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THE CANADA FARMER

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The Field.

Improving a Sandy Farm.

The *Massachusetts Ploughman* gives a description of a farm owned and worked by Mr. Wm. Mattoon, near Springfield, Mass. When it came into the possession of the present owner it was almost a sandy desert, not producing more than three bushels of rye to the acre. It now yields nearly two tons to the acre, and other crops in proportion.

Mr. Mattoon's first step toward improvement was to give the land a liberal dressing of clay. This was of course the right thing to do. He thus at once improved the texture of the soil, and added to its productiveness. Next, he began to think of providing manure, and instead of sending to a distance for horse manure or artificial fertilizers, he set about utilizing the waste products near home. There is a large slaughter-house near his farm, and he contracted for all the refuse, blood, bones, &c. These he hauled to his place, composted, and then applied to the land. He has managed to accumulate about eighty tons a year of this rich stuff, and has found that its effect on the soil has been wonderful. He thinks it far more valuable than "strawy horse-manure." He also contracted for all the dead horses from the adjacent city, and received $3 a piece from the city council for hauling the nuisances away. These he composted in a large pile, allowing them to lie a season at least and rot down before working them over. He makes a specialty of keeping hogs on account of the value of their manure, and at the time referred to by our contemporary, had upwards of 200 fat ones on his place. He makes large use of ashes, and is an assiduous collector of all manner of odds and ends that can be converted into fertilizing material. Of late he has turned his attention to leather waste, which, in rainy weather, is cut up by his men into fine bits, and so fitted for application to the land. The *Ploughman* thinks mincing up leather will hardly pay, as it will scarcely rot sufficiently to produce any fertilizing result in a life time. But it is refreshing, amid the prevalent neglect of manure manufacture, to meet with at least one farmer who is suspected of going to an extreme in that direction. It appears plainly enough that Mr. Mattoon has demonstrated that a barren sandy farm can be brought up to a high point of productiveness by the utilization of waste products. Of course, not only have science, thought and skill been brought to bear, but capital has been expended: It has, however, been wisely used, and so invested as to bring a remunerative return.

Our contemporary does not state whether any use was made of clover in the improvement of the farm in question, but we have no doubt that such an intelligent and enterprising farmer as Mr Mattoon was not slow to avail himself of a crop so valuable, and so especially suited to the improvement of the land on which he was operating.

There are many stretches of sandy waste, here and there, which are only waiting for a Mr. Mattoon to come along and take them in hand, to give the most satisfactory returns for the labor and capital expended on them. They are the pleasantest of lands to work when brought up to a fair state of productiveness, and while not so well adapted to wheat as soils of stiffer texture, they have their own special adaptations, and only require judicious management to be farmed as profitably as any.

Ashes in Reclaiming a Farm.

We have often spoken of the value of ashes, both leached and unleached, as a fertilizer—have given many instances of the good results that have followed their use as a top-dressing, and repeatedly urged farmers to make larger use of them than they do. And yet they are carried out of the state by the ship-load, and the truck farmers of Long Island think themselves lucky to get them, even at the outlay of time and money to which they are subjected. Not long ago we were riding with a most intelligent and well-informed gentleman in one of the sea-shore towns in Maine—a town which contains a considerable portion of light, flat, sandy land—as do most of our coast towns. The land had for some miles past been of this character, being rather *hard* looking, and supporting but a scanty burden of grass and weeds. But we came to a farm in the midst of this barren sand, that was "as green as a leek." The fields were neatly swarded, the growth of grass was rank, stout, and of a deep healthy green, and the cultivated land looked as though it was capable of producing good yields of almost any farm crop. It was a relief to the eye to glance over the boundaries of this farm, so closely defined was it, and in such marked contrast to the barren sand about it. "Here," said our travelling companion, "is a farm that has been brought up by the use of leached ashes—Kennebec ashes, I suppose, from some of the soap works on your river." We were at the time riding to take the cars and had no spare moments otherwise we should have stopped and inquired of the owner about his method of using the ashes. We learned, however, that none had been applied in recent years, so the good condition of his farm must have been due to the lasting qualities of the ashes. The appearance of the grass fields and pastures on this farm were enough, however, to convince any one of the value of leached ashes as a fertilizer, and it was certainly a pretty sight to look at these green fields in contrast to the general poverty of the surrounding soil. And we made up our mind then and there to again warn our river farmers against letting "Kennebec ashes" be sent out of our river to distant parts of the states and even to other states by the vessel load. You who are within a day's drive of a soap factory set your teams hauling leached ashes for your grass lands if you have nothing else to do, and great will be your reward.—*Maine Farmer*.

Drilling Wheat.

The U. S. Department of Agriculture has been collecting information as to the extent to which the drill is used in wheat-sowing, and also as to the advantages of the method, as they present themselves to the minds of intelligent agriculturists. A brief summary of the results obtained by these departmental investigations is as follows:—

1. Fifty-two per cent. of the winter wheat, and thirty per cent. of the spring wheat, or about forty per cent. of the aggregate of both kinds, represent the proportion seeded with a drill.

2. Nine-tenths of the testimony given asserts the superiority of the drill for winter wheat.

3. An average increase of one-tenth in the yield is assured by the use of the drill.

4. A large majority of observers declare that in most soils in which injury resulting from frost is liable to occur, drilling prevents or reduces the loss.

5. The majority assert that in certain clay soils with rolling surfaces, some advantage accrues in surface-drainage by use of the drill; while in some heavy soils with flat surfaces, the water freezing in the drill-furrow does positive injury.

6. The broadcast seeder predominates in spring wheat regions, because better adapted than the drill to seeding in unploughed corn fields, on rough surfaces, and in weedy fields.

7. About one sixth of the seed wheat (or 5,000,000 bushels for the crop) might be saved by the exclusive use of the drill.

8. The drill is used for seeding in connection with thorough culture, especially in winter wheat growing; the broadcast seeder for imperfect culture and rough surfaces, and sowing by hand is the method adopted for small patches and first efforts of *impecunious* pioneers.

Harvesting the Grain Crop.

More loss has attended the harvesting of grain from allowing it to become over ripe, than from cutting it in too early a stage of growth. A greater part of the wheat crop is harvested when ripe and not taken in until it will shell badly, and hence a loss of grain, and a lessened value in straw. A rule we have always been governed by has been to cut the wheat as soon as the berry is out of the milk, but before the kernel has become so hardened that it cannot be mashed between the thumb and finger; and in cutting oats, to lay them as soon as two-thirds of the field had become turned or changed in color. They should not be allowed to lie in the swath any longer than is absolutely necessary to cure the straw sufficiently to prevent it from moulding in the stack or mow. Both wheat and oats should be garnered immediately after they reach a condition to make it safe to do so, as great risk attends leaving these crops in the field. We have known acre after acre of heavy wheat to be ruined by growing in the bundle, all from neglecting to garner it at the time when it was fully fitted and weather fair. Where there is barn room it is always best to put grain crops under roof, but where they have to be stacked out from necessity, the work should

be done in a careful manner. The better way under most circumstances is to stack at the barn, then the grain is near the granary when it leaves the machine, and the straw may be saved where it is needed for feeding, bedding and manure.

In building a stack of sheaves, the following rules, adopted from our own experience, will be found perhaps of profit to some of our inexperienced readers at this time:

Where a pen is not used for foundation, set up two bundles against each other, and others against these until a circle is formed sloping from centre to circumference, each row half the length of a sheaf further out than the one before it. Carry out the foundation in this way until it is of the desired size, and then at outside lay a double row of bundles and press them down well. The foundation being now prepared build upon it by laying the tiers of sheaves from outside toward the centre each row lapping butts to bands. Gradually lay out until the stack has attained the height desired—that is, let each row of bundle butts project over a trifle further than the one beneath, so that the circumference of the stack will gradually increase in size as it goes up to a half way point, and then gradually draw in until the top is reached. Caution must be used not to make the stack too flaring; it is only necessary to make a little difference in the circumference of the base and centre to obtain the desired object, that of protection against heavy rain storms. When building the stack, always keep the centre a little the highest and well tread down, for in this lies the great secret of having either grain or hay keep well. The outer surface, by being less compact, will settle a little more than the centre, and consequently protect the whole from damage by not retaining moisture. We have found it a good plan to let one tier of bundles project some four inches at the point where it is decided to begin drawing in for the top; this furnishes what may be termed eaves. If the stack is to stand an indefinite time before threshing, it will pay to give considerable attention to thatching the top, at all events it should have a topping out of bog grass or poor hay.—*Ohio Farmer*

Ploughing and Preparing the Soil.

The following observations on this important subject are from Ville's "School of Chemical Manures:—

In the Bas Rhin, and doubtless in many other departments, ploughing is but superficial, and no deeper than 3 to 5 inches. This thickness is evidently insufficient, and should be increased to 12 to 16 inches, in order that the plants may thrive. The proportion of mineral substances in the soil is in the ratio of the thickness of the tillable layer, and will be doubled or trebled by deep ploughing. A system of rotation of crops becomes at the same time more easy. The great majority of agriculturists who persist in superficial ploughing, do so for fear of bringing to the surface sterile soils. It is a mistake, since a good subsoil plough allows of the simple stirring and gradual incorporation of the under layers, without bringing them to the surface. Experience has, however, demonstrated that deep ploughing is always advantageous and without the fancied inconveniences. We should fight each prejudices.

The arable layer, when its thickness is no greater than from 3 to 6 inches, is insufficient for the development of the roots of plants, and does not protect them against the influences of an excess of dryness or dampness. As the tendency of plants is to grow as much below as above surface, it is evident that they cannot expand properly in a thin layer. Therefore, the principal condition of a deeply tilled soil is seldom met with for plants sending their roots deeply into the ground. Even cereals, which are believed to vegetate at the surface of the soil, will have deep roots in properly prepared ground.

With an arable layer of 3 to 6 inches thickness the roots of plants will not acquire their natural growth, and will greatly suffer by the inclemency of the weather. An abundant rain will flood the plants, and when the water escapes over the surface of the field, it will carry away the soluble and more fertilizing substances. By drying, the damp earth will become compact and will compress the roots, the development of which will thus be hindered. After a long drought the plants which have their roots near the surface of the soil, finding no dampness, remain stationary, or even perish.

On the other hand, and in arable layers 12 to 16 inches thick, plants are able to penetrate and grow properly, and are protected against drought and the inclemency of the weather. An arable layer of this thickness easily absorbs water; during an abundant rain, water penetrates and is drained through the bottom, without carrying away any earth or manure.

Grasses and Forage Plants.

Vacant Places in the Turnip Field.

These will occur under the best husbandry. A stoppage in the drill, failure of seed to grow, or the ravages of the fly, sufficiently account for their existence.

They look bad. Every good farmer feels that they are an eye sore. Passers-by on the road notice them and say, "That would be a good field of turnips but for the gaps in the rows."

They cause considerable loss. Turnip ground, properly prepared, is the best on the farm, and is too valuable to be wasted. Often the profit of a turnip crop is materially diminished by these vacant places.

Why should they not be filled up? It is easy to do it, and thereby both appearances and profits may be greatly improved.

There are various methods of filling these ugly gaps. Later varieties of turnips may be drilled in our own by hand. The Yellow Aberdeen, Early Harvest or White Stone, are very suitable for the purpose. They will not grow so large or winter so well as the swede, but "half a loaf is better than no bread;" they can be fed in the fore part of the season, and will help to eke out the general supply.

But we are inclined to think the best method of supplying these vacancies is to plant cabbages. They are more nutritious than turnips, will be eaten more greedily by cattle, and are especially good for milch cows. It is too late now for the farmer to grow his own plants for this purpose, but in many instances a supply might be bought cheaply; and if those who are annoyed this year with unsightly and unprofitable gaps in their turnip fields will "make a note on't," and take care next spring to sow a good lot of cabbage seed, they will find their account in it. Cabbages are well worth growing as a field crop, and if any reader doubts the statement, let him put it to the test, by planting an acre or so another season, and we are quite sure he will give us a vote of thanks for the suggestion.

Hill or Level culture for Corn.

The question, "Which is the best method of filling corn for profit, by hilling, or by level or flat culture," was recently taken up and discussed by the Hingham (Wisconsin) Farmers' Club, as follows:

W. Higby remarks that as far as his experience leads him, level or flat culture is preferable. He tried, and seen tried by others both methods in same field, and invariably the level or flat culture gave larger and heavier yield of corn per acre, and would stand up better. By the hilling method when blown over by storm it would break the stalks near the ground, therefore would not rise again, whilst by the other method the most would straighten up. Further every time the corn is hilled up new brace roots are thrown out, consequently the growth of corn would be checked until such roots were formed and the maturity of the crop would in like manner be retarded.

J. Hasner has been used to the hilling method, and uses the plough with half mould board to work between corn. Hills up, but not high, sharp hills to carry the rain off, but rather a flat hill. Had on his place raised by this method, some 70 bushels per acre, and by using the cultivator and level culture had raised 90 bushels per acre. Thinks the cultivator cuts the rootlets that spread out in the soil in search of plant food, deteriorates the crop, and concludes the plough far better than the cultivator to work among corn.

C. Rogers had experimented in the cultivation of corn and taken notes of results. Finds several reasons why the level or flat culture is best. Corn naturally has a set of brace roots at or near the surface to support the stalk in an upright position, and by hilling the corn you stop its growth until it throws out an extra set of roots, and every time you add to the hill you cause a new set of roots to start out, consequently you retard the maturity of the corn from one week to two weeks and more. Nature does not cause hills or mounds for plants to grow therefore the nearer we imitate nature the better, and keep the soil level or flat. After the corn has thrown out the proper brace roots, it then starts out a set of fine rootlets or feeders through the soil in search of plant food to mature the crop, and by ploughing you cut them off and shorten the supply of food, &c. He cultivates often and keeps soil mellow and free from weeds.

J. De Lyser says his experience in former years in the state of New York was by ploughing and hilling corn. Result, rain would run off hills into furrows, and corn would suffer for moisture, except in very wet seasons, and would not get a good crop, which was the general rule thereby the hilling method. Since he has been here he has practised the level culture with results far better, by using the cultivator in dry weather, the more moisture in the soil to supply the wants of the plant. He also finds that it is less labor to plough a corn field after the crop is removed than it is by the hilling method.

Unprofitableness of Mammoth Roots.

