sole control of the management of the said ploughing matches."

Hon. D. Christie referred to a resolution he had before introduced in reference to the Veterinary College, and after giving his views at some length on the subject, submitted the following resolutions, which were seconded by Mr. Wilson:—

Resolved,—"That with a view of extending the usefulness of a Veterinary College, it is expedient to transfer that Institution to the Model Farm at Guelph to be in connection with the Ontario School of Agriculture."

Resolved, "That a sum not exceeding $4,000 from the funds of the Agricultural and Arts Association of Ontario be appropriated for the erection of suitable accommodation for the Veterinary College, and that the Executive Committee be empowered to erect the necessary building for the purpose and within the limit above named, when the Government shall have granted a suitable site."

Mr. Rykert, seconded by Mr. Wilmott, moved in amendment, "That it is inexpedient to appropriate any money towards the erection of a Veterinary School at Guelph until such time as some definite understanding has been arrived at with the Ontario Government in reference to the management and government of the said school."

On the amendment being put, the yeas and nays were called for. The amendment was lost by 10 to 4, and the original motion declared carried.

The Crops.

On another page of our present issue we give brief extracts from our various exchanges regarding the present state of the crops in all parts of the country.

The effects of the warm, growing weather, and the refreshing showers of the past few weeks upon vegetation of every kind have been altogether unprecedented, and there is little doubt that the spring crops of the present season will be among the heaviest for years back. A prominent Oxford farmer remarked in our hearing recently that his hay crop surpasses in appearance anything he has seen in Canada during the past thirty years.

Spring wheat, and such portions of the fall crop as escaped the killing-out process, look remarkably well, and the same remark will apply to barley, oats and, indeed, all spring crops. The potato-beetle has made its appearance in full force as anticipated, but the remedy for this pest is so generally known and effective that the exercise of a little vigilance is all that is necessary to keep it in check. We regret to learn that ravages of the grasshopper have been rather severe in Lanark and adjacent counties. On the whole we think our farmer friends have this year very little to grumble about, and a very great deal indeed to feel thankful for.

The English Climate.

From whatever cause, the climate of Great Britain is changing The most noticeable fact is that, while the winters are less severe, and the summers not so intensely hot as formerly, there has crept in what may be called a jumble of weather throughout the year. We have cold when we should expect heat, and warmth when we have every reason to look for snow. Meteorologists, who profess to speak scientifically, fail to enlighten us on the cause or causes of these phenomena. It cannot be said that, as regards the culture of grain crops, or the rearing of cattle, sheep, and other marketable animals, there has been any falling off. In these departments of affairs, and we may add in the forest culture, there has rather been an improvement than otherwise Change of climate has been more especially demonstrated in the case of fruit, the crops of which are exceedingly liable to be damaged by unseasonable frost Chance frosts in the later spring months are the terror of gardeners; and unfortunately the destruction so caused is becoming so serious in many places that some kinds of well known fruit are no longer worth cultivating. Better, it is thought, to import fruit than try to rear it. A paragraph has been going the round of the newspapers regarding this mysterious change of climate as concerns Scotland. At a recent meeting of the Botanical Society, Mr. M'Nab read a paper on Further Evidence of Climatal Changes in Scotland, and mentioned that several old Scotch gardeners, as well as amateur cultivators, concurred with his opinion, that many varieties of fruit now cultivated in that country were by no means equal to what they were about ten years ago Ribston pippins and Nonpareil apples are alleged to be inferior in size and flavor as well as number to the specimens formerly seen. The Jargonelle pear, once extensively grown and thoroughly ripened on standard trees in various districts of Scotland, is now exceedingly scarce. The famous Carse of Gowrie orchards, which half a century ago were so remunerative, and in which seventy varieties of apples and thirty-six varieties of pears were cultivated as standards, still exist, but with a sadly diminished production of fruit. The Clydesdale orchards are in the same fading condition. The damson shows signs of becoming extinct, and the common black sloe and brambleberries are in like manner on the decline. From the old minute-books of the Caledonian Horticultural Society it appears that from 1810 they offered prizes for peaches grown on open walls without the aid of fire-flues; but after 1837 they were discontinued, and the generality sent are grown on flued walls or in peach-houses. Similar painful evidence was given with regard to cherries, gooseberries, and Scotch-grown American cranberries; and even the filberts and hazel-nuts are, it is stated, not by any means so flourishing now as formerly. From 1812 to 1826 the large white poppy was cultivated in the field in various parts of Scotland, for the making of opium; and about fifty years ago tobacco was frequently grown in certain districts. All is changed or changing now, although several winters of late years have been remarkable for their mildness, and proved most favorable for flowering plants. The Scotch, however, cannot feed on flowers, and are much to be pitied under the calamity with which they are threatened, of being dependent on our English green grocers and fruiterers for their supplies of fruit.—*Chambers' Journal.*

The Duke of Sutherland on Dynamite.

A committee of the Commons, headed by Sir John Hay, has been for some time inquiring into the laws for regulating the manufacture, carriage, and use of explosive substances. Generally speaking, the representatives of the gunpowder trade who have appeared as witnesses have held that this compound is much less dangerous than the newer and in some respects more forcible explosive, such as dynamite, gun-cotton, and nitro-glycerine. Little has been said on behalf of these compounds until Friday, when the Duke of Sutherland appeared before the Committee, and gave evidence of circumstances within his own knowledge and experience favorable to the use of dynamite. The Duke stated that his men took to it very kindly, and wished to carry the cartridges in their breeches pockets in order to keep them at a proper temperature It was used in blasting up the roots of trees, and was so sudden in its action that little or none of the explosive force was wasted away through interstices, as was the case with gunpowder. They could do with dynamite for sevenpence work which would cost them six shillings with gunpowder. Owing to the railway companies declining to carry it he could not get nearly so large a stock as he would like to have For his own part, he would not object to travel in the same carriage on a railway with dynamite, because it required both concussion and heat to explode it, and though you might get concussion on a railway, you were not likely to get both concussion and heat together. It was made in Glasgow, and he trusted to the manufacturer for its purity. He was not aware that it gave off exhalations, and was very dangerous under those conditions. They, however, had not any accident during the three months they had used it. Such were the difficulties in getting it transported that they had to stow it away in hat boxes or any other smuggling sort of thing, and when they got it they stored it in boxes underground. Mr. John Downie, manager of the British Dynamite Company, Ardler, in Ayrshire, also gave evidence as to the safety of dynamite in transport, storage, and for general use.—*N. B. Agriculturist.*

The Hop Districts and the Frosts.

The *Hop Journal* says:—"In the hop-growing counties of England, as in the French vineyards, the frost has committed serious ravages, and, early as is the season, it is all but certain that the destruction of a considerable portion of the crop will be the result. In some grounds, we are told, the frost has done more injury than the oldest inhabitants can remember. Certainly so severe a frost has not been known in May for the last thirty years. In the low-lying grounds, which in the hot forcing seasons are the most prolific, the vine has been the most seriously injured, the greatest ravages being observable where the subsoil is clay; rocky and deep subsoils escaping with comparative little injury beyond the heads of the vine being cut, and the growth checked. As one correspondent points out, the hop plant is far more hardy in its nature than we generally imagine, or it would have been entirely cut down, as have pieces of peas, cabbage, &c., and even ash and chestnut plantations. As it is, the heads of the vine have turned black, and the leaves, which first were spotted, subsequently became yellow, and now the grounds look as though a fire blast had gone through them. Already we have reports of the flea in myriads, and the great danger is that the sickly condition of the plant—the effect of the frosts and the cold sharp winds—will lead to an increase of aphis, this pest having already made its appearance in various quarters. Should this be the case, the growers will be very fortunate if they escape a total blight. The season, however, is yet early, and a fortnight of warm weather, with genial showers, and especially a steady increase of night temperature, will do wonders for those grounds which have not suffered severely The most that we can hope for under present circumstances is a partial crop.

An agricultural exhibition is now being held at Bremen.

The crops in all parts of the Fraser and Cowichan districts of British Columbia look remarkably well, and give promise of an abundant harvest.

The farmers in Illinois are importing Norman horses. The animals are heavily built, and are specially adapted for agricultural purposes.

The Duchess of Oneida, the two-year old heifer purchased by W. J. Alexander at the New York Mills sale last fall for $19,000, died on the Alexander Farm, Woodford Co., of pneumonia.

A correspondent of one of our exchanges states that a little buckwheat sown among potatoes is an effectual bar to the potato-bug. He has seen several fields planted in this way, and not a bug to be observed in any of them.

The township of Puslinch is likely to suffer severely from the grasshopper pest. They are of diminutive proportions as yet, but when they attain the stature of their "fathers" of last year, certain annihilation of the crops must be the result.

The entire Ottawa district this season gives promise of a more than usually abundant harvest. The hay crop will exceed anything that has been produced for years, and the fall wheat, spring grain and root crops are already very promising.

Sir Harry M. Thompson.—This eminent agriculturist died at Kirby Hall, York, on Sunday, May 17th. He was born in 1809, became an original member of the Royal Agricultural Society of England in 1838, and president in 1867, besides filling various other offices of trust and responsibility. He will be very much missed in agricultural circles.

"Hearth and Home."—This popular publication has recently passed from under the management of the Orange Judd Co., and is now issued by the *Graphic* Co. of New York. The first number of the new series is profusely illustrated in the best style of the "Graphic" art, and the reading matter is fresh and vigorous as formerly. We wish the new publishers much success.

Butter and Cheese Exchange—The First Annual Report of the Butter and Cheese Exchange of New York is before us. It is a well printed work of some 150 odd pages, and contains, in addition to the charter and by-laws of the Society, the Ninth Annual Report of the American Dairymen's Association, with transactions and addresses at the annual meeting, list of members, factory reports, &c. The work is an interesting and valuable one.