We learn from the *North British Agriculturist* that at a recent meeting of the Royal Agricultural Society of Ireland, a paper was read by Professor C. A. Cameron, M D, chemist to the society, which showed very conclusively the wisdom of growing medium-sized rather than extra large roots. The paper, with its accompanying table of analysis, is rather long for insertion in full, but we may briefly give the gist of it. Ten specimens of roots grown at Brockley Park, Queen's County, were carefully analyzed. They consisted of five specimens of mangolds, two of turnips, and three of carrots. The treatment given them was the same as to preparation of soil, sowing, and after-culture, but varied as to the distance apart of the drills and the thinning of the plants, the object being to compare the yield of medium and mammoth roots. In weight of crop, the large roots had a decided preponderance, especially in the case of a variety of mangold known as "Carter's Mammoth Long Red," which, grown rather closely, and averaging a size of 6 or 7 pounds weight each, yielded 42 tons 15 cwt. to the acre, while, grown thinly and averaging 18 pounds each, the product was 70 tons to the acre. Superficial observers would pronounce this result conclusive as to the superior policy of growing large roots. But the tests of the laboratory tell a different story, and show that the smaller yield actually contained by far the larger amount of nutriment. The thickly grown roots yielded 19,782 pounds weight of dry food per acre, while those grown more thinly and developed to an enormous size, only yielded 11,681 pounds weight of dry food per acre. Here is loss in actual product, and further loss in carting and handling a vast and useless bulk of water. Professor Cameron points the moral of the experiment so admirably in the concluding portion of his paper, that we cannot do better than allow him to speak for himself. He says:—"We learn that no useful results, but rather the contrary, can be obtained by growing monster mangolds or turnips. Since the introduction of green crop husbandry into these countries it appears to have ever been the farmer's ambition to exceed his neighbors in the production of gigantic mangolds and swedes. It has always been the practice, too, of writers in agricultural journals to encourage the growth of roots of abnormal dimensions. I have not a shadow of doubt upon my mind but that this practice has been carried out to an extreme and mischievous extent. An able agricultural writer, Mr. Baldwin, of Glanmire, has forcibly pointed out the absurdity of awarding prizes to show roots merely because they are the largest. By "spoon-feeding" (as it has not inaptly been termed) a few roots it would be easy for a man with a few perches of a garden to produce more promising roots for show purposes than a farmer could who grew his 20 acres of roots in an ordinary and, I may add, a proper manner. Let us see how far the results of Mr. Young's experiments and my own justify my statement that very large roots should not be grown. At Brockley Park, Mr. Young sowed Carter's mammoth long red mangold in two plots. The mangolds grown in one plot were not thinned out widely, but were allowed to grow rather closely together. In the other plot the mangolds were supplied with a very large amount of manure, because the plot was the site of a former manure heap. The mangolds

here were thinned out widely, so as to allow room for the rapid and extensive development of the roots. The acreable yield of the mangolds which had been moderately manured and kept close together amounted to 46 tons 15 cwts., whilst the mangolds which had been abundantly manured and widely thinned out produced a crop of about 70 tons per acre. Now, if the large roots and small ones were equally nutritious, it would, of course, be desirable to grow the former, but when we compare the composition of the mangolds of plot 1 (thickly sown) with those of plot 10 (thinly sown), we find an absolute and important difference in favor of the former. The thickly-sown roots contain 15.7 per cent. of solid or nutritive matter, which, the acreable yield of the crop being 46 tons 15 cwts, would amount to 19,782 pounds weight of dry food per acre The thinly sown roots contained only 7 47 per cent. of solid or dry matter, and as the acreable return from these large roots was 70 tons, that would yield only 11,681.6 pounds weight of dry food per acre In producing the large roots, the farmer would incur more expense than if he cultivated the small ones; for instance, he would have to apply more manure, and his carriage would be far greater. If Mr. Young had ten acres of mangolds like No 10, he would have had to cart 700 tons from the field to the stores, and yet he would have had in this crop no more solid food than is contained in about 450 tons of the smaller mangolds, No 1"

Real Old Grass Land.

"Twenty or thirty years in permanent sod" constitute real old grass land, though, if well managed and properly grazed, it will improve up to fifty years, and then never retrograde unless abused in some way or other. Now if the greater part of the land which is natural for grass, and adapted for perpetually lying in grass for grazing and mowing, was allowed time to become established in a thick-set old sod, and the finer and most fattening herbage encouraged by judiciously grazing with mixed stock (a good proportion being sheep), there might be fine districts producing beef and mutton, butter and wool, with fine horses also, and with comparatively little use of the plough, less and less arable soil being required as the south was approached, because the winters would be short and the foddering and housing of stock of little moment in comparison

Just as the turnip husbandry of England was the salvation of the light soils, and the hills and downs of England, and the muirs, &c., of Scotland, at the same time renovating all the good, dry and well drained lower land, so lying by for the real old grass all the land most suitable for permanently remaining sacred from the plough, may be the saving of agriculture in America; for the fact of about two-thirds or three-fourths of every farm being in pasture and meadow, or in grass alternating in pasture and meadow, would be an assistance to the arable portion and every farmer adopting this system; because grass land, when once thoroughly established, can be managed so as to enable the farmer to support a great quantity of animals which, with produce from the soil ploughed, will give straw, &c., which in conjunction with better food, increases the manure heap.

But hitherto the greed of gaining a good corn crop by ploughing under the sod, has caused the having any established pastures or mowings to be out of the question; and then the unaccountable fear that sheep may injure the best herbage, has brought about a running out of the very grasses the sheep would have caused to flourish. In Illinois the grass land that has remained uncultivated for 20 and 30 years, has become so superior to the newly-laid down fields in timothy and clover, that double the stock can be supported upon it; and what is proof beyond doubt is that when rented, double the money per acre is readily paid for the "real old grass land."

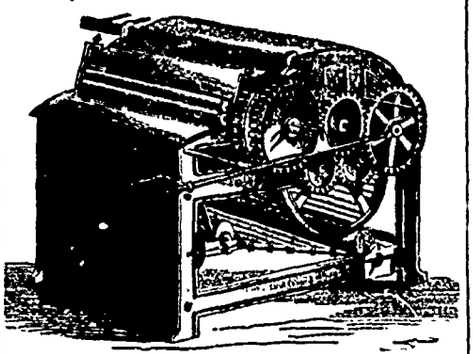
Let any disinterested person think on this, and it will show what a vast advantage would be gained by the whole community if (say half) the land now said to barely pay for occupation, could be let lie in grass till it would carry double the stock and be worth double what it is now to rent.—*Cor. Rural New Yorker.*

HINTS FOR STACKING HAY.—The *Pacific Rural Press* says: Make your stacks long and narrow. It will cure better and there is less danger of its becoming musty; besides it will be easier baling. The press can be moved easier than you can pitch from the rear of a wide stack. In building the stack, unload alternately on different sections of the stack; this will allow the air to circulate through each load before it is settled down by another placed upon it. About three gallons of salt thrown into a load of hay will preserve its sweetness. Three quarts are recommended by a hay farmer.

Agricultural Emplements.

Flax Scutching Machines.

We now present our readers with an illustration and description of the new patent Flax Scutching Machine of Messrs. Sandford & Mallory, England, which attracted so much attention at the late International Exhibition in London, from its simplicity and efficiency.



The cylinder is about 20 inches diameter and the feed 26 inches. It can be worked entirely by boys or girls; no skilled labor is requisite. The cylinder is composed of four iron rings which sustain the teeth and scrapers, and the belt is of strips of leather, which carry the corresponding teeth, the open spaces allowing the boon or shove to fall through, whilst the tow is thrown out at the end The flax, retted in any of the usual methods, and *unbroken*, is held in a light wooden holder, and fed in a thin stratum to the feed rollers, and is operated upon exactly as before described, by the teeth and scrapers, except that no water is used. Flax scutched by this machine is produced perfectly even and unbroken, with very clean ends, and the straw gives a large yield, averaging over 20 per cent. A boy and two children will produce about one hundred pounds of clean flax per day. The yield on the hackle from flax scutched by this machine is very much larger than from flax cleaned by any other process.

This machine may be driven in the same way as the cotton gin, either by steam or horse-power. The power required to drive is about half a horse-power. The speed requires to be varied according to the degree of retting the straw has received. For ordinary retted straw about 150 revolutions per minute are sufficient; for more tender and over-retted, 125 will suffice; and by means of spare pinions the motion of the feed-rollers can be increased or diminished so as to give less or more work, according to the nature of the straw to be cleaned.

Agricultural Implements.

We have heard the question frequently asked, "Is agricultural machinery really and upon the whole a gain to the farmer? Could he not, comparing one year's losses with another year's gains, and averaging these say once in a decade, have done just as well by clinging to the old system of manual labor?" Now there is a fallacy on the very surface of such questioning. In the first place, there is scarcely any species of farm Labor that can be performed without implements of some kind, from the simple processes of hoeing and spading to the new complex systems of reaping the grain and driving the thrashing machine. The query is simply absurd; it will not bear scrutiny. But another is added, viz:—"What great object is it to us farmers to have our machinery rendered more and more perfect when they become at the same time more and more costly?" Now, admit for an instant that agricultural machinery is a necessity—and who can deny that?—and another moment's reflection will show that every real improvement on the machinery —we say, real improvement—must ultimately prove a positive and clear money gain to the user, no matter what may be its present cost. Let us examine this. A farm of one hundred acres requires, if it is at all properly furnished, the following: two or more good ploughs, a shovel-plough, a small plough, a subsoiler, a single or two-horse cultivator, a root-seed planter, a grain drill, a roller, one or more harrows, fanning mill, straw cutter, root cutter, a good strong waggon with hay-rack, an ox-cart, a horse cart, wheelbarrow, sleigh, shovels, spades, hoes, hay and manure forks, hand and horse-rakes, scythes and cradles, grain shovels, mauls, wedges, picks, axes, wood-saws, hay-knife, a ladder, and various other matters still subordinate to these but equally necessary in their sphere. Let us now take the cost of furnishing a whole farming country with such a set of implements as we have mentioned to every hundred acres. We have not got figures for the Dominion just at hand, but it is computed that the cost of furnishing the agricultural districts of the United States with just such a stock is about five hundred millions of dollars. The cost per annum of men and horses to work these is calculated to sum up an equal amount. If now the effective power of labor be increased by improvement in this instance, say one-fifth, does it not stand to reason that there will follow a gain yearly of just one hundred millions of dollars to the farmers?

A knowledge of the science of mechanics, then, should be made a prominent object with the farmer in order that he may be able at all times to construct the best machine himself or select the best already constructed, and understand how to apply the forces required for the use of such machines to the very best advantage. There is no circumstance which shows the rapid advancement of modern agriculture more strikingly than the great improvement in farm implements. Within the past fifty years farmers have been enabled to do several times the work with an equal number of hands and horses. Ploughs have been constructed to plough deeper with the same if not greater ease of draught. Grain, instead of being slowly beaten out and crushed with the flail, is now made to gush in golden showers from the thrashing machine; horse rakes accomplish singly the labor of many men together, whilst the saving effected by the use of horse forks is almost incalculable. From ten to twelve acres of grain are neatly cut per day with a two-horse reaper, and seeds are better and much more evenly distributed by the drill; which thus obviates the heavy monotonous drudgery of hand-sowing It has been estimated that the number of reapers introduced into the United States up to the period of the great rebellion performed the labor of over a million of men—thus supplying the great loss caused by conscription for the army. As we have said, then, the knowledge of scientific principles and the applications of force should be aimed at by every one who aims at success in Canadian farming. We have all heard of the man who, to save the smaller horse, hitched him to the short end of the whiffletree, to balance the larger horse at the longer one. Now we do not expect in this enlightened age to see such ignorance as that, but instances are not at all uncommon where operations are performed to almost as great disadvantage, and which, to a person versed in mechanical knowledge, would prove absolutely absurd.

American Agricultural Implements in England.

There is something quite amusing in English prejudice, especially that which prevails in regard to our agricultural tools. It appears that we make but one tool which is conceded to be superior to their own, and that is the hay-fork. The English agriculturists have been forced to admit that our light spring hay-forks are better than their clumsy and dull implements, and we found this tool on sale in stores, and in use in the fields in all parts of England. This is curious enough, when we consider that they are not ignorant of the nature of most of our tools, and the dullest comprehension ought to be able at once to see their great superiority. The English implements are very *heavy*. Not one of any kind can be found but what contains twice or three times as much iron or steel as is needed. Laborers

cannot do as much work in a day with their heavy shovels. hoes and spades, as they can with our sharp-cutting, light elastic tools, and we think the latter will last as long

English ploughs are indeed a curiosity. We measured the length of a plough in use in a field, and it was more than ten feet long, and would weigh probably three times as much as the ploughs we use in soils of a similar character. There were attached to the end of the beam, next the horses, two stout wheels of sufficient diameter to be used upon a market waggon. It would be interesting to see an American farmer following one of these ploughs, and to notice the headlands made with it.

Last year we induced an English friend visiting this country to take back with him an assortment of our tools for use upon his splendid farm in Cumberland county. The results of the trials we were much interested to learn, and the first question asked upon reaching the mansion related to the success of the implements. We could not learn that one of them had been put to practical trial. The farm superintendent and the laborers decided in advance, that the tools were "too light" for their soils, and so they had been thrown aside unused. This objection appeared extraordinary when we walked over the clean mellow fields, free from roots, stumps, and stones, and we could not avoid expressing some indignation at this absurd manifestation of prejudice.

The cost of using heavy inconvenient tools will be felt more sensibly in England when the wages of laborers reach a point corresponding with those paid in this country. Ploughs which require two of their noble farm horses to move, can do no better work than our light ones, and these can be drawn easily by one horse, and thus an immense saving can be made. It manifestly cannot be long before a radical change will be made in the construction of agricultural tools in England.—*American Manufacturer.*

How to make a Grain Hand-Rake.

Procure some wire about one-fourth of an inch in diameter, cut it in pieces seven inches long, and dress the ends round or nearly so with a large file, or on the grindstone. These pieces are for the teeth of the hand-rake. Now take them to a blacksmith's shop or to a machine shop and have a thread cut on one end of each tooth for about one inch. Then drive out every alternate tooth in the head of a wooden hand-rake, plug up the holes with pieces of hard wood, well seasoned and oiled as they are driven in, and bore other holes in the head of the proper size to receive the iron teeth when screwed in. The holes for the wire teeth should be bored on one side of the plugs, so that the thread on the teeth will be held by the thread made in the head of the rake If the hole is made in the centre of the plug, tooth and all will soon work out. A better way still will be to take an old rake with a broken head. Make a new head, into which insert the teeth. When raking wheat, barley, rye, or oats into gavels, one can rake much faster, and with far less strength, by employing a rake with teeth twice as long as the wooden teeth are usually made. When raking with short teeth the raker must necessarily exert more strength to keep his rake down into the stubble than is required to move the straw along into gavels. Old rakes, the teeth of which have been worn up to short stubs, are frequently put into the hands of boys, to rake grain for others to bind into sheaves. As the teeth are so short they labor hard to accomplish what they could do with comparative ease if their rakes were provided with teeth seven inches long. A rake with long teeth will work far more satisfactorily at any other sort of work than one with short teeth If wire cannot be procured conveniently, knock out the short wooden teeth and make long teeth of some tough hickory, yellow locust, or any other tough timber, seasoned thoroughly. Such a job can be done on some stormy day. After a raker has become accustomed to long teeth he will not use a hand-rake with short teeth, because short teeth require the exercise of more muscle. Now is the time to fit up hand-rakes, so as to have them ready when the harvest is ready for the cradlers.—*New York Times.*

SHEEP SHEARING MACHINE.—Mr. Begg, factor, Durris, Kincardineshire, has bought a newly-invented machine for sheep-clipping, by which it is said that 200 animals can be deprived of their fleeces in a day by the labor of one man.

A COMPOSITION FOR COVERING HOUSE ROOFS.—Take one measure of fine sand, two of sifted wood ashes, and three of lime, ground up with oil. Mix thoroughly and lay on with a painter's brush, first a thin coat, and then a thick one. This composition is not only cheap, but it resists fire well.—*Sci. Am.*

Horticulture.

EDITOR—D. W. BEADLE, CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

THE ORCHARD.

Seasonable Notes.

GRAFTS of this season's setting should be divested of all superfluous stock shoots, as the latter tend to drain the sap away from the graft proper. A gentle rub with the hand will prove sufficient.

YOUNG NURSERY TREES AND SEEDLINGS should be kept carefully weeded, and the latter, especially in very dry weather, receive an occasional watering. Cultivate or hand-hoe frequently to keep the soil moist and mellow.

PRUNING.—This operation requires considerable taste, and should only be attempted by experienced hands. All branches that exclude the free access of air and light should be removed, and the knife freely used in the formation of an open, shapely head.

PINCHING OR THINNING.—This has become an established practice among the best orchardists. It consists in removing a large proportion of the growing fruit in order that the energies of the stock may be concentrated in bringing the remainder to all the greater perfection. The system is well worthy of trial, as it has been found that the increased size and better quality of fruit treated in this manner far more than counterbalance the deficiency in quality.

Fruits and Flowers at Owen Sound.

The recent meeting of the Fruit Growers' Association at Owen Sound gave a number of the members an occasion for making a visit to a place with which they had hitherto been but slightly acquainted. That some varieties of all of our leading fruits could be grown there was generally accepted, but the number and extent were very indefinitely ascertained, and the whole subject was floating in the minds of most of those who came from a distance in vague uncertainty. But the meeting afforded all an excellent opportunity for obtaining the most accurate information, both from the discussions at the sessions and from actual inspection of the gardens and orchards. The members from a distance were received with great cordiality by the gentlemen of Owen Sound and vicinity, and made to feel at once that they were at home. Every facility possible was afforded them for seeing everything of interest, and everything possible was done to make the visit to Owen Sound pleasant—red days in the calendar of memory. And all have come back with the feeling that Owen Sound is a pleasant place, and the resident members of the Fruit Growers' Association most agreeable gentlemen.

But we set out to write about the fruits and flowers that can be grown at Owen Sound. To those who think of that part of the country as a cold ice-bound region, but little removed from the limits of perpetual snow, it will seem almost incredible to be told that fruit, excellent fruit, is exported in considerable quantities even now, and that it promises to become an increasingly large article of export in years to come. Apples of most of our leading sorts thrive well, and if one may judge from the samples of Northern Spy and Golden Russet, which were exhibited in a state of the most perfect preservation, their size, their beauty of coloring and perfection of flavor, will cause them to be highly esteemed in any market.

Most cultivators had found the *Baldwin* too tender for the climate, but the *Rhode Island Greening*, though a little tender, yielded such large crops of excellent fruit that it was a general favorite. Those acquainted with these two varieties and their comparative hardihood will at once perceive that the Baldwin will almost thrive there, and will be quite prepared to accept the statement made by two or three that they found no difficulty in growing it, and in raising excellent crops. It follows then that all the varieties that are more hardy than these will grow at Owen Sound, while such as the *Snow Apple* and *Red Astrachan* will yield fruit of the most perfect quality. As yet the quantity of apples grown is not largely in excess of the local consumption, but the quantity is increasing as the more recently planted orchards come into bearing; and it will not be long before dealers in apples will find some of their very best *Northern Spy, Golden Russet*, and *Rhode Island Greenings* at Owen Sound.

There seems to be two varieties of soil there, the one a rich dark sandy loam, underlaid by quicksand, the other a strong clayey loam, underlaid by limestone gravel. As might be expected, there is a marked difference in the flavor and quality of the fruit grown upon these soils, as well as a difference already noticeable in the health and longevity of the trees. The clayey soil, underlaid by gravelly limestone, will be found to be everyway better for orcharding than the other, and intending planters will do well to bear this matter in mind when selecting the site for their trees. The committee appointed to examine the apples on exhibition detected this difference in the flavor of the fruits submitted to them.

In PEAR culture but little had yet been attempted, and the opinion seemed to prevail that the severity of the climate was a serious hindrance to success. Yet the writer saw fine healthy young trees of most of our usually cultivated sorts, including Bartlett, White Doyenne, Beurre d'Anjou, Beurre Clairgeau, Flemish Beauty, Clapps' Favorite, &c., &c. There can be no doubt but that the two last named varieties will succeed well, for they are exceedingly hardy; and it will be very remarkable if many more sorts will not be found to do well in a soil and climate where the Rhode Island Greening apple is so great a favorite.

It cannot be expected that the HEART and BIGARREAU CHERRIES should succeed there. We saw, it is true, a fine healthy tree of the Black Heart, but although the trees may survive, the cold will usually be sufficiently severe to kill the blossom buds, so that there will be little or no fruit. But the hardier Morello cherries will do well and usually bear fine crops of fruit. The *Early Richmond* is spoken of by members residing there as their most desirable variety.

The PLUM is evidently at home in Owen Sound. Nearly every variety that has been tried succeeds well. The cold of winter does not often injure the fruit buds, and the trees load with fruit until they fairly break down under the weight. Several thousand bushels were shipped last season to the city markets, a considerable portion going to New York. Such is the abundant productiveness of their plum trees that they literally bear themselves to death in a few years. The curculio, that insect pest which has so completely ruined the plum crop in all the southern districts, is as yet unknown, and the fruit is uniformly fair and free from imperfections. The only evil known to plum growers there is the black knot, which has become somewhat troublesome. This disease can be kept in check under ordinary circumstances by prompt amputation and burning up of the diseased branches. If the knots are allowed to remain, they will spread to other parts of the tree and to neighboring trees, and in a short time the whole orchard become infected. Indeed if a slovenly or careless neighbor allows his trees to become infected, the utmost vigilance and promptitude will hardly suffice to keep the knot in check. Such conduct ought to be made criminal, and the black knot included with the Canada thistle in the statute book.

If all could be induced to exercise a vigilant attention to the black knot, or made to do so, there is no doubt but that it could be prevented from becoming very serious. So also, when the curculio makes his appearance there, as in all probability he will, if there should be a determined and united war of extermination waged by all the plum growers, from the man with but a single bearing tree to those with more extensive plum orchards, there would be no difficulty in keeping the enemy in subjection. But if there be not this united and determined war, the curculio, once introduced, will soon become established, and will make as sad havoc with the plum crop there, as he now does in the more southern parts of the province.

In PEACHES but very little can be done unless it be by cordon training at such a height from the ground that the fruit buds might be kept below the snow line We did not see any efforts being made to train them in this way, and not more than half a dozen peach trees altogether. Mr. Dempsey, of Albany, Prince Edward County, has succeeded well with peach trees in tubs, placing them under a shed during the winter, where they are sheltered from the snow and winds. This plan might also be employed here, but ordinary out-door culture will not be successful.

GRAPES that will mature their fruit in the short summer of that latitude can be grown there without difficulty; for by taking the vines down from the trellis in autumn and throwing them upon the ground, they will be covered with snow all the winter and so protected from injury. Experience has shown that even the Concord requires more heat than is usually had there to ripen its fruit well. Some of Roger's Hybrids which ripen earliest do well, but those who had tried the Eumelan find that it is remarkably well adapted to that climate, yielding an abundant crop and ripening its fruit perfectly. Could our hybridists only infuse a little more saccharine into the wild grapes of the Æstivalis class, and add a trifle to their size, without lengthening the time required for the growth and maturity of the fruit, they would confer a great favor upon our friends at Owen Sound and in similar localities.

The snows, which fall so early at Owen Sound and continue so late and so constantly that they protect the ground completely from all freezing—so that it is a matter of perfect indifference, so far as any fear of injury is concerned, whether the potatoes are dug in the fall or the spring—these snows form such a perfect covering to all plants which do not grow above the snow line, that the lover of flowers can grow many things without fear of injury that would perish in the milder climate of the southern tier of counties skirting the north shore of Lake Erie ROSES of almost every kind can here be grown in perfection in the open ground. *Bourbon Roses* were seen in full perfection of beauty, which received no other protection in winter than the gathering together of the branches and securing them in a bundle so that they might not be torn off by the weight and downward pressure of the sinking snow. *Daisies* and *Violets* which so often suffer in our open winters, would doubtless there escape all injury. Shrubs, too, of nearly every kind, are completely protected by the snow. *Forsythia Viridissima*, which so seldom blooms well with us, is there in its season, a mass of golden blossoms; while the *Spirea Lanceolata, Deutzia Crenata, Double-Flowering Almonds, Prunus triloba, Blood-leaf peach*, and a hundred other beautiful things that would perish in their severe winters were they not covered from the cold by their mantle of snow, can be grown with perfect ease, and will flower in the greatest profusion. One thing only is requisite, that the cultivator content himself with low forms, for if he train them above the snow line, the exposed portions at least will perish

Thus it will be seen that Owen Sound is not without its compensations If the winters be long and cold, the earth, with all humbler vegetation is carefully, gently, yet securely wrapped in its covering of snow, and when warm weather comes, it springs at once into life and beauty The grower of fruits is exempt, at present at least, from some of the enemies that worry the patience out of his brethren in the warmer sections, while all the smaller fruits, as strawberries and raspberries, may be grown in endless variety and boundless profusion without one thought as to their hardihood, for all are alike hardy under the snow Vegetables, too, that must be carefully secured in the cellar with us, may be left to winter in the garden, and celery gathered fresh and sound on any mild day by digging it out of the snow. We have returned from our visit to Owen Sound more impressed than ever with the far reaching extent and beauty of that law of *compensation* which so wonderfully equalizes the amount of human comfort and human happiness; and, we may add, most profoundly impressed with the kindness and urbanity of the noble men and women who have made that once wilderness literally to blossom as the rose.

Apples at the Florence International Horticultural Exhibition.

The (Italian) apples were for the most part those highly-colored varieties which are cultivated in warmer climates than ours, and some of which were certainly very beautiful. They were remarkably well kept, and there was not a shrivelled specimen among them. Some were glossy as if they had been varnished, but we did not find many the flavor of which had been preserved in such a degree as to render them fit for use, according to our judgment. The flesh was fine and delicate, like that of the imported specimens of Newtown Pippin. Among the finest that we tasted were Regina delle Remette, or, as we would call it, Queen of the Remettes. It is a handsome fruit, rich yellow, and speckled with russet The flesh even at this late season is firm, crisp, very juicy and very finely flavored. Reinette rossa pontata is also a very handsome fruit, somewhat Pearmain-shaped, of a fine, deep red, and beautifully dotted with large fawn colored dots, the flavor of this also was excellent. Remette Rossa di Giaveno is also a very pretty fruit, highly colored and speckled with russet dots; the flesh is firm, juicy and richly flavored. This and the Regina delle Reinette were the best of the collection There was another that ought also to be specially mentioned on account of its excellent keeping qualities. It was called Detta Losna ovvero del Fulmine, and is flattish, even and regular in its outline with a dull red all over it, like that of Norfolk beefing, striped with darker red, and stained on some parts with yellow. The eye is large and closed, and it is altogether a characteristic fruit. The flesh is very crisp and juicy, and the flavor has a perceptible sweetness which predominates over the acidity. The other varieties were Calvilla rosa, Court pendu Chiodo; Verdoni di Trossano, a small ovate and angular fruit, with very firm and rather sweet flesh, and a long keeper, Calvilla rosso di Pucrolo, Reinette di Spagna, Calvilla variegate, Court pendu dolce di San Bastiano, Calvilla rosso tardivo, Matano, Court pendu Aspro di Susa, Apiola di Burianengo di Gasmo, Rugine dolce, a handsome russet, but rather too sweet, Reinette di Giachetta di Chiomonte, Apiola piccola (the Lady Apple), Apiola nera, Grace de Pincrolo, Reinette Grenoble, Reinette de Spagna di San Bastrano. Reinette Liscie di Giaveno, Remette prata agrinsita, Mela Carlo de finale lungo, which is a variety of Mela Carlo with a long slender stalk.

* * * *

Australia furnished her contribution most creditably A fine collection of apples was sent from the Horticultural Society of Victoria, the beauty of the specimens rivalling the excellent condition in which they arrived. Some of course were damaged after so long a voyage, but the greater part of them were as fresh as when gathered. Among them we observed some incorrect nomenclature, but this was no doubt attributable to the tickets, which were not fixed to the fruit, being changed either in unpacking or in setting up. This is to be regretted, as it would have added to the interest of the collection to have been able to observe the effect which climate has upon our home varieties. We detected some, however, although they were incorrectly labelled One of the finest, if not the very finest, court-garden flat we have ever seen was named Newtown Pippin, and the Newtown Pippin itself, sent by J. Smith & Sons, where it was correctly named, was equally beautiful as a specimen, excelling even those grown in America. The condition and flavor of this were perfection. Gooseberry Apple (not Gooseberry Pippin, as it was labelled) was in splendid preservation, and appeared as if it would keep for months to come. Scarlet Nonpareil, from Mr. Carson, had grown out of all knowledge, and was a beautiful fruit.—*English Journal of Horticulture*

Dwarf Pear Trees.

In a discussion on this subject by the Massachusetts Horticultural Society at an early meeting of this year, Mr. Charles M. Hovey excepted to the rooting of dwarfs from the pear, believing it would be better to let them run out their natural lives and then take them up. He thought they would not make as good standards as those originally grafted on pear stocks, on account of their tendency to send out one or two strong roots on one side of the tree, instead of rooting regularly all around the tree. If allowed to root from the pear, they must either be planted at the proper distance for standards at first, or thinned out to such a distance.