Mr. John R. Craig, of Edmonton, sailed by the steamer of the 20th ult. for Liverpool. He proceeds to England, he informs us, for the purpose of selecting Short-horns and Cotswold sheep for importation to Canada. Our statement in the last issue of the Canada Farmer, to the effect that Mr. Craig had disposed of *all* his short-horns to Mr. Groom, of Kentucky, was scarcely correct. It should have read, "a number" of his animals.

The Grangers held a Convention on the 10th ult., at Indianapolis, and adopted a platform, one plank of which was in favor of an irredeemable paper currency. To all appearance, this Association, which was expected to introduce a new order of things and purify the whole political atmosphere, is falling into the hands of wire-pullers, who are determined to use the farmers for the accomplishment of their own selfish purposes.

During the sittings of the Reformed Presbyterian Synod at Philadelphia recently, the Committee on the Order known as the Patrons of Husbandry or Granges, presented their report, which states that they emphatically and unequivocally condemn this and all other secret orders, as ensnaring, deceptive, and sinful in themselves, as prejudicial to the best interests of society, and a lawless and inefficient way of obtaining redress of grievances. The report was adopted by a unanimous vote.

Agricultural Entelligence.

Short horn Sale at Kewanee, Illinois.

The sale of Mr. R. Oatley's Short horns at Kewanee came off on the 10th ult., when 26 cows and heifers, and 9 bulls and bull-calves were disposed of for $16,300, or an average of $166. The highest figure reached was $1,500 for *Lady Newham 3rd*, the purchaser being Mr. George Otley, Neponset, Ill. The following is the sale list :—

COWS.

Maud Muller, 5 years, George Otley, Neponset, Ill	$1000
Eugenia, 5 years, J. S. Latimore, Abingdon	400
Portulaca, 9 years, C. C. Parks, Waukegan	505
Maid of Henry, 7 years, H. C. Reissner, Princeton	400
Moss Rose, 2 years, W. Cummings, Buda	530
Oxford Belle, 7 years, B. H. Campbell, Batavia	810
Lady Day, 8 years, S. Hills, Lamoille	275
Lady Day 2nd, H. C. Reissner	150
Lady Newham 3rd, 4 years, G. Otley, Neponset	1500
Rosemary, 2 years do. do.	1210
Eu emia 2nd 18 months, J. S. Latimore	270
Maid of Kewanee, 7 years, S. W. Jacobs, West Liberty, Iowa	525
Kate, 3 years, Niles Bros., Watago, Ill.	280
Mazurka 21st, 3 years, George Otley	500
Carlotta 2nd, 6 years, C. C. Parks	600
Oxford Belle 12th, 3 years, W. Norris, Arlington	300
Miss Maggie, 4 years do. do.	570
2nd Duchess of Clark, 2 years, J. Gibbs, Winchester.	300
Rosebud 2nd, 2 years, S. Hills	300
Louan of Hickory Grove, 6 years, J. S. Latimore	410
Lady Bird, 7 months, S. W. Jacobs	190
8th Louan of H. G., 2 years, A. C. Boggs, Princeton	570
Dolly Varden, 15 months, J. Stabler, Kewanee	225
Lucy Belle, 2 years, S. Hills	400
Martha Ann, 5 years, J. Bond, Abingdon	260
Kewanee Belle, 2 months, S. W. Jacobs	165

BULLS.

Royal Rose, 5 years, L. G. Todd, Plattsmouth, Neb	1000
Master Thorn, 18 months, J. Gibbs	300
Invincible, 17 months, G. Otley	500
Kewanee Duke, 8 months, do.	100
Duke of Henry, 5 months, L. G. Todd	200
Royal Master, 4 months, E. M. Vail, Kewanee	150
Royal Duke, 8 months, W. H. Neil, Arlington	230
Duke, 7 months, H. F. Humphrey, Annawan	100
Royal Commander, 8 months, W. Cummings	215

SUMMARY

26 cows and heifers,	Average $525	Total	$13,645
9 bulls and 5 calves,	do 295	do.	2,655
35 head,	Average $466	Total	$16,300

Sale of Mr. P. A. Coan's Woodside Herd at Washburn, Woodford Co., Illinois

This sale took place on the 17th ult., and was attended by a large number of western breeders. The following is the sale list :—

COWS AND HEIFERS.

Lady of Athol 8th, Ell Stilson, Oshkosh, Wis	$ 610
1st heifer Rose of Woodside, Robinson & Burgess, Tonica, Ill	630
Gentleness, John Nicholls, Bloomington, Ill.	700
Redbud, " "	4 5
Mazurka 2nd of Woodside, James Orr, Wayoona, Ill.	900
2nd heifer Rose of Woodside, J. Jones, Iowanda, Ill	500
Cypress Duchess, Davis Lowman, Toulon, Ill.	400
Lady of Athol and calf, C. C. Parks, Waukegan, Ill.	800
Bride of the Vale, Noah Franklin, Lexington, Ill	1000
Sabina, Miles Brockton, Watago, Ill.	475
Maud Muller, David Lowman, Toulon	310
Oxford's Idem, C. C. Parks, Waukegan	825
Anna Wiley 2nd, E. Stilson, Oshkosh, Wis	700
Cypress Queen, Davis Lowman, Toulon, Ill	625
Miss Rose 8th, S. S. Burgess, Tonica, Ill	300
Duchess of Oxford, W. R. Dunham, Towanda, Ill	245
Lady Laura 5th, A. Edwards, Springfield, Ill	1000
Merry Rose, L. Hukes, New Rutland, Ill	200
Merry Bell, J. L. Mills, Mt. Palatine, Ill	325
Merry Belle 2nd, E. Hukes, New Rutland, Ill.	225

BULLS.

Rosen Bell ville, 13,407, R. S. Norris, Galena, Ill	1000
Earl of Clarence, 14,139, John Gallagher, Florid, Ill.	210
Gallant Duke, 14,922, Joseph Stoner, Washburn, Ill	155
Third Duke of Woodside, 14,135, C. Mansholl, Bloomington, Ill.	250
Fifth Duke of Woodside, John Joseph, Washburn	250
Challenger J. L. S. Dennet, La Rose, Ill.	150
Constance Duke, S. S. Burgess, Tonica, Ill	210
Longfellow, J. A. Patten, Florid, Ill	115
Rosen Belleville 2nd, George Henshaw, Bloomington, Ill	100
Earl Mazurka, C. A. Hammers, Cazenovia, Ill.	150
John Alexandria 2nd, Wm. Harper, El Paso, Ill.	250
Eclipse, 9,991, J. M. Riper, Low Point.	125

SUMMARY.

20 females—	average, $570 50	Total	$11,410 00
12 Bulls	" 252 08		3,025 09
32 head	" $450 47	"	$14,435 00

At the Short-horn sale of Mr. A. F. Wood, Mason, Michigan, on the 11th ult., the prices ranged from $150 to $560, and 17 females made an aggregate of $5085.

Sale of the Eastwick Park Short-horns.

The sale of the late Mr. Barclay's Short-horns, Jerseys, and Southdowns at Eastwick Park, Surrey, recently brought together a large company of leading breeders from all parts of England, the Prince of Wales, Sir Fred Smyth, Mr. Pugh, of Wales, Mr. Attenborough, Mr. Meade Waldo, and Mr. Walter, M.P., being among the buyers.

When the company assembled round the ring, Mr. Thornton gave a brief account of the Short-horn herd, regretting much its dispersion, for it was only what might be called the germ of a herd that would, had its late owner been spared, have probably become one of the best herds in the South of England. Mr. Barclay had tried the effect of both Bates and Booth bulls on the same cows, which were purchased from Mr. Gamble, Mr. Cheney, and Sir G. R. Phillip's stocks. Lady Pigot's Victorious, of Booth blood, had been hired, and Mr. Sheldon's Duke of Brailes, of Bates blood, was purchased; and at the present time a son of Victorious was in service. This bull, Albert Victor, was a very fine animal: although a *white*, he carried enormous flesh, and yet was light and active, and of a quiet gentle temper. Mr. Jones Lloyd got him a bargain at $472, and his calves fetched in some cases as much as their dams.

The ewe tegs, in nice order, ranged up to $24, Mr. Rigden taking the first pen at $20. The ewes and lambs looked thin, and made lower prices, and there was no great demand for the rams.

Summary.

23 cows	average $291	Total,	$6,693
4 bulls	" 224	"	$96
27 head	average $281	Total,	$7,589

Sale of the Peekskill Jerseys.

On the 9th ult., Mr. B. Kettridge, of Peekskill, disposed of sixteen head of registered Jersey cattle for $2,555, or an average of about $185 each. The sales were as follows :—

Little Bella, F. Billings, Woodstock, Vt.	$355
Kate 1st do do. do	305
Paunette do do. do	200
Kate 2nd do. do. do	305
Fawnee, W. L. and W. Rutherford, Waddington	140
Florence 2nd do. do. do	145
Little Gazelle do. do. do	175
Fawn Star (calf) G. K. Barlow, Croton	65
Young Fawn do. do. do	195
Beauty's Son (calf) do do.	85
Little Lucy $65, and calf Stella's David, $32, S. C. Walker, Peekskill	197
Little Negress, George Dayton, Peekskill	230
Milk Maid 2nd, Mr. Hand, Peekskill	185
Little Sallie, $250, and Lucilla, $150, L. B. Carhart, Peekskill	400

Mr. JOHN L. GIBB, Crompton, Q., has sold the bull Mars (298) 715, to Mr. A. Grant, Fitzroy, for $1000.

At Mr. Charles Collard's sale of Short-horns, Little Barton, near Canterbury, recently, 40 females were disposed of for $8053, or an average of $201, and 8 bulls brought $1711, averaging $214. One of the latter, Bloomfield, a handsome two-year old roan of the Bracelet tribe, with five crosses of Bates' blood, was knocked down to Mr. A. S. Hill at $604.