Mr. Wood admitted the tendency to which Mr. Hovey objected, but said that it could easily be obviated by the operation of "lipping;" that is, removing the earth and cutting several tongues at intervals around the tree by an upward cut with a gouge or knife, beginning to cut at the bottom of the swelling of the pear where it joins the quince. These cuts should be from an inch to an inch and a half long and a quarter of an inch wide, and kept open by pressing a little earth under the tongue. The earth should be replaced over them, when they will soon send out roots freely all round the tree. The best time to perform the operation is after the middle of June, when the tree is growing rapidly and the ground is warm, so as to excite the production of roots. The soil should be kept moist by mulching or otherwise; in fact, the conditions of success are precisely the same as those required for striking cuttings. Standards made in this way have the advantage over those grafted on seedling pear stocks, that they do not send down long tap roots into cold, ungenial soils, to the injury of the tree and fruit.

Marshall P. Wilder had had a great deal of experience with dwarf pear trees during the last forty years, and was strongly in favor of them on account of their early bearing. Two-thirds of his collection were originally on quince roots, and by using this stock he was not only able to test many new varieties in much less time than would have been required with standards, but to furnish himself with fruit in a very few years. Viewed in this light dwarfs were not only exceedingly useful to the amateur and experimenter with new fruits, but a great blessing to the family He did not concur with Mr. Hovey's view that the dwarf, when rooting from the pear, sends out one sided roots. Some varieties, such as the Vicar, send out roots freely all round, without the trouble of lipping, and, the quince dying out, they made the very best standards he had got. His system was to plant standards sixteen feet apart, with dwarfs between, and when the standards grew so large as to require all the room, the dwarfs which had room from the pear were transplanted to other situations, and were found to be amply supplied with fibrous roots, without any tap root whatever. In this way a large proportion of his trees were made. Where varieties like the Bartlett, Doyenne Boussock, and Belle Lucrative send out roots from one side only, they still make fine standards when they get well established. In regard to the durability of trees on quince roots, Mr. Wilder said that he had some which, though not rooted from the pear, were more than thirty years old, among which were Urbanistes that each bore regularly more than a barrel a year.

Insects on Fruit Trees.

At the May meeting of the Adams County Horticultural Society, reported in the *Western Agriculturist*, we find the following in the discussion concerning insects:—

Galusha—We must cultivate our orchards, and keep hogs in them to destroy insects.

Coe—The barn swallows are the greatest destroyers we have.

Humphrey—These birds never go near the orchard

Inman—Apply air-slacked lime to trees while the dew is on the leaves; use a hay-rack with a platform on it, on a waggon, through the rows, and a large tin bucket with holes in the bottom to sprinkle it evenly over the tree. Strong lye will take off the rough bark and kill the insects. Sowing oats and pasturing with hogs is good to keep down insects.

THE FRUIT GARDEN.

Seasonable Notes.

CURRANTS.—White helleboro dusted on the bushes late in the evening or before the morning dew evaporates is certain destruction to the currant worm. Heavily laden branches should be properly supported.

RASPBERRIES.—After the season's yield has been secured, the fruiting canes must be cut out, and only three or four new canes allowed to each stool. Support by fastening loosely to trellises.

BLACKBERRIES require nearly the same treatment as raspberries. The canes should be kept securely tied up to avoid accident from high winds and heavy showers.

GOOSEBERRIES.—Heavily laden branches are liable to bend until the fruit touches the ground. This should be guarded against by a liberal use of proper supports. For mildew, apply sulphur as recommended for grape vines.

STRAWBERRIES.—The season being now over, runners required for new beds should be allowed to root. These can be set out either this fall or next spring. Apply a good dressing of manure to the old bed, and carefully prepare the new.

GRAPE-VINES.—Sulphur applied with a bellows is an excellent application for mildew. The density of the foliage at this season necessitates the hand-picking of insects prejudicial to the vine. Young shoots should be tied up, and the laterals pinched to a single leaf.

Fruit Houses and their Uses.

Mr C L. Hoag, in a report to the Fruit Growers' Association of Niagara Co., N. Y. gives the following account relating to the construction of a fruit house which he uses for gathering, sorting and packing the products of the orchard:

The house is 18x14 feet, open only to the north, thus excluding the fruit entirely from the sun. It is raised about one foot from the ground, with ventilation through the floor and out through the open north side The apples were put into the house as they were gathered, in bulk, their depth on the floor being about the height of a common apple barrel. They remained perfectly cool without sweating, and did not appear to sweat at all after they had been barrelled several days. The dealer said that the condition in which the apples had been preserved made them worth at least fifty cents more per barrel than apples gathered in the ordinary manner and allowed to remain any length of time in heaps upon the ground.

One great advantage secured by the construction of a house to receive fruit in bulk, is that the fruit can be packed in barrels in stormy weather, when it is impossible to handle it out in the orchard. A house built in the manner described is decidedly superior to the use of an ordinary barn floor, on account of the superior ventilation secured. The capacity of the building referred to is from 650 to 790 barrels of apples. Its estimated cost was about $100, rough boards being used for sides and roof.

Another member said that what fruit he had raised for several years had been at once removed from the orchard to the fruit house, and he was well satisfied that the superior quality of the fruit amply repaid the cost of the construction of a proper house for storing and packing it He suggested the construction of a house of sufficient width to require an alley through the centre of the building, with ample provision for thorough ventilation. Fruit can be put into large baskets as it is gathered, and be immediately drawn on sleighs or stoneboats to the packing house, and the work proceeds about as rapidly as when gathered in heaps on the ground. It is essential that the fruit, after it is gathered, should be preserved from exposure to the sun, dews and rain One great advantage of the fruit house is that the second quality of fruit that is left after sorting is in the best possible place for preservation and future use These buildings can be used for storing corn previous to husking, and for many other farm purposes when not required for the storage of fruit.—*Western Rural.*

Fruit Trees in Manitoba.

One by one the old fallacies with reference to what would and what would not grow in this northern climate are all gradually exploding as energy and enterprise steps in and shows what can be done in spite of all apparent obstacles. We remember that three years ago it was a generally conceived idea that it was quite impossible to grow apple or other fruit trees on account of the severity of the winter season, and as we paid one shilling or sixpence, as the case might be, for the imported fruit, we thought with a sigh of the splendid old apple orchards of Canada, and quite made up our mind to the fallacy, that as long as we stopped in the north-west we might bid farewell to a sight of an apple, pear or plum tree. We said we had made up our mind to the fallacy, and such undoubtedly it is beginning to prove; for last fall, by way of experiment, several parties imported specimens of different varieties of fruit trees from Minnesota, among whom we may mention Mr. Hall, of Headingly, who brought in from Stewart's Minnesota Nursery seventy trees, consisting of nine varieties, and this spring he finds that out of the whole number he only lost five. Upon asking him whether he had taken any unusual precautions with them to ward off the effects of the frost, he informed us that beyond packing a little snow around them, he had done nothing until the month of March, when he found that the hot sun acting in contra effect to the frost in the ground, was beginning to split the bark; and therefore to protect them from the effects of the sun, not the frost, he placed some manure about the stems, and as we have before stated, he has the satisfaction of finding them all hearty and thriving, with the exception of five; also currant bushes, strawberry plants, &c., that were only planted last fall and this spring, are heavily laden with fruit. These evidences of the adaptability of our climate to the culture of fruit trees is very encouraging, and we trust the result will be that ere long we will see our Province thickly studded in all parts with young and vigorous orchards.—*Manitoba Gazette.*

Curl of Peach Leaves

Mr. Miller of *Colman's Rural World* writes as follows on the above:

We notice a number of articles in different journals on this subject. Various causes are attributed to it; but none of them, in our opinion, amount to anything so far as a preventive or cure is concerned. Our own observation for many years leads us to think wet weather and cool nights, about the time the peach trees are in blossom, is sure to produce the curled leaves. It never gives us any uneasiness, for they soon drop off, and the trees do not seem to be injured in the least by it. Where the fruit has dropped off trees thus affected, as is noticed in some places and attributed to that cause, I think the trees are suffering still from the winter before last. Many peach trees were so injured then, that although they did not die outright, were still so much injured that they will never come out right again. Our trees were very full set, but a couple of storms, and of their own free will they have cast off most of the surplus, and in most instances have just about enough on now. Whenever trees are too full, thinning out will pay. A fair rule is, to leave them so that no two will touch each other when full grown. The fruit will be much larger, better, finer colored, and not so heavy a tax on the tree. Will command a better price, if selling is the object. In the same market we can beat any man fifty per cent., who does not thin out his fruit, if the chances are equal. It may not be generally known that Bartlett pears will become pretty good eating, if taken off when only half grown; when the trees are too full, this has a double advantage.

STRAWBERRY FERTILIZER.—A Lancaster correspondent says: "An experiment made last year by myself may not come amiss at this time with those who grow strawberries. I procured half a hogshead, filled it with rain water, and put into it ½ lb. of ammonia and ½ lb. of common nitre. When the strawberry plants were blossoming out, I gave them a sprinkling of the solution at evening, twice a week, until the fruit was nearly of size. The result was double the amount of fruit on those where the liquid was applied, to what was obtained from those alongside, to which none of the liquid was applied."

COAL ASHES FOR THE CURRANT BUSHES.—Mr. D. C. Woods, of the Adams Co. (Ills.) Horticultural Society, is reported in the *Western Agriculturist* as saying: "My currants bear well set four feet apart. I cultivate well, and put in a peck of coal-ashes. They hold their leaves and ripen fruit well, with a large yield."

THE VEGETABLE GARDEN.

Seasonable Notes.

EARLY SWEET CORN should be hoed frequently.

CARROTS AND BEETS.—Having got a fair start, these are likely to take care of themselves. Frequent hoeings will accelerate the growth and keep down the weeds.

POTATOES for early family use should be kept well hoed, and free from weeds. Paris green and flour or plaster, in the proportion of one part of the former to twenty-five or thirty of the latter, dusted on the vines in a dry state, will check the ravages of the potato beetle.

TOMATOES. The vines should in all cases be tied to stakes or trellises to prevent the fruit from coming in contact with the ground. When the fruit is fully formed the ripening process is accelerated by pinching off the ends of the vines. Keep a sharp look out for the potato-bug, as this is one of its favorite "dishes."

CABBAGES These should be transplanted on a dull cloudy day, or immediately after a shower when practicable. Water frequently from the cistern, or, better still, the liquid manure tank, and prevent caking by frequent hoeings. Examine the beds about 10 o'clock p.m. and any grubs that may have been depredating will be found above ground, and may be easily destroyed.

Curiosities of French Gardening.

The visitor who passes through the markets of Paris cannot fail to be struck by the size and beauty of the fruits and vegetables displayed There are huge and perfect pears, a glistening array of salads, enormous heads of snowy cauliflower, and giant stalks of asparagus, which attract attention no less for their size and faultless condition, than for vast quantities, all equally fine and large of their kind. These are due to the wonderful skill and patient industry of the French gardeners, who are unequalled by any others, either here or in Europe, in the art of cultivating garden produce.

One cause of this superiority is the devotion of the French to specialties. This system obtains as generally among the gardeners as among the men of arts and sciences An American market farmer or gardener divides his ground into many lots, and plants nearly every variety of truck known to the market. The French gardener gives himself up to the cultivation of a special class or succession of fruits or vegetables, and by long study and practice, by experimenting with various manures, soils and modes of culture, arrives at the production of a perfect crop of his specialty, season after season, with unerring certainty.

He is also much more economical of space and more prodigal of labor than we are, or, in fact, than we need be. He seldom suffers his ground to lie fallow, crop succeeds crop in endless rotation; the cauliflower is set among the melon hills, ready to spread as soon as the melons are gathered. Between the rows of asparagus are planted early potatoes, lettuce, &c., in such a manner as to keep the ground constantly fruitful, and when the weather becomes frosty, and the sun loses a goodly share of its forcing power, large bell glasses are employed, one of which is placed over each plant—especially in the case of the salads—and heat is thus concentrated upon it until its full growth is fairly attained.

The enormous size of the French asparagus is chiefly due to the manner of planting Instead of setting the plants closely together, as we do, a space of at least six inches square is allowed to each "stool," which enables it to suck a large amount of nutriment from the soil, and become a strong and solid plant Each stool is also manured repeatedly every season, the soil being carefully scraped away down to the roots, the compost placed around them, and the earth put back again.

The French system of cultivating the apple, pear and peach is also peculiar The trees are all grafted and dwarfed. A strong wire is stretched along in front of each row, about three feet above the ground Upon this wire a single branch of each tree is trained, and, as soon as well started, this branch is made, by heavy pruning, the only fruit bearing one on the tree. The consequence is that the entire strength of the tree goes to the nourishing of the fruit upon this

branch, and this fruit becomes large and fair in proportion. This process, by the by, is borrowed from the Chinese.

The pear, however, is also largely grown in the pyramidal and other forms, but almost always from dwarfed stock.

In the cultivation of the peach the French gardeners have shown great skill and forethought. Near the town of Montreuil, a few miles only from Paris, there is a large number of gardens, enclosed in white-washed walls, against the surface of which peach trees are trained in many fanciful forms. One of these is known as the "Napoleon peach." This is a specimen so trained as to figure in very large letters against the wall the name of "Napoleon," a single branch going to the formation of each letter, and the whole surrounded by a wreath composed of two large boughs trained in a circle. There are many other curiosities in French market gardening and pomology, the details of which are too long for the compass of a single article. These or some of them may be spoken of hereafter.—*The Press.*

Cucumber, Duke of Edinburgh.

This is a new English cucumber which is very highly praised by those who have grown it. It is a fine pearl white spine. Color of fruit a beautiful rich green, which it retains to the last, and being a remarkably shy seeder, is consequently of a quality for table that cannot be surpassed. Its average length is 30 to 36 inches, but it has been grown during the past season to the extraordinary length of 40 inches, being at the same time of the most beautiful proportions and quality.

Mr Abbott, the eminent English cucumber grower, writing of this, says: "Its robust habit and constitution surpasses all I have ever seen. It is also one of the most prolific sorts possible to grow, and cannot be exceeded by any sort out. Its size is most enormous, the longest fruit I grew was three feet four inches in length. The calculated length of 107 fruit grown by me was 284 feet (an average of about 32 inches each.) It is a splendid pearl white spine, color best green, which it retains to the last. It has been the wonder and admiration of all the gardeners who have seen it. * * * * I give this after twenty-one years' successful cucumber growing."