At a sale of excellent cattle from the herds of the Rev. John Storer and Mr. E. M. Waldo at Blisworth, 24 cows sold for $7533, or an average of $327, and 14 bulls made an aggregate of $3271, averaging $234. Anna III., a fine Booth cow, descended from Ann by Pilot (496), and got by Mantalini Prince (22,276) was bought by Mr. R. Blackwell for $446. Her daughter, a yearling, Ann VII. was bought by Mr. Pickergill, from Yorkshire, for $892, the same gentleman purchasing Crown of the Realm, a light roan, two years old, by British Crown (21,322) out of Lady Clare, of the Mantalini family, for $814. The other noticeable lot of Mr. Storer's was Rennie Gwynne II., a handsome two-year-old, which was knocked down to Mr. J. L. Gibb for $682.

A WOOD pigeon was shot lately at Stranraer, Scotland, containing in its crop 1272 grains of oats.

LEWIS and Skye have suffered materially from long continued wet weather. A correspondent of the *Daily Mail* states that on some farms nearly one-fourth of the stock has died from this cause.

HITHERTO worn-out straw hats have been considered things utterly beyond utilization. The world advances, however, and now a profound American economist proposes to chop them up by machinery and feed horses with them.

Some Granger, says the *Farmers' Union*, has left his pocket-book on our table. It looks as if it had been run through a threshing machine in the heart of the grasshopper country. It is out at bottom, sides, and top, and there is nary a cent in it.

A HULL-LESS oat is spoken of by the *St. Albans Messenger* as having been brought to this country from Belgium. Nothing more is known of its history. The grain comes out of the hull when it is threshed, and makes an excellent meal.

THE first three men in the world were a gardener, a ploughman, and a grazier; and if any man object that the second of these was a murderer, I desire he would consider that as soon as he was so, he quitted our profession and turned builder.—*Cowley.*

As an instance of the vilest ingratitude on record we refer to a Newburg billy-goat, who, after having had his head extracted from a picket fence, through which he had thrust it to reach some tempting mouthfuls of grass, turned and butted his benefactor into the gutter.

A GRASSHOPPER convention was held at Windom, Minn., recently, at which 200 persons were present. The general opinion prevailed that a destruction of the crops this season was inevitable, and a resolution was adopted asking Governor Davis to send a committee to Washington to lay the facts of the general destitution before Congress and ask for relief.

THE COLONY OF VICTORIA.—The Registrar-General estimates the population of this Australian colony, at the end of the year 1873, at 790,488, shewing an increase of 19,761 in the course of the year. The births registered during the year were 28,010, being 16,596 more than the deaths. The arrivals were 29,459, being 3,165 more than the departures. There were 4,915 marriages in the year.

SCOTCH POLLED CATTLE.—At a sale of pure bred polled cattle, recently held upon the farm of Balquahan, tenanted by the late Mr. Robert Walker, Portlethen, 16 cows and calves were sold for $2,920, or an average of $182.50. Three two-year old heifers realized $350, or an average of $110. Five yearling heifers brought $430, or an average of $86. Three bulls, which had been in service were also offered, and realised $457, or an average of $152. The total sum realised at the sale was $3,997.

A SOMEWHAT singular incident has just occurred at a farm belonging to the château of Avignon, in the Camargue, Bouches-du-Rhône. A flock of 684 sheep were feeding, when they were suddenly surprised by a violent storm of wind and rain dashing in their faces. They instantly turned and ran away to escape the driving shower, but unfortunately the path they selected led them straight to a deep pond, into which they plunged one after the other and were drowned. A poor dog who was in charge of the flock endeavored to stop them but the pressure of the frightened animals was so great that he was borne down and shared their fate. Their bodies were got out the next day and buried in deep ditches dug close by. The loss is estimated at nearly 30,000f.

LIVE CATTLE FOR ENGLAND.—An English paper says: A steamship arrived in London last week with a cargo which promises to mark an era in the food question, and help to cheapen beef for the poor man more than the most careful marketing. We allude to the *North*, which has just arrived from the River Plate with five hundred head of live cattle, all in good condition and brought across from the Argentine Confederation in 24 days. How excellent the condition of these South American beeves was may best be judged by the fact that after a few days' rest and fresh food they have all been sold to Berkshire farmers for store beasts at an average of £16 a piece. Now, the supply of these oxen on the River Plate and adjoining territories is simply enormous, they are killed by tens of thousands for the value of their hides and fat, and the very best of them may be bought, brought over, and landed at an outside cost of £7, excluding freight. Here, therefore, is a profit of 100 per cent. to set on foot a mighty live stock trade with South America.

The Crops.

The crops look excellent at present, and give every sign of an abundant yield —*Glen Allen Cor. Waterloo Chronicle.*

The clover and hay crop is represented as being very heavy all through the townships, and other crops are looking remarkably well —*Aylmer Paper.*

The crops through out the county are all in splendid condition. The late rains and cool weather do not give farmers a chance to grumble. The fruit crop will apparently also be abundant.—*Brantford Expositor.*

The crops in our own highly favored county, with the exception of fall wheat and barley, the latter of which has been somewhat injured by the late frosts, will be a full average, hay fifty per cent. over an average.—*Ommee Cor Lindsay Warder.*

The crops along the 10th line of this township look well with but few exceptions. Fall wheat has not made a better appearance for years. The meadows are quite in advance of last year.—*Blenheim Cor. Review.*

The late rains have greatly improved the appearance of the crops The fall wheat is also improving its appearance. There are a good many fields which have suffered considerably, and many others which promise a fair yield.—*Bruce Herald.*

From all parts of this county we have the most favorable reports as to the crops. The late rains have been an immense benefit, and the growth for the past two weeks has been very rapid. Up to the present time the prospect is most encouraging.—*Guelph Mercury.*

Although much of the winter wheat was ploughed up, and some fields which remain promise but little, the spring crops look remarkably well. It is cheering to note the rapid growth of all vegetation after the genial and refreshing showers of the past two weeks. —*Fullarton Cor. Mitchell Advocate.*

We are glad to learn that the recent rains are having a most beneficial effect on the crops, and the prospects are rapidly improving. Fall wheat and clover were badly killed out by the winter, but they are making better progress than could be expected. The prospects for an abundant supply of fruit are excellent.—*Strathroy Age.*

Fall wheat, although badly killed out, has greatly improved with favorable weather and refreshing showers and may yet be an average yield. Spring crops look well in this section, and give promise of a plentiful harvest. The potato bug put in an appearance earlier and in greater numbers than last year.—*Hawksville Cor. Waterloo Chronicle.*

Information received from farmers in this neighborhood seems to indicate that notwithstanding the apparently unfavorable season, the crops present an encouraging appearance. The late rains and cool weather have insured a good hay crop, and the grain looks satisfactory. It is reported that the potato bug has already made its appearance.—*Cobourg Star.*

We hear excellent reports about the growing crops in this section. Fall wheat has picked up wonderfully considering the unfavorable appearance it presented early in the season, and nothing has yet occurred to mar the prospect of good spring crops. His honor the potato bug is out in force, surveying the theatre of his contemplated attack upon our valued tubers, but whether he is going to disappoint our hopes of a supply of that esculent remains to be seen.—*Waterloo Chronicle.*

The prospects were never better for an abundant crop of everything grown on the farm and garden—grain, roots, vegetables and fruit. The land seems fairly teeming over with vegetation of all kinds, and the farmers were never in better humor. There would have to be extraordinary bad weather from this to harvest to affect the crops now The grasshopper plague in Lanark and Dalhousie is the only drawback to the general favorable appearance of things.—*Perth Courier.*

Farmers were a few days ago wishing for just one more rain to make them sure of having first-class crops. Now that their wish has been fulfilled, an abundant harvest may be regarded as beyond doubt. The contrast between this season and last, up to this time, is indeed great Then pastures were dry and arid, young trees were dying, numbers of old trees shedding their leaves from the extreme drought; and in many cases water had to be drawn from considerable distances to cattle in the fields. Now, the grass has a rank, luxurious growth, the forests are clothed with brilliant verdure, and plenty seems to await the labor of the husbandman.—*Belleville Intelligencer.*

We regret to learn that in some sections of the country the grasshoppers are destroying the meadows and some of the spring crops. The Colorado bug is also in immense numbers, so that farmers will require to use diligence in destroying these pests, or there will be very few potatoes. The fall wheat was somewhat winter killed, but it promises to be more than an average crop. If the ravages of these pests above referred to are excepted, present appearances indicate that all kinds of spring crops will be in great abundance.—*Simcoe British Canadian.*

We have been making particular inquiries amongst the farmers of this and surrounding sections, and we find the reports more favorable than might have been anticipated six weeks since. There has been more growth during the past ten days than we might have expected in a month, and there is every present promise of a bountiful harvest Fall wheat, on the gravel and light soils, will be a fair crop All spring grains are likely to be an average. It is very risky to give an opinion of the fruit yield, but the prospects are that it will be more than an average.—*Exeter Times.*

From all parts of the country the most gratifying accounts reach us concerning the appearance of the crops. The lateness of the season led many farmers to be of a despondng mood, but the transformation which has taken place during the past two or three weeks has almost entirely dispelled the fears of croakers; and we are now assured that never at this season of the year did mother earth give better promise of an abundant harvest in due time. The meadows are rich and luxuriant, and what crops already peep above ground look remarkably healthy Fruit gives promise of an abundant yield, and with the present favorable weather we are safe in promising a rich return for the recent labors of the husbandman.—*Morrisburgh Courier.*

The late showers of rain, and intervening warm, sunny weather, have given an amazing impetus to the growing crops. Not for years at this season have the spring crops looked so promising. Grass also, which promised so unfavorably early in the spring, is now looking well, and not only affords excellent pasturage, but promises a good yield of hay. Even the fall wheat, what is left of it, presents a healthy and vigorous appearance, and bids fair to be an average crop. Fruit also promises well. The potato bug is becoming troublesome again this year, and the potato crop will likely suffer severely from its ravages, if not well watched. But, upon the whole, prospects have not been so encouraging for years, and if nothing unforeseen occurs between this and harvest time, we may fairly anticipate an unusually bountiful yield of almost every kind of crop.—*Huron Expositor.*

The copious showers of the past few days have had a wonderful effect on the growing crops, the spring grain in all quarters looking fine, and promising so far a more than usual yield. The fall wheat in many sections is also looking up, and although the wheat on clay soils will undoubtedly be light, the crop will by no means be a failure On the Lake Shore, from one end of the county to the other, the fall wheat looks uncommonly well The acreage of spring crops this year is far in advance of any former year in this county. We hear of one or two farmers who have planted 100 acres of corn, while 30 and 40 acres on one farm is a common report Many farmers have also put in more beans, oats, and potatoes than formerly, so that should the season continue favorable, the crop of 1874 will net to our agriculturists a much larger sum than that of the last year.—*Chatham Banner.*

Mr. George Tomlinson, 9th line, is one of the most thorough farmers in the township, and his estimate of the crop prospects is generally reliable. He informs us that hay will be light, spring crops rather "patchy," owing to the dry weather, but on the whole they look well. Fall wheat will be short in the yield. His own is just in the shot blade, and he thinks is the best field in this part of the country. He has not yet sown his turnips, and contends that they should never be sown until between the 10th and the 20th of June, when vegetation is more active and strong, and the plant is more apt to be carried forward beyond danger from the fly. He cultivates his land first thoroughly, sows in drills, which he afterwards rolls down tolerably flat with a heavy roller. In this way there is less danger of injury from drought. Late sown turnips, too, he contends, grow later, and are hence more succulent and sappy than those which, being earlier in, stop their growth earlier and become woody. We insert these observations because we think they may prove useful. Turnip culture should receive here more attention than it does.—*Meaford Monitor.*

Such prospects for a beautiful harvest we have never seen, the weather keeping cool with just the requisite amount of rain, and as a consequence the prospects are as good as they can be. Meadows are already waving with the wind, with the roots thick and close. As a result hay, which a couple of weeks ago could not be got without paying in the neighborhood of $10 per ton, has now gone to from $12 to $15, and difficult to sell at that. Fruit prospects are also good, but care must be taken to keep the caterpillars off the fruit trees. The best cure we know for them is strong lye applied with a swab on the end of a pole. Burning them out should not be attempted, as, although no apparent danger may be seen this year, the limbs touched will be found lifeless next season. If your neighbor is too lazy to clean his trees of them, make a raid on the caterpillars, as it will pay, because the millions, when they have eaten all their home supply, will migrate to your trees. Clean them out in the fall if possible.—*Brighton Flag.*

Facts in regard to the growing crops this season have been somewhat difficult of ascertainment. The fall wheat in some places was totally ruined by the continued thawing and freezing of one of the most open of winters; whilst in other places, on light soils, this old stand-by of the Canadian farmer received from the unpropitious weather but slight injury. However the sum of the damage to this crop has been far more than usually heavy; and many fields which were sown in high expectations last autumn are now commencing to wave in spring grain. But though meadows and fall wheat have been very severely injured, yet, judging from the present luxuriant appearance of the country, the loss will in a great measure be neutralized by a more than ordinary abundant yield of spring grains, vegetables, etc. The frequent rains of the past few weeks and the growing weather have urged forward vegetation at a pace seldom witnessed before in this Canada of ours, and should the present state of moisture continue throughout the month, July will be entered upon with vegetation as far advanced as the average of years, notwithstanding the late date at which spring fairly opened. The hay crop, as a whole, will of course necessarily be rather light. After the passing away of the dry season sufficient time was not left for it to attain a desirable height, and as a consequence the weight per acre will be materially reduced. Fall wheat, where not ploughed up, is stooling out well, and even where the plants are not particularly thick, the yield bids fair to be considerable. Altogether the prospects for a fair average, if not an abundant harvest, are exceedingly encouraging.—*Woodstock Review.*

Harvest Prospects in England.

In many parts of England, especially towards the south-west, the drought has been excessive for some weeks, and the cereal crops will inevitably be light. The harvest is not likely, however, to be late, but straw will be very short. In Yorkshire, Lincolnshire, Essex, the Midland and some other counties, wheat has a generally good appearance. Barley suffered from the May frosts and promises only a fair yield. The appearance of oats even in the most favored counties is varied, and moisture is much required over the whole of England as well as Scotland. In Gloucestershire and south-westwards in the direction of Cornwall there has only been a trifling shower or two since the middle of April. The country there has a very scorched appearance. All kinds of grain crops are very light. Potatoes have a fair aspect, but turnips and mangel could scarcely be got into the strong soils, and have done little good since deposited. Grass is poor, and hay which is being made in the neighborhood of Bristol is deficient in quantity. Beans, where early put in, seem to be doing very well in most counties, and have a rich blossom. Indeed, early planted wheat and early sown beans, in the meantime, indicate the best return of the season's crops in England. South of the Border the rural and harvest prospects on the whole are not quite so encouraging as they are in Scotland.—*N. B. Agriculturist.*

THE Irish constabulary returns, based upon information obtained from farmers and others, and revised by boards of guardians, show that it may be estimated that Ireland produced, in the year 1873, 469,563 qrs. of wheat, 6,912,765 qrs. of oats, 1,016,539 qrs. of barley, 25,576 qrs. of bere and rye, 48,375 qrs of beans and peas, 2,683,060 tons of potatoes, 4,429,967 tons of turnips, 515,690 tons of mangelwurzel, 278,923 tons of cabbage, 19,843 tons of flax, and 3,306,163 tons of hay. Ireland had also, in 1873, 4,142,400 head of cattle, 4,482,053 sheep, 532,146 horses, and 1,042,244 pigs.—*Bell's Messenger.*

Veterinary Department.

Periodic Ophthalmia.

Periodic ophthalmia is a disease by no means unfrequent amongst the horses of this country, and differs very materially from simple ophthalmia, the nature of which we briefly described in a previous number.

Periodic ophthalmia is a constitutional affection, operating on the organ of vision, at first attacking the internal structures, and finally involving the whole eye, and terminating sooner or later in partial or complete loss of vision.

This disease is more prevalent on this continent than in Britain, which may be owing to the extremes of heat and cold, but there are other causes which appear to operate injuriously upon the system Various names have been applied to this complaint, as constitutional, specific ophthalmia, &c These names have arisen from the peculiar and somewhat erratic manner in which it progresses and terminates

Amongst the many exciting causes, the extremes of heat and cold stand prominent, but there are other well marked causes, as ill ventilated and dark stables hard work and general neglect In many animals there exists a hereditary tendency, ready to burst forth when exposed to any exciting cause. There are some prominent sires on this continent whose progeny are notorious for their weak and diseased eyes.

Many years ago the disease was very common amongst Irish horses, but since more attention has been bestowed on the selection of perfectly sound horses for breeding purposes, the trouble has greatly disappeared.

Generally the attack is sudden, and usually the first symptom observed is an increased secretion of tears, the eye is weak and intolerant of light, the upper eyelid droops, and the eyeball is retracted within its socket. This symptom is especially well noticed when only one eye is affected, the conjunctiva is reddened and congested, and the cornea has a dull appearance around its margin. The pupil is contracted, and as the disease advances the interior of the eye loses its transparency, becoming of a yellowish brown color, the pulse is generally slightly quickened, and the animal duller than usual.

As the disease advances, a purulent discharge is occasionally noticed. After a few days the attack subsides, the cornea becomes clearer, the irritation gradually ceases, the interior of the eye changes to a greyish color, the result of a deposition on the crystalline lens, which is usually the forerunner of cataract. In some cases, the eye appears to be restored to its natural structure: generally, however, although all irritation appears to have subsided, the eye looks smaller than natural, and is easily affected by sudden exposure to light.

A marked peculiarity and prominent symptom of periodic ophthalmia is its shifting from one eye to the other; in many cases, the one eye has no sooner recovered than the other becomes affected. Apparent recovery is very rapid in some cases, and the animal, to all appearances, is perfectly sound, when the disease will again suddenly break forth with increased severity, soon terminating in a well marked case of cataract. In other cases it may be months or even years before a cataract is completely established, and even after it is formed, cases are noticed where inflammatory action periodically occurs

As a general rule the treatment of periodic ophthalmia is anything but satisfactory, but the irritation may be palliated by a rational course of treatment, as placing the patient in a darkened box, not exposing him to the extremes of heat or cold, by giving a moderate dose of purgative medicine, and bathing the eye with tepid water and laudanum. The extract of belladonna may be given in one drachm doses, morning and night, and also applied as an ointment round the orbit, its action on the iris tending to prevent adhesion to the lens. Benefit may also be derived from the use of the nitrate of potash, or iodide of potassium, in drachm doses twice a day. The food should consist of bran mashes, with carrots in winter, and in summer, green food may be given After the more acute symptoms have abated, the eye may be stimulated every second day with a solution of nitrate of silver, of the strength of ten grams of the nitrate to the ounce of water, the wash to be applied with a feather or camel's hair brush.

Simple Surgical and Other Appliances.

Setons.

Like many other remedies for the cure of disease which have fallen into disuse or disrepute, setons are not so much in request as formerly. At one time, and even within recent years, it was quite as common for a seton to be inserted for the cure of minor complaints, as in earlier times bleeding was the universal and all important means of dissipating all the evils flesh is heir to, as well as of those which existed only in the fleshly imagination of hypochondriacs and old maids who were affected with doctors on the brain If a dog were brought suffering from sore throat, the treatment was, "Insert a seton beneath the jaws, extending to the chest." A horse was served in the same manner; and if the cow proved guilty of such a sinful malady, which was rarely observed, she had one a little longer and ever so much thicker, because she is such an insensible being—so it was said. When horses suffered from an attack of indigestion, which caused a hind leg to swell, the most orthodox remedy was a seton; if the feet suffered from inflammation, a seton was put through each frog. In chest affections such as inflammation of the lungs, one of extra length was recommended. "Indeed," said one authority, "it can scarcely be too long."