MENDING WATERING POTS.—The *Country Gentleman* says:—Tin watering pots much used in the garden often become rusted at the lower corners, and begin to leak. It is not necessary yet to throw them aside, as the holes may be effectually stopped without going to the tinker's, by covering them inside with a small piece of linen dipped in copal varnish, the tin being previously thoroughly dried. When the varnish hardens by drying, they are perfectly water-tight.

TRAP FOR CUT-WORMS.—The *American Agriculturist* give the following:—An old shovel handle is split for about a foot with a fine saw. The split portion is soaked in boiling water to soften it, and the ends are inserted into holes made in a hoop or ring of wood two inches wide, one inch thick, and eight inches in diameter. In the bottom of the ring there are inserted a number of pieces of an old broom-handle projecting two inches and placed not more than a quarter of an inch apart. When this is pressed into the earth around a hill of corn or a cabbage plant, it leaves a circle of smooth round holes two inches deep with compact sides and bottoms. The cut-worms fall into these holes in their nightly rambles, and may be found and destroyed in the morning.

TOMATOES.—We had a very fine lot of plants, short, stalky and branching. We made the mistake, however, of putting them on some very rich land—land that would have produced a fine crop of onions or cabbages, but was too highly manured for tomatoes. This I had learned by experience a time or two before, but somehow we have to learn such things over again every five or ten years. We will not repeat this folly the coming season, but will select good corn or wheat land, rather inclined to clay than sand or loam, for our tomato crop. This moderately rich soil will produce more fruit and less vine, will ripen the fruit more evenly and earlier, and the product will be smooth and of the very best flavor.—*Cor. American Agriculturist.*

A CUCUMBER FROM THE ROOT.—A correspondent of the *Field* recently sent to the publishers of that journal a curiosity in the shape of a cucumber (Master's Prolific) which had been grown in an ordinary cucumber house. When the plant came to be moved the fruit was found growing from the root nearly a foot from the stem and without the slightest appearance of an eye.

THE FLOWER GARDEN.

Pressing Flowers, Ferns, and Grasses.

At this season of the year we frequently desire to preserve the beautiful flowers which bloom everywhere about us, whether in field or garden. The process is an exceedingly simple one, and does not require a hand press wherewith to accomplish the desired end; but a pair of flat irons, a large chair, or even a leg of a couch can be made to do duty for it. A number of sheets of buff manilla, or common brown paper are, however, essential.

Take care to gather the specimens on a fine day, and either just after the dew has dried away or just before it falls. If gathered at noonday the flowers will not keep their colors as well; and if plucked in field or meadow, it is well to place them in a tin box in order to retain their freshness.

A good specimen of a plant should show every part—its root and stem leaves, its flower part, open and in bud, and, if possible, its seed and seed-vessels in their various stages.

When the specimens are gathered take up each one singly and lay it smoothly between two sheets of the paper, and place them inside the leaves of a large book; do the same with another, and so on until the book is full. Now tie a strong string tightly around it, and place under flat-irons, or some heavy weight. Let the plants stand for twenty-four hours, and then change the paper to dry them still more. Do this for three or four days and you will find that they retain their color perfectly, and are then ready to put away. If the plants have thick or woody stems it is best to cut away the under part of them before pressing. Stone crops and heaths should be dipped into boiling water for three or four minutes and then dried off before pressing—for if this is not done the succulent stems will continue to grow even after being pressed in the paper, and spoil their appearance. Berries can be dried by being hung up in the air or sun for a few days. Ferns can be pressed the same way as other plants, but if the fronds should shrivel up before they can be placed between the papers to dry, they can be put under water for an hour or so, and this will expand them again. As soon as they are free from moisture, however, take care of them.

The grasses of the fields and meadows, if gathered in their first bloom, tied up in bundles, and hung up in bunches in a dark closet to dry, heads downward, will retain their natural color, and make a lovely addition to your winter bouquets. Indeed, I think no summer vase or bouquet complete without their airy, fairy grace, and daily gather them to adorn our surroundings.

When the ferns and flowers are well pressed, you can make them into lovely transparencies by pasting them with starch upon coarse cape lace, covering them with another piece of lace, and then putting them between tiny frames of cardboard; binding the edges with green ribbon, you can suspend them from your windows. Lamp shades can also be made in the same manner, and bouquets can be formed upon paper and framed under glass, which will closely resemble water-colored paintings.

DAISY EYEBRIGHT.

Ivy for In-door Decoration.

We do not know a single plant so suitable for growing in the ordinary air of living-rooms that will stand so much hard usage as the ivy. The only point on which cultivators err by neglect is the failure to keep its leaves well washed and clean. If this be done two or three times a week, and the soil watered as often, it will grow for weeks, and even years, without danger from change of temperature.

Ivy will succeed better in our dry, warm rooms than almost any plant with which I am acquainted, and all that is needed to make it attractive is the exercise of a little ingenuity in the appliances for its home. A vase, not necessarily costly by any means, will answer a good purpose; and this reminds me of an excellent idea I lately noticed in a foreign periodical for growing this very plant. Long shoots of the ivy were procured, with the young and tender aërial roots very abundant; the lower ends were wrapped in moss, and then some five or six of these were tightly tied together at the bottom and placed in the vase. Fill the vase within a few inches of the top, and suspend the ball of moss therein. The roots will soon commence to grow; afterwards the moss should not quite reach the water, as the roots will extend down into it, and prove all-sufficient. So many very beautiful varieties of ivy are now in cultivation that, by selecting kinds that will form a decided contrast in shape and color, the effect will be sensibly heightened. The centre of the vase may be filled with cut flowers or grass; indeed, nothing would look better than ferns.

The ivy may be allowed to hang down over the sides of the vase in graceful festoons, or else trained over and around the window, thus making a room appear cheerful and pleasant all the winter long. It is not necessary, and, in fact, I do not believe it will grow as well in the strong light as when in a partially shaded position, as the ivy loves shade, and an even, cool atmosphere. I have known instances where ivy has been grown in large tubs, and trained up a staircase, thus forming a mass of green foliage from the hall below to the floor above. Used in any way, as fancy directs, it is unexcelled as a house plant.—*Farmer (Eng.)*

UNSIGHTLY beds of hardy herbaceous plants may be converted into attractive objects by attending to their needs. When their bloom is past, and the rather homely seed vessels and decaying leaves become the reverse of ornamental, cut them away, and introduce in their near vicinity some flowering plants, such as geraniums, heliotropes, etc., or we may scatter a few seeds of brightly colored annuals over the bed, to succeed the early blooming plants that are showy but once in the season.—*Horticulturist.*

SMALL trees are a necessity in small yards, and I know of nothing better in this way than the Red Bud or Judas Tree, White Fringe, Yellow Wood or Virgilia, Laburnum, White Dogwood, Magnolias of sorts, Double flowering Peaches (in a group), Purple Mist, and the various thorns (where they will succeed). The recognized rules of all right-minded landscape gardeners forbid scattering these at regular distances all over the lawn, but, on the contrary, enjoin it upon us to set them in groups and masses, with an occasional specimen having some marked character standing alone.—*Horticulturist.*

AN AMERICAN BOTANIST, Dr. H. G. Farlow, has made an interesting discovery in the reproduction of ferns. He has observed the development of true fern plants directly from the substance of the leafy body produced by the germination of the spores of a fern (Pteris Serrulata), and quite independent of any reproductive organs, and he states that the plants thus produced were quite undistinguishable from those which arise in the regular way by way of fertilization. A few nearly similar cases have been recorded in flowering plants, the seeds of some female flowers having proved to be fertile when there appeared to have been no possibility of their having received the influence of the pollen; and this observation of Dr. Farlow's is of importance as tending to confirm these supposed cases of parthenogenesis, as it is called, in plants which have hitherto been regarded as not thoroughly well established.—*The Garden.*

NATURE'S FORESTS.—A correspondent of the *N. Y. Tribune* writes: Suppose we adopt great nature's method of growing forests. The ground being broken she strews on plenty of different kinds of wood seeds. After the seeds come up, the young trees grow so thickly that they shade the ground, and in that way, and by shedding their leaves, keep it in a proper condition for their healthy and thrifty growth. If the young trees in a natural thicket stand too thickly nature herself thins them out by smothering some. Nature does not cultivate forests with horse and plough, or cultivator, or hoe. Do any know a better way? or can any grow nicer forests than nature does? Trees grown ten or twelve feet or more apart will be low, bushy tops, and not worth much only for fuel, &c. Young thickets must be protected against such animals as browse or injure the young trees. To cultivate forests would ruin the whole thing, besides being of enormous expense.

DURATION OF CUT FLOWERS.—This spring I have carefully noted the time during which some of the most showy of early-blooming plants retain their beauty when cut, and I find the Narcissus amongst the most durable. This, if cut when the buds are fully developed, opens out beautifully in water, and lasts in flower, on an average, nine or ten days. One species, N. gracilis, lasted sixteen days, and was not much withered even at the end of that period. The blossoms of the German Iris contrast well with those of the Narcissus, and if the spike is cut with the first flower expanded, the other two or three unopened buds will follow in succession, causing the same spike to last fully a fortnight. Solomon's Seal keeps fresh for a week or ten days, and sprays of Forget-me-not even longer if arranged either in damp sand or moss. Squills, such as Scilla patula, S. campanulata, S. cernua, and their varieties, also last long indoors; the flower-spikes turn upwards, and the flowers open almost as well when cut as when on the plants themselves.—*Cor. London Garden.*

Agricultural Chemistry.

Lime as a Manure.

There is perhaps no substance, if we except the product of the farm-yard, that has been for so long a time and to so great an extent employed as a manure as lime in one or other of its modifications; and the experience of generations has shown how general and how clearly marked are the good results that follow from its use.

It will then be worth our while to examine the causes of this beneficial action of lime and the conditions which regulate it, in order to see if we can learn from them something that may be of practical advantage to us. Nothing is more certain than the fact that the addition of lime is not always advantageous to all lands alike; and it is very desirable to know beforehand whether in the case of a given field we should be likely to derive benefit from its application or not.

There are several ways in which lime may be of service in the growth of crops; and as these are quite distinct from each other, it is necessary to understand them all before we can say, in any case, whether any particular piece of land will be improved by lime or not.

Lime is an essential element of the food of plants. It is invariably found in their ashes The ash of the grain of wheat, rye and oats, contains over 3 per cent of lime; that of barley and Indian corn, about 2½ per cent; and that of peas and beans, from 5½ to 6 per cent. A larger amount of lime is found in the ash of the straw of these plants—the ash of wheat straw, for example, yielding nearly 6 per cent., and pea straw as much as 38 per cent. Lime is present in still greater quantity in root crops. The ash of turnip roots contains 12 per cent, and that of the tops about 35 per cent.

A great number of experiments have shown conclusively that this proportion of lime is absolutely necessary for the healthy growth of the respective plants, and it is always found that fertile soils contain a certain quantity of this substance. As is to be expected, in order to produce a good crop of any kind the soil must contain sufficient lime to furnish the quantity required by the particular plant of which the crop consists It is well known that soils which result from the disintegration of granitic rocks, in which lime is wanting, are as a rule sterile, while those formed by the decay of the trap rocks are usually fertile. and the comparative fertility of these trap soils has been shown to depend largely upon the amount of lime that the trap contains.

It is on soils which are naturally deficient in lime that its addition as a manure is attended with the most striking improvement in fertility. It is not uncommon to find a soil of this kind which contains in abundance all the other constituents of plant food. Lime is all it needs, and when this is supplied it becomes at once capable of producing excellent crops, although previously quite unable to do so. If the lime is present in insufficient quantity in the soil, although the latter may not be absolutely barren, it will be much improved by the addition of lime. If in pasture, the grass will be greener, sweeter, and more nutritive, and if in grain or turnips, the crops will be larger and of better quality, and grains will ripen earlier. But it is not only as an element of plant food that lime is of service as an application to the soil.

We have already seen that the final result of the decay of vegetable matter is carbonic acid, water and ammonia. But when vegetable matters such as the roots and leaves of plants decay in the soil in contact with water and a limited supply of air, a number of acid products are formed whose presence hinders the further decay of the organic matter Soils which are in this condition are said to be "sour," and such soils are unsuited for healthy vegetation. The natural remedy for this state of things is some substance to neutralize the acid. Lime answers this purpose. Being a strong *base* it unites with the acid to form *salts*, and the soil by this means is rendered "sweet." The vegetable matters decay and the soil becomes fitted to support strong and vigorous new plants. Thus in the second place lime is of benefit to the land by neutralizing the acidity of a sour soil. But not only does the lime combine with the acids already formed by vegetable decay, but it also promotes this decay by its presence in the soil. Acids retard the decay of plants while alkalies hasten it. Hence, the addition of lime promotes the decomposition of the organic matter The products of the decay of organic matter, carbonic acid and ammonia, are of course of the greatest value as plant food Lime, therefore, not only serves directly as a necessary element of plant food but also indirectly increases the quantity obtainable from the soil in a given time

The action of lime upon organic matter containing nitrogen is particularly worthy of note.

We have before alluded to the method of manufacturing saltpetre by means of the so-called "nitre beds" This process is conducted as follows A quantity of refuse animal matter is mixed with lime and exposed to the air in heaps. After some time the heaps are found to contain nitrate of lime, which is dissolved out by water and converted into nitrate of potash or saltpetre by the addition of carbonate of potash The manner in which this nitrate of lime is formed in the nitre bed has been the subject of a good deal of dispute among chemists. Some writers are of the opinion that the nitric acid is formed by the union of the nitrogen and oxygen of the atmosphere in the presence of the lime and the porous matters of the nitre bed, and favored by the presence of the various organic substances undergoing oxidation—for decaying substances are always slowly uniting with oxygen Most probably, however, the nitric acid results from the oxidation of the ammonia evolved from the decomposing animal substances. It appears that the ammonia, which consists, as we know, of nitrogen and hydrogen, unites in the presence of a strong base such as lime, and of porous materials by which it may be absorbed with the oxygen of the atmosphere, its hydrogen combining with oxygen to form water, and its nitrogen uniting with another portion of oxygen and with the lime to form nitrate of lime.* This change will only take place in the presence of lime or some other powerful base. Now the soil of our fields, particularly when freshly manured, presents many of the features of a vast nitre bed. It contains large quantities of organic materials undergoing putrefaction, and these materials are spread over and through a great quantity of porous earth If, then, lime is present in addition, we have all the conditions requisite for the formation of nitric acid in exactly the same manner as in the nitre-bed It has been shown of late years that in all probability the nitric acid so formed plays a most important part in the nutrition of plants, and consequently in the growth of crops As this change will not go on except in the presence of some powerful base, the importance of a sufficient supply of lime for this purpose is abundantly evident.