We well remember, when this axiom was uttered, the author did not reckon upon his auditory, for among the number was an aspiring groom, who, having been some years in the service of an officer in the army, had therefore seen large experience, and was already, as he thought, in the shoes of Esculapius himself. This worthy had witnessed the extended adoption of setons for many ailments, and having a roving commission among small horse and cow proprietors of the adjoining town, practising among their animals for his own immediate benefit, at once began to torture them for everything. It was marvellous how many yards of tape that fellow got through in a few weeks He did his work well, too. The last case he was permitted to try his hand upon died before it could be decided whether his seton had any beneficial effect, with which also died out, and justly, his reputation. The creature was suffering from contagious lung complaint, notwithstanding which she was cast upon the ground and, by means of the usual instrument, a seton was inserted, commencing at the jaws and passing down the front of the neck, over the chest, between the fore legs, terminating somewhere near the navel on the abdomen, certainly not less than 5 feet in length.

However absurd this illustration may represent the remedy, it is nevertheless a certainty that setons are very useful agents in the cure of disease; like everything else, they should be adopted with mature judgment They are constructed as follows.—A suitable needle, having an eye sufficiently broad to receive tape or round cotton cord, is passed beneath the skin for some distance, either over or contiguous to the parts diseased, an opening being usually made through the skin at the respective points of inlet and outlet. Sometimes a needle having a sharp broad point is made use of, which makes both these orifices; but usually they are first made by either a lancet, forceps, or an appropriate knife. Slight alteration is made in accordance with the nature of the parts. If the skin is loose and mobile over them, it may be taken up in a thick fold by the left hand, and the sharp needle passed through one thickness of the skin. Afterwards the skin is allowed to recede to its proper position, and the needle is gently pushed with a sidling motion along the surface of the muscles, &c., the left hand by pressure on the skin directing it along, as force is applied by the right. When it has been passed sufficiently far, the skin is again gathered into a fold and held tightly by the left hand, while by extra force the needle is caused to come outwards. The skin is then smoothed over, needle drawn through and the tape secured.

In those parts where the skin is thick and tense, tightly bound down and unyielding, a somewhat different plan is adopted. The needle is furnished with a *blunt* point, and at the extremity is a small rounded knob or eminence. An orifice is first made through the skin, usually by means of forceps not unlike scissors, the points of which are hooked. These, being caused to grasp the skin, are pressed together, they enter and divide it, leaving a gash about 1 in h long. A second is cut at the point of exit. Then the blunt needle is passed under the skin from one hole to the other, drawn out, and the tape secured.

There are two ways of securing the tape. One consists of bringing both ends together, and tying them in a common knot; the other is more preferable and less liable to accident, as there is no loop to catch, whereby it may be drawn out or tear the skin It merely consists of tying a separate piece of wood to each end, and letting them hang free.

The next condition to be noticed is to take care that the seton is moved or drawn backwards or forwards every day, the object being to prevent adhesion, or obstruction to the flow of pus, and to promote the discharge. The parts below the orifices should likewise be kept clean and free from accumulating discharges, as much irritation and even blemishes may result; but if the hair beneath, over which the discharge may flow, be moistened with a little olive or rape oil, blemishes will be prevented.

The object of a seton is to produce *continued* irritation, and by the constant formation of pus, drain away morbid matters from the system; in ordinary estimation they are solely for the purpose of overcoming some already existing local inflammation, thus they are applied over the seat of spavin; beneath the jaws for chronic irritation of the throat and threatened roaring, &c.; and one of the most useful ends to which they are applied is for the prevention of black-leg in young cattle For this purpose one of 10 or 12 inches is inserted in the lower third of the neck and dewlap, and this, while it certainly reduces the over plethora of the system, at the same time produces a temporary inconvenience and limits the thriving properties of the animal.

It is a common plan to dress the tape or material used, a little resin or green ointment being usually selected, but practitioners will also use blistering ointment, and sometimes the tape is previously saturated with a preparation such as tincture of cantharides, &c. The objections to setons are, their slowness in action, therefore they are not suited to cases of high and active inflammation; and besides this they cause ugly blemishes. In the first instance, they must always give way to more powerful and immediate agents, and in all cases where they may do good, it may be wise not to observe the scar with too critical eye, for a good animal restored with a blemish may be worth a hundred whose organs may be incomplete or unsound by reason of false treatment and too great fear of contracting such marks.—*Farmer (Eng.)*

Cleanse the Mangers.

The mangers of horses, cows and oxen, when supplied with cut fodder and meal, frequently become offensively sour, in consequence of the decomposition of the wet meal that adheres to the corners of the feed boxes. This is apt to be the case especially when animals do not lick the corners entirely clean. If a small portion of feed is allowed to remain in the manger only a portion of a warm day it will become sour, and the offensive effluvia will taint the entire manger, so that an animal will often refuse to eat his accustomed allowance, unless compelled by keen hunger. The true way to manage mangers is to scrape the corners clean at least twice per day, removing every particle of rejected food. Then, if the manger does not smell as sweet as a butter bowl, let the corners be washed out with hot water, wiped clean, and a handful of caustic slacked lime be sprinkled in the manger. If mangers are kept clean they will seldom become offensively sour If an animal leaves a portion of his feed, a new mess should never be given on the rejected feed.—*N. Y. Herald.*

REMOVING WARTS BY LIGATURE.—Mr Nathaniel Foster, who lives near Winterset, in a late letter gives his experience in the removal of a wart the size of a man's fist, from a favorite cow upon his farm, by ligating with a piece of twine This had to be removed twice, and at the end of two months the wart was gone and the wound healed entirely up. Mr Foster prefers this mode of treatment to the caustic plan, or to remove with the knife, as being safer and more effectual. He is undoubtedly right in this conclusion.—*Ex.*

Breeder and Grazier.

Sawdust as a Feeding Material.

A number of carefully conducted experiments on the digestibility of woody fibre have led to the conclusion that the latter is assimilated by the animal organism in proportionately speaking larger quantities, to the extent even of 79 per cent., instead of 34 per cent. under a poor than under a liberal system of feeding (as regards quality of the diet)

According to the well-known journal edited by Stockhardt, *Der Chemische Ackersmann*, several lots of five to six year old wether sheep had shown, on a trial being made, that they were capable of digesting as much as 80 per cent of the woody fibre of paper pulp, 50 per cent. of that of poplar, and 37 per cent. of that of pine wood.

Notwithstanding, however, the nutritive qualities possessed by so cheap and universally abundant a material, no practical application resulted from the experience thus gained until dearth of provender and the high price of straw at length induced Mr. Lehmann, for the Tharander Agronomic Institution, to take up the subject afresh. Mr. L., commencing his trial of woody fibre in the form of sawdust, with ten cows and one in-calf heifer, endeavored to obtain reliable information on the following points:

1. Will cattle, without being driven to it by excessive hunger, eat sawdust, when the latter is mixed with their other food?

2. Can sawdust be advantageously employed as a substitute for straw in feeding horned stock?

3. Have resin and the essential oils contained in pine wood sawdust any effect favorable or the reverse, on the composition of the milk and butter?

4. What effect has long continued feeding with sawdust (mixed of course with other materials) on the health and condition of cattle?

The total live weight of the animals was 10,800 pounds, and they had been receiving daily, per 1,000 pounds live weight, the following mixture:

31·7 lbs. sliced turnips,
2·2 lbs. oat shells,
3·5 lbs. chopped oat straw,
5·3 lbs. grains,
} mixed and then moistened with lukewarm water

0·5 lbs. bran,
2·3 lbs. rape cake,
8·9 lbs. long oat straw.
} These (after the bran had been boiled in water) were added to the above

The only difference made at first was to add for two consecutive days, for every 1,000 pounds of live weight, 1·1 pounds of sawdust, obtained from a neighboring saw-mill and passed through a wide-meshed riddle. All the cows partook of the new article of diet, and no portion of their ration remained unconsumed. The like was the case during the next eight days, when the quantity of sawdust had been increased, and that of the long straw diminished by 4·6 pounds. In all, this mixture, which appeared to completely satisfy the animal's hunger, was continued for fourteen days, and throughout that time no change in their health or general appearance could be perceived. On the other hand their milk, though the same in quantity as before, grew richer in quality, and the butter improved in flavor and composition.

Owing to the exhaustion of the stock of sawdust, it unfortunately became necessary to interrupt the experiment for the space of ten days, and to substitute for the new food 8·9 pounds—the amount originally given—of long oat straw. The other items of diet remained unaltered, and at the expiration of the ten days the experiment was renewed for five weeks without a break. The last change of regimen made was to replace the grains by turnip leaves (become slightly acid), to increase the allowance of sawdust from 1·9 pounds to 7 pounds, and to diminish in a corresponding degree, *i.e.*, from 8·9 pounds to 4·6 pounds, the amount of long straw. The mixture then consisted of—

31·7 lbs sliced turnips
18 lbs. turnip leaves grown acid,
2·2 lbs. oat shells,
3·5 lbs. chopped oat straw,
7 lbs pine wood sawdust,
} Mixed and moistened with lukewarm water.

5 lbs bran boiled in water
3·2 lbs. rape,
9·1 lbs. long oat straw.
} Added to the above before feeding began

On this the cows were found to do so well that it has been adopted ever since as the regular food of dairy stock kept at the institution, and by the employment of sawdust (as above) to one-third of the wood fibre contained in the mixture, a daily saving is effected, averaging 1½d. per 1,000 pounds of live weight.—*Rural New Yorker.*

Spout-Washing Sheep.

The following extract from a paper read by the Hon. G. H. Cox before the Agricultural Society of New South Wales, although too late to be of much practical benefit during the present season, is well worthy of being placed upon record:—

"My experience goes to prove that, however carefully you may breed your sheep, and however superior the wool may be which they grow, your returns will be disappointing without the greatest attention is bestowed upon the washing of your clip. Every gentleman who has judiciously expended money upon the necessary plant and appliances for spout-washing his wool will freely admit that the returns are on hundredfold. Some three or four years ago the sheep owners of the Mudgee district were anxious to obtain the opinion of manufacturers as to the general getting up of their wool and the sorting of their fleeces. We used to get periodically the brokers stereotyped report that 'so many bales of wool were sold—that the attendance of buyers was limited or otherwise—that some bales were seedy and moity, and others rather tender'—all of which we knew, and, knowing, could not remedy, but we could never learn what the manufacturer said about it—whether it contained too much or too little yolk; too dry from over-washing, or too heavy from under-washing; was the sorting satisfactory, &c. Well, we engaged the services of a gentleman who went through the cloth manufacturing districts, and who supplied us with much valuable information, which we utilised, and which I shall now be happy to impart to others Our directions were never to use water for the soak beyond 110 degrees Fahrenheit; never to use alkalies, such as potash, soda, or hard soap, but that any quantity of soft soap might be used, in fact, using it to any extent was merely a matter of pounds, shillings, and pence; but that all alkalies destroyed the fibre of the wool, making it harsh and dry, and, what the manufacturers say, making it work unkindly. We use spouts with a quarter inch opening, and with a pressure of 8 feet. The great object to be obtained in washing wool is not only to make it white but to make it bright. After leaving the spout, the fleece when squeezed by the hand should puff out again, not feeling sticky, and should glisten in the sun with a peculiar brilliancy; if too little yolk is left in the wool, it will be wanting in softness; if too much, it will become sticky, and after a time turn yellow The desirableness of this brilliancy in the wool is that manufacturers of merinos, de lames, and other light fabrics will give extreme prices for it, as this bright wool only will take delicate dyes. Frenchmen are the best customers for this kind of wool and their absence from or presence at the sales makes a difference of at least 1s. per lb. in the price. The number of days that should intervene between washing and shearing must depend partly upon the state of the weather, as well as upon the condition of the sheep. Yolk will rise quicker in fat sheep than in poor ones, but from two to three clear days is generally sufficient. In sorting we skirt very heavily, taking about one-half from the fleece, and making it into what we call broken fleece or pieces and locks The remainder is sorted into combing and clothing sorts."

A Plea for the Cows.

Reader, are you fond of milk? Do you like butter or beef? Then have compassion upon the kind, generous cow. Most farmers feed their horses something better than straw or badly cured hay in winter, though their work during that season is light Horses are usually kept in comfortable stables, with clean, dry bedding, renewed every night. They are also carried and brushed every morning, and fed on good hay, oats, chop, etc., until they are "fat as fools," as if they were being prepared for the butcher instead of being kept for labor. This is curious philosophy. A fat man is not in a condition to endure hard work, nor is he as comfortable or healthy as a person in moderate flesh. It will usually be found that those who thus overfeed their horses are the very men who starve their cattle. In summer they are turned into the woods lot, the fallow field, or the highway; while the horses are always "in clover." In winter, the milch cow runs the road by day, and at night lies or stands shivering in the wet or muddy barn yard, or is treated to the luxury of a snow bank for a bed. She eats straw and corn fodder, with an occasional frozen pumpkin! And yet she is expected to yield daily gallons of that most indispensable article of food, *milk*. Is it strange that she grows poor, or that her calf is unthrifty? If we have no compassion for the cattle, and disregard the divine command to treat them with kindness, considerations of pecuniary interest ought to correct this cruel and inhuman practice. A cow that is poorly fed cannot give much milk, nor milk of a good quality, for the plain reason that it is among the most nutritious of all the substances we consume, and cannot therefore be manufactured from food that does not contain nutritious elements. Some farmers instruct their wives that "corn must not be fed to the cows because it dries them up." But the women—God bless them!—have compassion upon the kind and docile animal upon whose system such severe drafts are being constantly made, therefore insist upon furnishing food that will repair this waste. High feeding for cows in milk pays as well as generous feeding for steers. Let us see. Milk sells readily in the country villages for four cents a quart, while in the cities it brings a higher price. Suppose the cow to give three gallons a day, we have 48 cents, or something over $14 per month, as the value of her product. What other animal will make such generous returns for food, care, and generous feeding. If we consider the profits resulting from raising the calves for steers we shall have reasons equally conclusive in favor of generous keep. Whether markets be good or bad the well-kept steer, in good form and of good quality, always sells at a profit to the breeder. But we cannot have good form, good condition, and good quality where the calf was not properly started. A runted calf becomes "paunchy" and unthrifty, a form which subsequent good keep will seldom correct. The true principle therefore is, if we regard the matter only in a pecuniary point of view, to *feed well*, feed as much as possible in-doors, and we shall have more manure, and the manure where the cattle are well fed will be of better quality. Our land needs the manure as much as our cattle need the nutritious food; and thus it is, as the English say, the more we feed the more we can produce. We should never feed in the highway. If we cannot feed in-doors, we should certainly feed on our own land, and aim to select a place where it will do the most good.—*Chicago L S Journal.*

The Production of "Two-Year-Old" Beef in a Highland Glen.

Skirting the northern boundary of his Grace the Duke of Richmond's deer forest of Glenfiddoch, and fully 1,000 feet above sea level, Mr. Macpherson, Auchlochreach, Glenrinnes, Banffshire, has for several years reared splendid black polled cattle. He was the breeder of that wonderful specimen of three summers' development with which, in the Smithfield show of 1872, Mr. Bruce, Burnside, Fochabers, carried the first prize in the polled oxen class, and the champion plate as the best animal in the hall Mr. Macpherson sold the other day six two-year-old polled beasts of his own breeding to a butcher at £30 10s. a head, and for five or six years he has been close on that figure with his surplus animals of the same age. It may be added that the two-year-olds in the whole of that Highland glen have, on an average, brought from £20 to £28 a head for several years. Their feeding consists of plenty of good milk to begin with, good pasture grass, turnips and straw, with a little cake in winter, and, in some cases, a little oats, as the selling period approaches. The dietary thus includes very little not grown on the farm. Mr. Macpherson's are the only pure polled cattle in the glen, the others being crosses from mixed bred cows and short-horned or polled bulls, generally the former.—*North British Agriculturist.*

Good Suggestions.

The collar should fit closely, with space enough at the bottom to admit a man's hand. If too large it has the bad effect of drawing the shoulders together. On no consideration should a team or any work horse be compelled to wear a martingale, as it draws the head down and prevents him from getting into an easy and natural position. The check rein may be used, but only tight enough to keep the head in a natural position, and should never be wound around the hames. See that the hames are buckled tight enough at the top to bring the draft irons near the centre of the collar. If too low, it not only interferes with the action of the shoulders, but gives the collar an uneven bearing. Caution should be taken that the girth is not buckled too tight, particularly on string-teams, for when the traces are straitened it has the tendency to draw the girth against the belly and distress the horse.—*Rural Home.*

Poultry Yard.

Poultry Notes.—No. 13

FATTENING.

If properly cared for and fed nearly all chickens at the age of between three and four months will be, for all domestic uses, fat enough to kill, without having recourse to the fattening coop, but farmers who dispose of their surplus stock in the market will find a readier sale and correspondingly higher prices for fowls if well fattened. Somehow people will buy a fat fowl in preference to one with a corresponding amount of flesh but not so much fat, although the latter will be of little use except to fill a present tum. It is therefore desirable to place chickens in the fattening pen occasionally for a few weeks before disposing of them, and it is desirable also to know the nature and quality of the food to be given, the manner of its administration, natural and artificial, and when so administered, either in a solid or semi-fluid state, the results likely to be most beneficial to the feeder These are matters which have all been well considered and practically tested. Having in previous articles on this subject quoted the means adopted by several of the French feeders of note, it will be unnecessary to repeat them again; we cannot omit, however, drawing attention to the absolute necessity of strictly observing all the rules laid down while the fowls are in the fattening coop, if perfect success is sought for. Cleanliness and regularity in feeding must be observed throughout. The process of fattening may be divided into two kinds—natural and artificial In England, as in this country, the natural process is that usually adopted, although artificial means are frequently used by poulterers near the great cities in England; but we are not aware that it is systematically adopted, as in France. In fattening by natural means the food recommended by English feeders, chiefly, we presume, by reason of its cheapness, is a mixture of barley-meal, oat-meal, or buckwheat-meal, with the husk sifted out, mixed with milk and made into the consistency of a dry, crumbly paste. This is fed three times a day, care being taken that only sufficient be given at a time to be eaten up clean, and none left, water being supplied at the same time. The artificial means is that adopted chiefly in France, and consists of two methods—one of cramming with solid food; the other, by means of funnelling, with the food in a semi fluid state Mlle. Rasmet affirms that the best food for fattening fowls is buckwheat-meal, bolted quite fine, kneaded up with sweet milk till it gets the consistency of bakers' dough, then cut into rations and made into rolls about the thickness of a woman's finger, and administered to the fowl in pellets of about two and a half inches long On the other hand, it is stated by M Jacque that the funnelling process, or cramming by means of a funnel, with farinaceous food in a liquid form, is, by reason of its simplicity, ease, and the rapidity with which it is performed, the quickest and best method to be adopted He recommends barley-meal properly sifted, mixed in equal proportions of milk and water, and to be of the thickness of clear soup when it begins to boil; and this method would seem to be coming more and more into favor in France, and for years past the largest feeders of poultry have been using these machines, inasmuch as they are supposed to disturb and excite the fowl less, the whole meal being injected at one operation. Other minor improvements as regards the management of fattening fowls have from time to time been made, but the most perfect system yet developed appears to be that carried on at a town in France by M. Martin, where the method of procedure is so superior that a commission was appointed by an agricultural society, and its report published, on which Mr. Wright in his poultry book remarks as follows.—"The food employed by M. Martin consists of fine maize and barley-meal, mixed in about equal quantities; to this is added a portion of lard; and the whole is then mixed smoothly with milk, so thin as to be almost liquid. The feeding house is a large, airy building on the summit of a hill, and is furnished with three revolving octagonal stands, which, as they turn within upright axes, present each side in succession to the operator, precisely in the same manner as the revolving show stands so often seen in shop windows. Each side of the stand contains five perches for the fowls, and as each perch roosts five birds, the stand accommodates two hundred fattening birds. The perches are arranged over each other, and under each perch is a board sloping backwards, which throws all the droppings into the centre of the machine, and effectually prevents them falling on the birds below. Every morning a little straw chaff is thrown upon them, and the whole taken away in a barrow running under, by which means the fowls are kept perfectly clean. The most peculiar thing about M. Martin's management, however, is the singular fact that the fowls are *tied upon their perches* by thongs of rawhide, which are passed round their feet, but leaving them otherwise at perfect liberty. Partitions or upright slabs fixed to the perches divide them from each other, and keep practically in separate compartments, with the great advantage of a free circulation of air. The whole apparatus is frequently disinfected with sulphate of iron, which keeps the birds perfectly free from vermin. The feeding is done by a machine which contains the food in a reservoir. The operator, who has a seat which he can vary in height, takes the head of a fowl in one hand, and with the other places down the gullet of the bird a nozzle fixed on the end of a flexible tube which reaches to the machine; by then pressing a treadle, a piston forces the proper quantity into the fowl's crop. A graduated dial regulates the quantity given, according to the age, size and stage of fattening of each bird. A slight push with the hand causes the frame to revolve so as to bring the next bird opposite the feeder, and the feeding is thus performed with such rapidity that one hour is sufficient for the entire two hundred birds. The Commission states that the fowls seemed to enjoy this novel mode of treatment, and that if any drops of the nearly fluid food fall accidentally upon the perches, they are eagerly pecked up by the eager birds. As soon as the fowls are ready for market they are hung up by the feet, a cloth passed round them to prevent struggling, and a small knife thrust into the throat. As soon as they are dead, they are plucked, washed, drawn, wrapt in wet cloths to cool rapidly, and placed on a stage that the blood may freely escape, on which the whiteness of the flesh depends. These arrangements, we quite agree with the Commission, are well worthy of consideration It might be thought that the fowls would struggle violently on finding themselves fastened to the perches; but this is not the case if put on at night. The advantages in cleanliness and ventilation are very great, and it is found that the birds almost invariably thrive and fatten well. The Commission, in fact, express great surprise and satisfaction at the results achieved, and strongly recommend the adoption of M. Martin's system, which may be considered "the latest improvement as regards poultry fattening in France."