There is also a mechanical effect of lime upon the soil which is sometimes of great value. It has the property of rendering the soil more light, open and porous, and in a stiff clay soil this is often a great advantage. In light sandy soils, however, it may of course be quite the reverse

It must be borne in mind that it is necessary to add manure after the addition of lime to a field, in order to reap the full amount of benefit from it.

Lime may be applied either in the burnt or the unburnt condition, or, as they are sometimes called, either in its *caustic* or *mild* form.

Lime is found in nature in great abundance combined with carbonic acid as carbonate of lime. Nearly pure carbonate of lime occurs in many localities, crystallized, as calc spar; marble is another variety of the same substance; limestone is a more impure form and is the most abundant source of lime. Chalk is nearly pure carbonate of lime. The shells of marine and fresh water animals are largely composed of carbonate of lime, and the chalk seems in a great measure to have resulted from the disintegration of countless generations of these shells. The various deposits of shell marl which are found at the bottom of many ponds and lakes in this country, doubtless have a similar origin. They may often be seen to be composed of the remains of innumerable small shells. Carbonate of lime is also very commonly combined with carbonate of magnesia, forming the rocks known as dolomites or magnesian limestones Lime in any of these forms is called "mild lime." From them "quick" or "caustic" lime is obtained by burning The operation of burning, as we all know, is conducted in large furnaces called a lime-kiln. Its object is to drive off the carbonic acid when the lime is left behind uncombined. This quick-lime has a very strong affinity for water, and when it is wetted or water poured over it, it unites with the water to form a hydrate containing about three parts by weight of lime to one of water. During the formation of this hydrate a great quantity of heat is given off and the lime crumbles down into a soft white powder, occupying sometimes two or three times the bulk of the original lime.

If quick-lime is exposed for some time to the air, it absorbs not only moisture but carbonic acid, and the result is a mixture of carbonate and hydrate of lime When magnesian limestones are burnt a mixture of quick-lime and caustic magnesia results; and when this is slaked, a mixture of the hydrates of lime and magnesia, in the same proportions, is produced.

The question now arises, In what condition is it best to apply the lime to the soil? The answer to this question will depend upon the circumstances of the case. Quick-lime is in a much more active condition, chemically, than mild or carbonate of lime. It is much more speedily efficacious in bringing about the changes which have been enumerated as resulting from the application of lime to the soil, but this very activity renders it unfit or unsuitable for some cases in which mild lime may with advantage be employed. Mild lime, on the other hand, possesses all the fertilizing and otherwise beneficial properties of quick-lime, only they are more tardy in their operation. If unburnt lime is to be applied to the land it should be slaked, either quickly just before its application, or else allowed to slake spontaneously, according ot circumstances, and it should always be applied in fine powder.

It must be borne in mind that caustic lime has the property of expelling ammonia from fermented manure. Hence care must be taken not to bring them into immediate contact, and to choose times as far apart as possible for their application to the land. Shell marl or other forms of mild lime have no action of this kind, and therefore may be laid on at any time.

CHEAP VINEGAR.—Take a quantity of common Irish potatoes, wash them until they are thoroughly clean, place them in a large vessel, and boil them until done. Dram off carefully the water that they were cooked in, straining it, if necessary, in order to remove every particle of the potato. Then put this potato water in a jug or keg, which sit near the stove, or in some place where it will be kept warm, and add one pound of sugar to about two and one-half gallons of the water, some hop yeast, or a small portion of whisky. Let it stand three or four weeks, and you will have excellent vinegar, at a cost of six or seven cents per gallon.—*Journal of Chemistry.*

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* In symbols $2NH_3$ ammonia added to CaO lime, added to O_8 oxygen, equals $3H_2O$ water added to $Ca2NO_3$ nitrate of lime.

The Dairy.

Butter.

Address at Indianapolis Convention, by O. E. Morrow, Madison Wis,

Intelligent butter makers are at work at this problem: To produce the largest quantity, of best quality, at least cost, and to sell at the highest price. We cannot hope to secure a solution which will prove satisfactory to all, or even secure uniform practice. The greater the number of individuals engaged in any calling the greater the difficulty in securing uniformity or excellence of product. In this country millions of men and women make butter, working under very different circumstances, and with widely varying intelligence. The prejudices of the masses, the disinclination to adopt new modes, work strongly against improvement. Circumstances entirely beyond control greatly affect the quantity produced, and thus affect the price received. A favorable season over a large portion of the country will add largely to the butter product, and a reduction of price is inevitable. Severe and long continued drought in the great dairy regions will largely reduce the product and increase prices, although not necessarily the profits. Unusual profits from cheese production or other branches of farming may divert attention from butter making so as to sensibly affect production and prices—for the price finally depends on whether the supply is less or greater than the demand. Ignorance is the greatest hindrance to universal excellence of the butter product, and the greatest helps will be found in increased information and increased interest leading to the application of all the information possessed. This information must reach the individuals which compose the mass. There is room for difference of opinion as to the best modes of reaching the end, but that end should be improvement of quality of the mass of butter made, rather than securing the highest possible excellence of a small part of the whole product. Conversation, discussion, competition among producers; addresses and discussions at meetings of dairymen, local and national,—often-repeated suggestions, advice, evidence by the agricultural, commercial and general press—everything that will incite more thought and more intelligent action - should be used to aid in this work. Butter is made for the consumer, and the producer will be wise if he heed, as far as practicable, the wants and tastes of the consumer, and he will learn much if he will heed the lessons which the experience and observation of the carrier and dealer have taught them. The information needed is not altogether "practical" in the ordinary meaning attached to the word. There is need enough of information which only the true scientist can give. Let it be remembered that success best secures followers; the best incentive to the adoption of any business plan is to show that it pays. Let it be proved and illustrated in practice that improvements in butter making secure larger profits, and they will be adopted. Among the requisites in butter making, back of and more important than a good churn, pure milk well cared for, good cows, abundant food and pure water, well arranged buildings, a good soil and suitable climate—more important than any of these—is it to have the Man. Given the right man, and the other requisites will follow; given the wrong man and all other things will not insure success. The dairyman must be willing to work—steadily, faithfully, carefully, giving attention to petty details, and cheerfully submitting to many unpleasant things. His labor should be intelligently applied. He needs much information, and should be a man of good observation, quick perception and ready adaptation. He needs also honesty. His success will largely depend on the reputation he makes for himself, and permanent good reputation can only be maintained by being rather than seeming to be honest, and by having his butter, in fact and not alone in appearance, good. He who would win success as a butter maker—as he who seeks success in any honest calling—will do best to rely on industry, intelligence, integrity. Such a man can win success in butter making in fields not long since thought entirely unadapted to dairying. The area in which dairying can be conducted with fair success is very much larger than was formerly supposed. Wherever the vegetation, water and climate, is such that cows can be kept in good health, it is possible to produce good milk, butter or cheese. But certain sections are much more highly favored than others. The great dairy regions of the country will continue to be its cooler portions. The north rather than the south will make the great supply of butter. The cold winters of the more northern states would seem to be a great objection, but there are compensations found in the rapid growth of most forage plants in summer and in the general healthfulness of cattle. And, as a matter of fact, cows belonging to the average farmer of Central Wisconsin suffer no more in winter than those belonging to the average farmer of Central Indiana. The former recognizes the necessity for some protection and good food; the latter is not so certain to do so. The greatest losses of cattle in winter are reported from regions of which it is sometimes boasted that cattle may run at large all the year. The location of the farm with reference to railroads, neighboring cities, etc., is less important to the butter maker than to many others. Proximity to depots and good home markets is desirable, but not essential. The butter maker, less than most farmers, feels the cost of transportation. His product will carry safely long distances, and is valuable in proportion to bulk and weight. The half wild cow of Texas gives but little milk—only sufficient to nourish her offspring—and mainly spends her energies and vital force in efforts to procure food. The cow of the successful dairyman is required to put forth but little effort to obtain her food, and that food is mainly converted into a large quantity of milk. Transport the Texan cow into the most luxuriant pastures and her yield of milk will be increased, but will fall far short of that of the typical dairy cow. In accordance with the wonderful law of adaptation by which animal and vegetable life fits itself to its surroundings, each has inherited from a long ancestry certain characteristics which cannot suddenly be developed. No one would hesitate as to which cow would most probably produce a milk-giving progeny. In every dairy herd there will be found a wide difference in the quantity or quality of the milk given by different cows. Some, perhaps, produce less than is required to pay the cost of food and care—for it is only the surplus over a fixed amount from which profit is derived. Could all be made equal to the best, the profits would probably be doubled. The highest average excellence can only be secured by breeding from the best. By many years of careful selection and breeding, certain breeds of cows have been produced which have the almost invariable quality of producing a large quantity or excellent quality of milk. We have among our so called "natives," cows equal as milk producers to any in the world, but this characteristic is not so firmly established as it should be to certainly secure like qualities in the offspring. The wise dairyman will avail himself of what others have done, and also improve his herd by careful selection. It is practically essential that dairymen should breed their own cows if general excellence and steady improvement is expected With reference to the progeny, the bull is half the herd, hence the necessity of careful selection. Neither great quantity or excellent quality alone is sufficient to determine the value of a cow for butter. Quantity and quality must both be considered. The cow will thrive on a much greater variety of food than some would have us believe. Grass is her natural food, and some few kinds of grass are undoubtedly better than others; but in default of these she will do well on many others. As our cereals are really grasses we need not fear to feed cows grain. The kind of food is important, but no more so than the quantity and condition. High feeding is sometimes injurious, but loss has resulted thousands of times from insufficient food for each instance of injury from intelligent high feeding, in summer or winter. All agree that milk designed for butter making should be clean, cool, and not disturbed, but here the points of agreement stop. Whether it should be set in shallow or deep vessels, and how long it should remain are unsettled questions. The advocates of either extreme of practice are able to point to good results. Ease of arrangement is better secured by large vessels than small, and this is an important point, especially on most farms, where the care of the milk mainly devolves on the women of the household. Nearly all the butter consumed by a large part of our rural population, and a large part of that consumed in cities, is now, and for years will continue to be, produced by parties keeping but a few cows—selling a little when they have a surplus; these many littles making a large aggregate. Such cannot have the best possible contrivances, but most of them can improve on their present arrangements. Cleanliness can be secured, as well as freedom from taint from vegetable and animal odors, and the butter can be put up in such packages as will not, as is now too often the case, make low prices a necessity. The rapid spread of the cheese factory system suggested the adoption of a like system in butter making, and this has been done to a limited extent. In favor of the butter factory system are the facts that it would relieve many farmers' families of a great burden; that a more uniform and better average product can be produced, and that a good reputation is more easily secured than by small establishments. The facts that it is objectionable to remove milk designed for butter; that delivering of the milk at factory must be made twice a day, at much loss of time, and that the skimmed milk—valuable for feeding—is taken from the farm, will prevent the factory system from being adopted except in regions where dairying is a prominent feature. In such it is now succeeding well. The plan of having butter churning depots or having the churning done at the farm houses, the working and packing being done at a central establishment, meets some of the difficulties in the regular factory system, and, in turn, is not free from difficulties. The quantity of butter produced in factories devoted mainly to cheese making is steadily increasing. Made from sweet cream in considerable quantities and put in attractive packages, this creamery butter sells well, and, however bad the practice may be for the cheese, partial skimming will continue and increase so long as paying prices for butter are obtained, as will the practice of giving exclusive attention to butter making at some seasons of the year. Other things being equal, the nearest market is the best. Every city and large village furnishes a market for butter. In every such place there is a small class who are not only anxious to have good butter but are willing to pay for it. In such a market reputation is easily made, and a few butter makers can generally do well by supplying the class spoken of by contract at prices considerably above the average price paid. The more remote the market the greater the difficulty in securing individual reputation, but it is practicable in many cases to do this and be well paid for it. When the trade is direct and the sales frequent, the size and style of package is determined easily by the wish of the purchaser. Those who produce but little and cannot secure a direct trade rest under a serious disadvantage. The village grocer cannot be expected to pay high prices nor does he make full discrimination as to quality; and it is often inconvenient and not safe to pack and hold butter. Making butter for the winter market is often best in such cases. To those who are willing to give the necessary food and care this gives good profits. Dealers in country and city alike receive much butter in rolls or other undesirable shape for anything except immediate use. To rework this and put it in desirable packages is entirely legitimate provided always that no attempt is made to deceive as to quality. Adding harmless coloring matter to please the eye is not at all a crime, but no coloring, working, washing or other process will make a good article out of an inferior one. The less working butter receives the better, so that the object desired be obtained. We have not yet devised a perfect butter package. It should be used but once and so should be cheap, yet it should keep butter safely for any reasonable length of time. Much butter must be sold by producers to dealers—middlemen: nor is this to be regretted. The seller will always try to get as much as possible, the buyer to buy as cheaply as he can. But aside from this there need be no conflict of interests. It is better for each that the other should have a fair profit. It is better for all parties that honesty and fair dealing should be the rule. It is better for all that all obtainable information be freely circulated. Let every source of knowledge be open to all, and let the wisest make the best use of the knowledge gained. The establishment of exchanges by dairy produce dealers in large cities is a step in advance. These exchanges can do much to correct errors and abuses. Producers look to them for quotations based on merit alone, without reference to locality where produced. Let every tub of butter stand on its own merits and not be bolstered up by the good reputation, or pushed down by the bad reputation, of other butter coming from the same locality.—*Western Farmer.*

Packing Butter.

Supposing that we have butter in condition for putting away, the two most common practices are either to work it into rolls or prints, or to pack it in tubs. For immediate use in the family or for sale to consumers for present use the former method is the most convenient, but should be practised only for those uses. Fine quality butter put up in small prints or rolls, will soon lose flavor by contact with the atmosphere in that shape, so that, though it may not be so nice to the eye of the dairy-woman; it is essential to the keeping qualities of butter, that it be immediately packed in tubs and perfectly excluded from the air. Stoneware pots are very good for this purpose,

where the butter is to be kept at home for future market or where it is to be used, or where the place of final sale is near at hand; but if the butter is to be sent off a long distance it must be packed in wooden tubs, and the sweetest wood for these tubs is the white ash. White oak wood is not bad for butter tubs, but it has not the purity and sweetness of white ash. The butter should be packed solid in the tub and covered on the top with a cloth of white linen or cotton, then a layer of fine dairy salt, say a quarter of an inch thick, spread over all. If the tubs or crocks are to stand some time before being sent to market or opened for use, the top may better be covered by an inch or so of brine, instead of dry salt. Some housekeepers seem to think that because butter is packed in tubs it must of course be set on the table in rough lumps just as it is dug out of the tub. That is not at all necessary; the butter can be made into just as attractive shapes from the tub as from the churn; and it will have the most important of all requisites—that of original good flavor and sweetness, which is better than any fancy shape presented only to the eye. Butter that is to stand any length of time in rolls or prints should be carefully wrapped in fine muslin and kept in pails or boxes which can be shut up air-tight.—*S. D. Harris, in Cleveland Herald.*

THE cheese business in Dereham is in a very thriving condition, the factory receiving the milk of about one thousand cows, from which is manufactured upwards of two tons of cheese daily. The cheese is being sold almost as fast as it is being made, at 11¾c. and 12c. per lb.; the former price being realized for cheese of this month's make, the latter for all previous sales.

SHARP PRACTICE.—Several tubs of butter shipped from Copenhagen to New York have been returned. The honest Lewis county farmer who manufactured the butter is too enterprising for those simple Yorkers. In the centre of each tub were packed oyster cans filled with salt and other materials of about the same weight as butter. The local buyer did not discover the cheat until, testing a lot from the same dairy a few days ago, his trier struck the foreign substance. Communicating with the New York house, other tubs were found in similar condition, and were returned.

THE FOLLOWING is from the *N. Y. Producers' Prices Current*.—Factory men are using too much box for their cheese. Receivers prefer that the side of the boxes should be cut down to conform to the size of the cheese and that the boxes should be shipped bottom up. This they say will prevent the cheese from pulling up so much from heat. Many cheese are greatly injured in making by scalding at too great a heat; this has the effect of driving off the cream into the whey and as effectually skims a cheese as though the cream was taken off by a skimmer. The true method is to scald a good while at a low temperature, then the cheese shows all the richness that was originally in the milk.

THE VIRTUES OF BUTTERMILK.—Mr. Robins, in a paper presented to the French Academy, thus extols the virtue of buttermilk: Life exists only in combustion, but the combustion which occurs in our bodies, like that which takes place in our chimneys, leaves a detritus which is fatal to life. To remove this we would administer lactic acid with ordinary food. This acid is known to possess the power of removing or destroying the incrustations which form on the arteries, cartilages and valves of the heart. As buttermilk abounds in this acid, and is, moreover, an agreeable kind of food, its habitual use, it is urged, will free the system from these causes, which inevitably cause death between the seventy-fifth (!) and hundredth year." (!)

EFFECTS OF DISEASED MILK.—According to a statement published in the *New York Times*, Mr. Chevean has recently made several observations of the action upon healthy calves of milk from cows suffering from tubercolosis or phthisis. The calves were perfectly healthy, and after sixty days' feeding they were slaughtered. They were then found seriously diseased; numerous tubercles were found throughout the lymphatic system, and the lungs were full of caseous deposits. Similar investigations by Dr. Klebs, a German physician, resulted similarly, and he concludes that the infection first attacks the intestines, then the liver and the spleen, and finally the lungs. Vigorous organisms may resist the infection or overcome its effects but the virus is contained in the milk of diseased cows in proportion to their condition. Scrofula is thus communicated to a healthy animal by a diseased nurse. The virus is contained in the serum of the milk and is not destroyed by boiling.

Correspondence.

The Potato Bug.

(To the Editor of the CANADA FARMER.)

SIR:—This pest has now become so prevalent throughout Ontario, and it multiplies with such fearful rapidity, that the raising of potatoes must be wholly abandoned the present, unless some efficient means are found of checking its ravages.

Paris Green has been used extensively to kill these insects; and there can be no doubt that, when eaten by them, it does kill them speedily. But to the use of this substance there are two serious objections.

One application of it can only kill the insects then on the plant, whereas we have learned, from dear-bought experience, that getting rid, however completely, of one swarm is no protection against the next. Consequently, repeated applications are requisite. Not only do the newly grown leaves present no deadly trace of the poison, but it is apt to be washed off by rains. The cost of such applications is so great that with the labor requisite to raising a crop, it would not pay to apply the remedy as often as is requisite to protect the plant effectually from the ravages of the insect.

The other objection we refer to, is the highly poisonous character of Paris Green. In consequence of this, not only are fatal accidents liable to occur from its use, but the poison becomes diffused through the ground, and exerts a pernicious influence on future crops, though not in a very marked degree. For, unlike many virulent poisons, this one is not volatile.

We have tried the application of fresh well-slacked lime, and found it quite effectual. We scatter it carefully not only over the growing plants, but over the whole surface of the ground. The lime appears to kill the young bugs on which it falls by its caustic property, which destroys all that eat it, both young and old. The insects, however, seem to avoid it. For we have sometimes noticed after rains that the leaves on which the lime still lay, were untouched, while those from which it had been washed off were partly eaten. It is true that whenever the lime is washed off by rain, it leaves the plant liable to be attacked by a new swarm. But this can be remedied by another application, as the cost of lime is comparatively trifling, and it benefits instead of injuring the soil. To be effectual, however, it must be applied all over the leaves, and not merely to the highest. Two or three applications in a season will generally suffice.

Any remedy, however, in order to prove satisfactory, must be applied generally. The bugs fly at night from one field to another, and consequently, if one now fails to attend to them, his grounds may breed more bugs than all his neighbors can destroy.

Before the animals deposit their eggs, they can be easily picked off by hand, but if they are neglected till they have done so, this process becomes very toilsome, as the eggs are stuck on the under side of the leaves, so that they are not easily found, and when once they are hatched, the young fry are so numerous and so hard to find that hand-picking becomes impracticable, save at an unwarrantable expense of time and labor.

From all we have seen and learned, we are decidedly of opinion that no matter what course is taken, it will be unavailing unless it is adopted universally. We know of an instance which occurred last year, in which one potato field which its owner had left to take care of itself bred so many bugs, that when they had eaten it all up, they spread everywhere in the neighborhood in such numbers as to defy any effective resistance. They swarmed not only on everything green, but also on the fences and highways, and some crawled even into the dwelling houses.—I am, &c.,

McG.

Pumpkins for Cows—Orchard Grass.

(To the Editor of the CANADA FARMER.)

SIR:—Will you kindly inform me on the following subjects. (1.) Are pumpkins a good feed for cows in the fall, to keep up the flow of milk? (2.) Where can orchard grass seed be obtained, and how much seed should be sown to the acre? Is it a good grass to grow half and half with timothy? Would winter rye be a good crop to seed down with?—I am, &c.,

A GODERICH SUBSCRIBER.

[(1) Pumpkins are excellent food for milch cows in the fall. They come too late in the season to increase the quantity of milk very much, but they will improve it in richness, and the butter in flavor and yield. They should not be fed too lavishly, especially at first. Fifty pounds of ripe pumpkins per day, in two feeds, would be economically used.

(2.) Orchard grass can be procured at all leading seed stores. Two bushels of seed are required to the acre. It is a good grass to mix with timothy for pasture but not for meadow, as timothy is some ten days later in ripening. Orchard grass ripens at the same time as red clover, and hence it mixes best with that plant for hay. It is remarkable for enduring drought, and for the rapidity with which it springs up again after being cropped. It produces excellent milk, and yields a very large amount of feed. It is one of the best grasses in use, and ought to be more generally cultivated. It is best sown in the fall with winter grain, and winter rye is one of the very best grains to seed down with it.—L. B. ARNOLD.]

Birds and Beetles in Canada.

(To the Editor of the CANADA FARMER.)

SIR:—My time has been so much occupied of late with various matters, among others the laying out of a new garden and lawn—and, by the way what a splendid season it has been for sodding! My quarter-acre lawn was only finished on the 27th of last month, and now, thanks to frequent showers and a Philadelphia mowing machine, it looks as if the turf had been laid last year, and we are playing croquet upon it—that not until to-day have I found leisure to run through the pages of your impression of the 15th instant.

Among other interesting matter I find a chatty and agreeable communication from A. Fisher, on which I venture to submit a few remarks.

1. He says, while speaking of parasites in general, that "we cannot, as yet, point to any enemy which may be said to have proved a match for the Colorado beetle."

Not, perhaps, quite a "match;" but the lady-bird *coccinella*, which, since the unwelcome advent of the Colorado beetle, has appeared in this neighborhood and probably elsewhere in numbers previously unknown, is a deadly foe to that beetle: there are many kinds of lady-birds, and as they feed upon the eggs of the Colorado beetle—eggs that in size, form, and color nearly resemble their own—we should find that without their... lamentable as the depredations of the ten-striped beetle are, they would be very much more deplorable without the appearance of its enemy.

The lady-birds are highly valued in the hop counties of England. The hop-growers are much addicted to betting, and in their wagers on the number of "pockets" expected, are usually guided by the number, large or small, of lady-birds appearing, at a particular season, on their vines, as those small and pretty beetles are the natural enemies of some of the more injurious of the hop-pests. Hops! how many refreshing reminiscences of Bass and Allsop float through the mind at the bare mention of hops, during these burning days! *No cocculus indicus, no strychnia in their ales*, but pure malt and hops—a wholesome and invigorating beverage, and not slow poison.

While writing about Colorado beetles I may mention that, having abstained from planting potatoes in my garden this year, they attacked my tomato plants. It is pretty well known, I believe, that they feed upon the egg plant even more greedily than on the potato.

2. I hope I shall not be accused of hypercriticism if I suggest that the "canary" mentioned by A. Fisher as one of our insectivorous birds, is not a canary at all, but a goldfinch. It will not even pair with the

cau y, or if in an isolated case it has done so, the eggs have proved unfertile.

3. Neither are the "Bob o' link" and "orchard oriole" identical. The "Bob o' link" is the "rice bunting," *emberiza oryzivora*, and is certainly not a "weaver bird;" it builds its nest, formed of leaves and grass, upon the ground.

4. With respect to humming birds, I can confirm what your correspondent says as to their numbers, inasmuch as I have counted eight perched simultaneously upon a clothes-line. I must, however, be permitted to doubt the accuracy of the statement that "there were at least three kinds of them" seen by him. None, I think, ever visits Canada but the *Trochilus colubris*, the ruby-throated humming-bird. If your correspondent saw three differing in color they were the old male, the old female and young birds of either sex, which vary in plumage from both their parents.

Trusting that A. Fisher will accept this communication, should he take the trouble to read it, in the same friendly spirit as that which dictated it, I am, &c. VINCENT CLEMENTI, B.A.

Peterboro', June 29th, 1874.

Turnip Culture.

(*To the Editor of the* CANADA FARMER)

SIR:—There appeared a short time since in the agricultural columns of the *Globe* a number of different plans for raising turnips; and assuming that the results of actual experience are always welcome to the publishers of an agricultural paper like the CANADA FARMER, I now proceed to tell you my method of turnip culture.

My soil is a sandy loam—the best kind of land, I think, for the plan which I have adopted. I take a piece of old sod, meadow or pasture, plough it in the fall or early spring, and work it down very fine with the harrow and cultivator to the depth of four or five inches. When sowing time arrives I apply well rotted manure at the rate of twelve or fifteen waggon-loads to the acre. This is spread evenly over the surface I then plough the soil just deep enough to cover the manure without turning up the old sod; then roll, and drill in the seed without ridging. I make the rows two feet and a half apart, and thin the turnips to eight inches in the row I have tried several other methods, but the one given above has always proved the best. Two years ago, I tried the plan of spreading the manure on the surface and then ridging the ground, so that the manure was under the ridges All went well enough for a time, but after several showers of rain the tops turned mouldy; it seemed as though the manure had burned them.—I am, &c., J. C.

Canning Strawberries.

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

SIR,—Please mention in the next number of the CANADA FARMER a good method of canning strawberries.—I am, &c., A LADY READER.

[1. To one pound of berries add one quarter pound of sugar, which should be sprinkled on the fruit and remain over night; then place them in a porcelain kettle, let them come to a boil and can them at once, keep them in a dark, cool place, as the light will discolor them, but will not injure their flavor. 2. Make a syrup of white sugar and water; bring to a boil, skimming, if necessary; throw into the boiling syrup enough berries to fill one can; as soon as they boil up skim out the berries into the can and seal up; continue this till all the fruit is disposed of. The syrup that remains makes a beautiful jelly. 3. After removing the hulls, weigh the fruit and then the sugar, taking pound for pound. Put the sugar with a little water on the stove; let it boil twenty minutes; put on the fruit and let it just boil, taking care that each berry gets scalded. Have the cans ready and seal immediately. Keep the fruit in the cellar in the dark. 4. To one quart of berries take a tea cup of white sugar, with enough water to form a syrup; when the sugar is perfectly dissolved, put in the berries and cook fifteen minutes. Can immediately in tin and solder tightly. Keep in the cellar. In general the berries should be canned as soon as possible after they are taken from the vine.—ED. C. F.]

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The Canada Farmer.

TORONTO, CANADA, JULY 15, 1874.

Hydrophobia.

This disease, of all maladies that can attack humanity the most fearful and fatal, is now apparently one of the leading topics of the day—the recent deaths in New York of Mr. Butler and Mr. McCormick having engaged the attention of nearly the whole civilized world. The former of these gentlemen was a man of superior ability and intelligence, a great dog fancier, and, moreover, one who maintained that the dread disease was more imaginary than physical. He always kept a number of pet dogs about him, studied their habits and ailments, and was the author of several works on the canine species. Some time ago one of his dogs bit him slightly in the hand as he was in the act of administering to the animal some medicine. In accordance with the theory he held, the matter was pooh pooh'd for a time, and ultimately allowed to slip entirely out of his mind. After the lapse of a few weeks, however, well defined symptoms of the fearful malady made their appearance, and after two days of intense suffering, Mr. Butler died The subsequent death of Mr. McCormick from a similar cause has led to a professional investigation of the nature of the disease, its causes, effects and remedies, and as that investigation is still proceeding under the direction of eminent medical men, we may soon hope to arrive at something authentic regarding what, up to the present time, has been veiled in comparative mystery, though frequently illustrated by horrors unutterable.