In this country all kinds of grain are much cheaper than in England and France, except buckwheat, which with us is always scarce. Not so in France; buckwheat is a plentiful grain, and for this reason, as well as its being an excellent food for poultry, is extensively used. Corn-meal is always cheap with us; and by mixing with it a little of the other meals, will make an excellent food for fattening. If farmers were to apply a little more of their time and attention to the cultivation of poultry and the rearing and fattening of chickens for the market than they do, they would find in it a useful and profitable employment for the female and junior members of their family. In France it is made a business of, and found to pay well; fattening and killing has been brought to a system, and at a show of dead poultry held in Paris in 1864, as much as £160 sterling was offered in prizes, and 2,000 head were exhibited Poultry in France is considered as a part of the general economy of the farm, and poultry food enters into the farmer's rotation of crops. Large establishments exist, although nothing on so grand a scale as some poultry writers have announced; yet there are large poultry farms. Some years since M. Geyelin made a journey from England to France with the special object of procuring information in this respect, and found a poultry farm conducted by M. Manoury in Picardy, where about 5,000 head per annum were raised; and further information proves beyond a doubt that there are large numbers of farmers in France who raise for market their hundreds—a few their thousands—of poultry annually; that this item of farm produce is regarded by them as of the utmost importance and all connected with it assiduously cared for and looked after; and that in many departments it forms a large proportion of the whole agricultural trade. Even in the state of New York, we have an account lately published of a farm devoted exclusively to poultry, owned by a Mr. Warren Leland of New York, and fed out of the refuse from his tables, he being the proprietor of a large hotel in the city of New York. On this farm he rears annually a large number of fowls for the supply of his hotel, without the use of any artificial means save some fire heat in their roosting places during the severe part of the winter season. We must not be considered as advocating such a wholesale system as that pursued by M. Manoury of Picardy, or others nearly similar to it; but that each farmer could, without any additional cost by way of labor, produce annually a much larger number of fowls and eggs for market than he does, is beyond a doubt, and besides being a help, it would add to the production of the very best kind of meat.

The Apiary.

Seasonable Hints.

Swarming is late this year, owing to the general backwardness of the season. Those bee-keepers who have only box hives wherein the combs are fixtures are entirely dependent on the caprice of their stocks, both as to the time and manner of swarming. The time lost in watching for swarms to come off, and the loss, not to say mortification, experienced when one or more swarms go away to the woods, only require to be computed and a little common sense brought to bear on the result, to decide any wise bee-keeper to go into the use of movable frame hives.

We are quite willing to admit that there is more zest and enthusiasm among the bees when they swarm in the natural way, and that it takes a little while for them to accommodate themselves to the new order of things established by the art of man; but the same may be said of other creatures that have been subordinated to human use. The young horse has more zest and enthusiasm prancing in the pastures than he has when harnessed and put between the shafts of a cart or waggon, but the rule acted on is how to make him of most service to his lord and master, man. So with the bees.

We advise all who keep bees to put their new swarms into movable frame hives, and a week or ten days after swarming, to transfer the old stocks into movable comb hives also. How to do this may readily be learnt from the bee books, one or more of which ought to be in the hands of every bee-keeper.

This is the season for using the extractor. While

the honey yield is abundant, it may be worked without stint. The bees will soon fill the empty cells again, and will seem to be stimulated to harder work by deprivation of their stores. There is no way in which the most can be made out of a stock of bees so surely as by the use of the honey-emptying machine. But when the honey harvest begins to fail, the operations of the extractor must diminish or stop altogether. It is no gain to the bee-keeper to deprive the bee of a needed supply of honey, and leave them to starve before winter is over. Many have overworked the extractor, boasted of their large honey yields, and found themselves next spring *minus* their bees.

Those who have been to the expense of getting one or more Italian queens, must improve the shining hours, during the lifetime of the drones, to get as many stocks Italianized as possible. A queen nursery facilitates and expedites this operation. But where this device is not available, the queen or queens must be transferred from hive to hive; or queen cells put into hives in place of the common queens. It pays to take trouble in this process, even though, in some cases, the result is cross-bred instead of pure stocks. The hybrids are undoubtedly preferable to the common bees, and although it is thought they are crosser and more excitable, they readily succumb to the training power of smoke.

Many bee-keepers are puzzled how to get their bees off the combs, when this is required in using the extractor, and in other operations. There is no difficulty about it. Instead of shaking the frame, thereby running the risk of breaking new comb and irritating the bees, the best plan is to use a broom of soft blue grass or a goose wing, and brush the bees off the frame. This must be done quickly, but not harshly. The sudden surprise of finding themselves tumbling head over heels appears to prevent their becoming cross. Their only anxiety is to recover their foothold.

Precautions must be taken against the ravages of moth-miller, and a watch kept against toads, who are apt about nightfall to seek a supper at the entrance of the hive.

So soon as the multiplication of queens is over for the season, it is well to get rid of the drones, which are consumers but not producers, and are consequently a heavy tax on the resources of the hive.

A STANDARD FRAME.—Everybody—beg pardon—every *bee keeper* would like to have all other sizes and shapes of frames and hives thrown away, *except one*. Whose is it? Why, *mine*, of course. No other is just right. It is like the efforts to unite all denominations of Christians. They are all ready, willing, *anxious*, but it must be done on "my creed."

WEIGHT OF HONEY IN BOXES.—In the ordinary glass honey boxes now in use, it requires about 35 cubic inches to hold a pound of honey. Larger boxes lose less space, and hence require a less number of cubic inches. Thus a box 4 × 5 × 6 inches contains 120 cubic inches, and therefore, when well filled and sealed over, holds about 3½ lbs. A five-lb. box requires about 33 inches to the pound, and a ten-lb. box, about 30 cubic inches.—*Apiarian.*

IN A "QUANDUM."—A. I. Root, in *April Gleanings*, says he has lost about one-fourth of his bees, and his only way to account for it is, that there were *too few* bees in the fall. But that won't do, for three of the *weakest* in the fall are among the *best* now—and the *best* in the fall is among the missing. Then he draws the sage conclusion that *weak* colonies *may* build up, and *strong* colonies *may* dwindle down. "We can't most always, generally, sometimes tell what we don't least expect most."

THE EXTRACTOR.—Three years ago I had 40 stocks. The extractor was recommended to me, and I procured one. Writers in the *Journal* said to use it every six or eight days. I did not use it that often, but it proved a great curse to me. I lost eighteen stocks, and might as well have lost twelve more. Now I will say to beginners, use the machine once, and then put it away till the next year. It is a good thing if you use it right. I would not do without one, since I have learned how to use it. I have thirty-three good stocks now.—*C. Reisting.*

Poetry.

Princely Cottages.

"The Prince of Wales began, immediately after his marriage, by building the Alexandra Cottages, a row of 12 dwellings, built of Carr stone found on the estate, faced by white stone, and each entered through a pretty porch, with gardens in front and rear. For these a rent of £4 a year is paid by the tenant. The cost of the erection of each was £195. The Louise Cottages, built on the West Newton portion of the estate, are only inferior to the Alexandra Cottages in outward appearance; but they are also inferior in rent, and even their outside is attractive enough. They cost less than the Alexandra Cottages, the money laid out for the erection of each being only £140. For these the tenants pay a yearly rental of £3 10s each. On the whole, the Sandringham Cottages produce only about 1½ per cent. on the capital invested."—*The Hour, May 12*

"The Cottage-homes of England,
How beautiful they stand
(So once Felicia Hemans sang,)
Throughout the lovely land!
By many a shining river-side
These happy homes are seen,
Clustering round the commons wide,
And 'neath the woodlands green."

The Cottage-homes of England—
Alas, how strong they smell!
There's fever in the cesspool,
And sewage in the well.
With ruddy cheeks and flaxen curls,
Though their tots shout and play,
The health of those gay boys and girls
Too soon will pass away.

The Cottage-homes of England!
Where each crammed sleeping-place
Foul air distils, whose poison kills
Health, modesty, and grace.
Who stables horse, or houseth kine,
As these poor peasants lie,
More thickly in the straw than swine
Are herded in a sty?

The Cottage-homes of England!
But may they not be made
What poetess Felicia
In graceful verse portrayed?
With chambers, where a purer air
The sleepers' lungs may bless,
And pretty porches, gardens fair?—
The Prince of Wales says, "Yes."

The Cottage-homes of England,
Whose aspect makes men wince,
May turn to happy dwellings yet,
With landlords like the Prince:
Then quicker brain and readier arm,
And more strength better spent,
May add an economic charm
To less than two per cent.

The Cottage-homes of England!
The toiler gay and blithe,
Who drinks his ale and plies his flail,
And swings his sweeping scythe,
His sons and daughters, braced anew
With strength that nothing ails,
Will bless each Prince of landlords who
Does like the Prince of Wales. —*Punch.*

Miscellaneous.

A Plea for Butchers.

It has often been alleged that the butcher's profession is one that demoralizes all who engage in it. They become like the brute—brutal. From the *Lancet* it would seem that "very creditable accounts" are specially given out about butchers. "They are not midnight drinkers." "One of the dressers" of Bartholomew Hospital, our medical contemporary says, "has kindly informed us that during his three months' experience he has not had a single butcher brought in drunk." This gentleman's experience is, of course, limited. His notion with regard to butchers before he entered the hospital must have been something like that which an English lady entertained when she visited Edinburgh for the first time. She was astonished that all the people in the streets did not wear kilts, and that their hair should be other color than red. From more than three years' knowledge, instead of three months, we can say that we have not seen a butcher the worse for liquor. That the *Lancet* should specially single this industrious class out as a set of reformed reprobates, says little for its acquaintanceship with them and its own taste.—*Farmer (Eng.)*

Keeping Smoked Meats in Summer.

There are various plans and devices for keeping smoked meats for summer use, from the attacks of flies and beetles which infest hams, smoked beef, etc. if left where they may have access to them. Among the more common is, wrapping each piece separately in strong brown paper, and then packing in barrels filled in about the packages, with ashes or other absorbent material.

Another plan is to place the pieces in sacks well surrounded with cut hay, or in tight barrels, with cut hay or straw closely pressed around the pieces. By this latter plan, however, the meat is apt to mould. To prevent this, it should not be entirely excluded from the air, and where light and air can enter insects are apt to follow. A better plan, when the trouble and expense are not grudged, is to wrap each piece separately in paper and enclose in sacks cut to fit. Sew them up and dip in thick lime wash, and hang in an airy but cool place. Some, indeed, claim that meat may be kept perfectly and indefinitely by simply rubbing the surface with pepper before smoking, but it is almost no protection at all.

The best and cheapest way to preserve meat is to have a smoke-house built in such a manner that, while it is tight and dark, it shall at the same time be well ventilated. All that is necessary to secure this is a chimney on top protected by blinds so that the rays of light cannot enter, while at the bottom is a tube connecting with the outer air. In such a smoke-house you may keep meat indefinitely by occasionally causing a smoke during summer. If the meat has been properly cured, it will keep sweet. If the insects cannot get access to the place where it is kept, they cannot lay their eggs therein, and consequently there cannot be either skippers or beetles or their larvæ.

The smoke-house may be used for a variety of purposes when not filled with meat. The first four feet should always be built of brick, both as a protection against fire and as affording a most convenient receptacle for ashes, in all districts where wood is burned for fuel. Where farmers depend so much, as they necessarily must in the country in summer, on preserved meats, they should have a place to keep it safe from insect enemies.—*Western Rural.*

Should Horses Wear Blinders?

We never could see what vice or deformity lay in a horse's eye, that could make it necessary to cover it up, and shut out its owner from at least two-thirds of his rightful field of vision. The poets say that old age looks backward, but we have never heard such an idiosyncrasy charged upon the horse. The theory that a horse is less apt to be frightened when shut out from everything behind him we suspect to be a fallacy, else saddle-horses and war-horses would be duly blinded. Every horse is as familiar with his own carriage as with his own tail, and, as far as his "personal" fortitude is concerned, is no more disturbed by being pursued by one than by the other. As for other scare-crows that come up behind, they are mostly so familiar to the animal, that the more fully the horse can perceive them, the more quietly does he submit to their approach. Then it is such a pity to cover up one of the most brilliant features of this most brilliant creature. The horse has borne such a hand in the civilization of this rough and tumble world, that it seems not so much a cruelty as a discourtesy, as well as a disgrace, to hide his form with embarrassing toggery. No wonder we estimate the force in the world as horse-power, no wonder the Romans and the Germans, each in their own languages, designate their aristocracy as riders; no wonder their descendants made chivalry a synonym for their highest virtues. Let the horse be given his due, and unblinded. The check-rein is another nuisance in harness-wear which has almost entirely disappeared from England, the army having at last given it up by order of the Commander-in-Chief, Sir George Burgoyne.—*Webster Times.*

CARBON SMOKE FOR PAINFUL WOUNDS.—A correspondent of the *Country Gentleman* says: Take a pan or shovel with burning coals and sprinkle upon them common brown sugar, and hold the wounded part in the smoke. In a few minutes the pain will be allayed, and recovery proceeds rapidly. In my own case a rusty nail had made a bad wound in the bottom of my foot. The pain and nervous irritation were severe. This was all removed by holding it in the smoke for fifteen minutes, and I was able to resume my reading in comfort. We have often recommended it to others with like results. Last week one of my men had a finger-nail torn out by a pair of ice-tongs. It became very painful, as was to be expected. Held in sugar smoke for twenty minutes the pain ceased, and it promises speedy recovery.

COMMAND large fields, but cultivate small ones.—*Virgil.*

THE frost is God's plough, which he drives through every inch of ground in the world, opening each clod, and pulverizing the whole.—*Fuller.*

TRADE increases the wealth and glory of a country; but its real strength and stamina are to be looked for among the cultivators of the land.—*Lord Chatham.*

IN the age of acorns, antecedent to Ceres and the royal ploughman Triptolemus, a single barley-corn had been of more value to mankind than all the diamonds that glowed in the mines of India.—*H. Brooke.*

AND he gave it for his opinion, that whoever could make two ears of corn, or two blades of grass, to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together.—*Swift.*

AGRICULTURE is the most certain source of strength, wealth and independence. Commerce flourishes by circumstances precarious, contingent, transitory, almost as liable to change as the winds and waves that waft it to our shores. She may well be termed the younger sister, for in all emergencies she looks to agriculture both for defence and for supply.—*Colton.*

SHADING BY WHITENING THE GLASS.—We have found no mode more simple than skim-milk, with a little powdered whitening mixed with it (say as much whitening as the size of a walnut), reduced to a fine powder, and thoroughly mixed with two or three quarts of milk. We should advise those trying the scheme to do a piece of glass first. Let it dry, and add to the milk or whitening as they require less or more shading. If it be put on quickly and thinly by one man with a brush, and another follow with a dry duster-brush, merely daubing it quickly with the points of the dry brush, the shading will have the appearance of shaded ground glass, and looks neat.

SOME enthusiastic gardener writes as follows: A good way to checkmate the gray grub is to whittle out some imitations of tomato plants, paint them green, and set them out. If they are not very good imitations, just label them "Trophy tomato plants." The grub will come along early in the morning, and seeing that label, will begin to gnaw. He will chew a little while, and then read the label again to see if he is not mistaken. In a little while he gets sick of it and makes up his mind that "trophies" are not good Now is your opportunity. Quietly remove the decoys and insert your genuine plants, labelled just like the others. The grub has not as yet learned the trick.

A SMART OLD PONY.—The most remarkable and perhaps the oldest horse in New Haven, Ct., is the North Pony, now owned by Dr. Tyler. He was thirty-five years old on May 18. He was in his youth a racer and won many a purse. In 1853 he was taken from the race course and sold to J. G. North for $1,000, who owned him many years. His color at that time was almost black. Afterwards he was owned by William J. Benton, and kept for a livery horse, and was many a time hired to go for an evening to Woodbridge. At one time, after having been over-worked and abused, he was found stiff in the stall, and his grave was dug, but a horseman in a couple of days restored him, and he was at work again Dr. Tyler has owned him for several years; and although he has grown grey in his old age, he is tough and spry, and will take the Doctor to as many patients and in as quick time as any horse in town.—*L. S. Journal.*

CROWS PULLING CORN.—A subscriber wishes us to give a sure method of keeping crows from pulling corn. The best we have ever tried is to tar the seed before planting. Put a half bushel of seed into a washtub; turn over it sufficient scalding hot water to cover it; stir rapidly and empty all immediately into a corn basket, previously provided. As soon as the hot water has drained off, pour the corn back into the tub, and while still hot, stir it with a flat paddle which has been thrust a few inches deep into a bucket of tar. A very thin coating of tar on the paddle will be sufficient to coat every kernel of the corn thoroughly, if well stirred while hot. After the corn is all tarred, a few handfuls of gypsum (plaster) will dry it sufficiently to separate the kernels and render it easily dropped. The kernels are but little larger than before being tarred, and no bird or fowl will eat a kernel of it. It will not sprout quite so readily as if not tarred, usually lying in the ground 24 hours longer before coming up. After a crow has pulled a stock from one or two different hills, the field is safe from crows. Chickens may scratch up occasional hill, but will not eat the corn.—*Ex.*

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