That hydrophobia is an idiopathic disease appears to be a generally accepted opinion among medical practitioners. The period of incubation, too, is limited to twenty months at farthest, and although cases have been cited of its having appeared several years after the patient had been bitten, these are not well authenticated. It is said to be spontaneous in its origin in both the canine and feline species, and to be communicated to man by inoculation with the saliva of animals affected with the disease. It is the rarest of all known diseases—hence the great disagreement as to its character, whilst it is at the same time absolutely fatal. Not that every one who is bitten dies from hydrophobia, by any means. So far is this from the fact, that of twenty who had been bitten by the same dog, only one died of rabies. But wherever the disease manifests itself it is sure to result fatally. The following is a very good description of rabies as it occurs in the dog, and also of other canine ailments which are sometimes mistaken for it:—"A genuine case of hydrophobia, even in the dog, is of very rare occurrence. But when the disease does manifest itself, its symptoms are marked and easily defined, and to one who has given the subject the slightest attention, there should be no mistake concerning a proper diagnosis. The trouble is, that to persons of superficial observation an epileptic fit—very common among dogs—may be mistaken for hydrophobia. The dog, when suffering from an attack of epilepsy—a sure guarantee that he is not mad—runs about wildly, staggers, falls down, regains his feet, toddles about mechanically, froths at the mouth (which is another positive indication that he is not mad, for a mad dog never froths at the mouth), and, as if entirely deprived of sight, runs against anything in his way. With the mad dog the case is entirely different. He dreads at the mouth, is possessed of preternatural strength, and never staggers or falls except to die. He does not bite mankind, but rather avoids society. He takes long journeys of thirty or forty miles to vent his restless desire for motion. When journeying he does not walk or run, but proceeds in a slouching manner—a kind of trot. His aspect is dejected. His eyes do not glare or stare, but they are dull and retracted. His appearance is very characteristic, and if once seen can never afterwards be mistaken."

The pathology of hydrophobia has not been well understood, but it is expected that the investigation now going on will throw considerable light on the subject. An examination of the brain in Mr. McCormick's case showed the small vessels distended to their utmost capacity, and small points of a scarlet color were everywhere visible. The sinuses or channels along which the blood flows between the dura mater and the bony wall of the skull, were filled with blood. Wherever may have been the seat of the disease, the inflammation had extended to the brain and caused the condition we have just described. Careful microscopical investigation of the nervous centres will be made, and a scientific report written upon the disease.

And now, knowing that the disease is possible and also fatal, what is to be done to avoid it? We should say, get rid in the first place of all dogs not absolutely necessary, and muzzle those remaining during the dog-days. There is no doubt but a rigid plan, rigidly carried out, of taxing dogs heavily, and adding to the tax a heavy fine for having them unmuzzled during certain seasons of the year, would go very far to allay the pest, and not only prevent hydrophobia, but afford also a protection against the ravages of sheep-killing curs that are doing every year so much damage in all parts of the country.

The Trade in Dairy Products.

A more leisurely examination of the first annual report of the Butter and Cheese Exchange of New York, cursorily noticed in our last issue, impresses us more than ever with the magnitude of the interests to which the organization has devoted itself, and we quite agree with the *Grocer* in its statement that the development of the staple products of the dairy is one of the most remarkable events in this wonderful age of progress. The value of the entire production in the United States and Canada is upwards of $500,000,000, and under the modern factory system of butter and cheese making the future growth of these interests must be still more rapid than in the past. The demand is constantly growing, and people are coming more and more to realize the value of butter and cheese as articles of food. As one of the important branches of the produce trade, the dairy

interest has never had until now the consideration to which it is entitled. Prominence has been given to the export trade in cheese, but at the expense of the domestic trade Methods of handling produce have been in practice which practically ignored the financial strength and ability of our butter receivers. But a better day has dawned, and the union of purpose of the Exchange and the American Dairymen's Association gives a happy augury of the future.

The Bow Park Herd.

The third Catalogue of Mr George Brown's Herd of Short-horns has just been issued It is a handsome volume of 260 pages, and contains the full pedigrees, with copious notes to each animal, of the entire herd —now numbering over 200 high-bred cows and heifers, and over 60 bulls. Among the females there are a number of magnificent animals imported from England, and a large number of very fine specimens of high-class American families imported from the United States. Of the English stock there are three pure Towneley Butterflys; five Duchesses of Dercham; three Roan Duchesses; two pure Mantalinis; eight Cambridges; three Isabellas; besides Floras, Guavas, Madrigals, Meadow Flowers, Phillises, Princess Royals, Sansparells, Sidonias, Waterloo Cherry Duchesses, &c., &c The American stock includes three Mazurkas; three Roses of Sharon; two Louans; six Brides from Xenia; two Duchesses of Oakland; five Craggses; four Famosas; three Blanches; four Red Buds; besides Rosamonds, Souvenirs of Thorndale, Red Duchesses, Miss Margarets, Julia Bedfords, &c., &c. The Bates and Booth families are kept distinct, there being imported bulls of very high-class pedigrees at the head of each herd. *Duke of Barrington 4th* by 9th Duke of Geneva (2830), bred by Mr. H. J. Sheldon, of Drailes, Warwickshire, England, a very grand animal, imported last year by Mr. Brown, heads the Bates section, and he is ably supported by the Kentucky Bull, *Duke of Springhill*, from Althea by Washington, 9281, and other fine young bulls. The Booth section is headed by *Royal Tudor*, a noble bull imported last year, and carrying in his veins the blood of such famous sires as Buckingham, Leonard, Hamlet, Majestic, Prince Christian and Royal Broughton Three other imported pure Booth Bulls, *King of the Ocean*, *Grand Duke of Gordon* and *Baron Powlett*, are likewise in service. Catalogues of the Herd can be had by written application to the Editor of THE CANADA FARMER, Toronto, or to Mr. Brown, Bow Park, Brantford, P. O.

The $14,000 Bull.

Several American newspapers having expressed doubts as to the genuineness of the high bids made at Col. King's sale for this now celebrated animal, Mr. Wentworth has addressed the following explanatory letter to the *Farmers Home Journal*:—

"With so many heifers as I had by the 15th Duke of Airdrie, out of cows very rich in Duchess blood, (the demand for which at private sale does not reserve me enough to make a public sale of interest), I concluded that it would pay me to bid as high as $10,000 for the bull. There were but few bulls that would improve my herd, and this was one of them. But, just before the sale commenced, I heard that the Duke, of Mr. Murray, of Wisconsin, had been sold to go to England, and that English buyers for Mr. King's bull were upon the ground. This, I feared, would leave my 15th Duke the only one in the north-west, and he was getting old. I accordingly had a consultation with north-western breeders who felt that it would be a calamity to let such a bull go out of the country and I offered to pay $10,000 for ½ or ¼ of the bull, or any fractional portion above ¼, providing stockholders could be found to make up what the bull would bring over $10,000; I to keep the bull and they to pay up the advances at the rate of $100 for each calf. Under this arrangement I could not go above $14,000. Having lost this bull, I did the next best thing. I bought his son, his exact image in almost every respect, out of one of Mr. King's very best cows, who had three full Duke crosses in her pedigree. This made the young bull a very small fraction short of a full Duke.

After this purchase, I lost all further interest in the sale of his sire, and made no claim for him under my bid. And, so long as I have the young bull with all his merits, I have no feeling as to who secured his sire, provided he remains in this country

My bid of $10,000 for the bull was a deliberate one, after a month's reflection. The bid for $13,000 was made under the above circumstances; and if I had had a little more time I am confident I could have formed a combination that would have warranted me in bidding above $15,000

JOHN WENTWORTH

Chicago, Ill., June 11th, 1874.

June Frosts.

Canada is not the only country visited by frosts in the month of June. A writer in the *Garden* says:—

On Friday week (the 12th of June) the frost in the neighborhood of London was most severe. The young foliage of many herbaceous plants was destroyed, potatoes were blackened in many fields and gardens, and the flowers of such hardy plants as irises, lilies, and peonies were killed. That favorite border flower, Dielytra spectabilis has been cut down by frost three different times this year. Roses are generally a greater failure through frosts than we ever remember to have seen them, and so of most other garden products. After these experiences it would be rash to say that we are at any time safe from frost in England. "On two nights," says Mr Titus Salt, writing to us from Milnefield, near Bradford, "within the last week the thermometer has registered 34 and 36, with a bitter north-east wind. It is literally destroying all vegetation" As one of the curious effects of the great frosts of May, Mr Ware, of Tottenham, informs us that, while large numbers of roses, worked near the surface of the earth perished, standards of the same age and same varieties escaped. This was doubtless owing to the greater cold and moisture near the surface of the ground.

The Effect of Camphor on Seeds —Curious Experiments.

Some curious and all but forgotten experiments, of much interest to agriculture and gardening, observes a London paper, have lately been revived by a German savant. Very many years ago it was discovered and recorded that water saturated with camphor had a remarkable influence upon the germination of seeds. Like many other useful hint, the stupid world took no notice of this intimation, but a Berlin professor came across the record of it, and he appears to have established the fact that a solution of camphor stimulates vegetables as alcohol does animals. He took seeds in various sorts of pulse, some of the samples being three or four years old, and therefore possessing a very slight degree of vitality. He divided these parcels, placing one moiety of them between sheets of blotting paper simply wetted, and the other under strictly similar conditions between sheets soaked in the camphorated water. In many cases the seeds did not swell at all under the influence of the simple moisture, but in every case they germinated where they were subjected to the camphor solution The experiment was extended to different kinds of garden seeds, old and new, and always with the same result of showing a singular awakening of dormant vitalism and a wonderful quickening of growth It also appears from the professor's researches that the young plants thus set shooting continued to increase with a vigor and vivacity much beyond that of those which were not so treated On the other hand, when pounded camphor was mixed with the soil, it appeared to exercise a rather bad effect upon seeds The dose in this latter case was possibly too strong At all events, there is here a line of inquiry well worth following up by seedsmen and gardeners; and even farmers might try how far wheat and barley would profit from the strange property which seems to be possessed by this drug over the latent life of vegetable germs.

Mid-Day Rest.

An American exchange calls the attention of farmers to the superior method of the French Canadians in their arrangement of the hours of labor and rest. The plan could also be adopted with equal advantage by the farmers of Ontario. It says:—The French Canadian farmers arrange their summer labors in the field very wisely. The summer days are long in Lower Canada, and farmers rise by four or earlier and after a light breakfast get to work before five. They then work till about ten, take dinner, and perhaps sleep till about three in the afternoon, when they go out and work till seven or eight. Their hours of labor are thus nine or ten, in the coolest part of the day, and they are equally fresh for both morning and evening labors. They have six or seven hours for sleep at night, besides a mid-day nap, if they take it, and they can do some chores in the house, barn or stables during the long mid-day interval Would it not be well to copy to some extent this wise plan in the Northern States, where the summer days are long, and often intensely hot? There could surely be no difficulty in getting into the fields by six, and working to say eleven, then resting and dining till two, and working till seven. This would avoid the great heat of the day and give ten hours for work, which we think too long, except in a push. Nine hours in the field would probably turn out quite as much effectual labor of man and beast, and leave more time for chores. What do farmers say on this most important subject? Such a change, to be valuable for this year, should obviously be made at once.

Colorado Beetle.

Professor Burrill, of the Illinois Industrial University, is reported by the *Chicago Tribune* as having made the following statement of experiments with the Colorado Beetle. "He had applied a plaster of the crushed insects to his arm, had rubbed them into a cut on his hand, had crushed hundreds of them in his hands, and in one instance the fluid spirted into one eye—all of which had no unpleasant results, and he did not believe that they possessed any poisonous properties whatever. He could not say the same of the common potato-fly—*Lytta Vittata*, or striped cantharis—which was no doubt more or less poisonous, and it was possible that this led to an erroneous opinion in regard to the Colorado insect." His favorite remedy is arsenic—a tablespoonful to a bucket of water, sprinkled on the potatoes through a fine rose. This he regards as preferable to dry arsenic or Paris green, as these must be applied when the dew is on, and be renewed after a shower, while the liquid adheres to the plant for a long time, and only requires renewal on account of a largely increased growth of the leaf. The leaf appears to retain the poison without any change, and as it does not seem to be assimilated by the plant, it in no way affects its growth. Paris green has the same effect, but its extra cost is the objection to it. The professor thinks that in some instances it is a trifle better than the arsenic, but of that he is not positive. The cheapness of arsenic recommends it, as it can be had at ten cents a pound, while Paris green costs fifty cents. When either of these is used in powder, twenty or thirty times their weight may be added of common land plaster, or ten parts of flour, as too much of the drug is injurious to the plant.

MR. H. H SPENCER, Dorset Farm, Brooklin, informs us that he has quite recently imported a yearling Southdown ram and a pair of very choice yearling ewes from the noted flock of Mr. Henry Fooks Dorsetshire, England.

THE WESTERN FAIR.—The arrangements for holding the Western Fair are in a very advanced state. The advertising department, particularly has been pushed forward with great energy, and everything points to an unusually successful issue. The list of *bona fide* premiums embraces $11,000, and then the prospect of an exceedingly abundant series of crops is excellent.

ON JUNE 25 England had 5,964,549 cattle, an increase of 300,000 over 1873 and of 400,000 above the average between the years 1869 and 1873 inclusive. It had 29,427,635 sheep, being 1,500,000 over 1872 There were imported from Ireland 684,618 cattle and 364,371 swine; from foreign countries 198,968 cattle, 849,278 sheep, and 79,923 swine. Germany, Holland, and France are the chief places from which exportations were made.

Agricultural Entelligence.

Bath and West of England Agricultural Society's Show.

Meeting at Bristol.

This long established and highly popular exhibition was opened on the 8th ult., and continued for five days. The weather during the whole period was intensely warm. "Rain," says the *Farmer*, "would have been a blessing. It would have made the parched ground pleasant; it would have made it much more comfortable for the hoofs of horses and cattle, and for the feet of men. It would likewise have been much more agreeable and satisfactory to those who competed in the trials for mowing and reaping machines. The grass was so short that the men on the machine scarcely knew when to throw it off, and the rye afforded no sufficient test for the quality of the reapers." A marked contrast this to the state of affairs at Bolton a few years since, when adventurous reporters had to carry their own planks on which to navigate the seas of slush which intervened between them and the places they had to visit in the discharge of their duties. This year's show, held on nearly its 100th anniversary, has been more successful than any of its predecessors. The attendance on Thursday was the largest ever known in connection with the society, the whole area of 38 acres which constitutes the grounds being literally packed with visitors from all parts of the kingdom, indeed, we may say the world. Some idea of the vast concourse of human beings may be formed from the fact that on that day $27,522 were realized at the gates on twenty-five cent tickets.

The show of stock was good, and the short-horns stalls were, as usual, the chief centres of attraction. In the aged bull class there were eleven entries. The first prize was awarded Mr. Stratton's *Protector*, a splendid animal in every respect. In the two year old class the first prize was awarded to *Lord Godolphin*, a bull that promises to rival the fame of his sire *Royal Windsor*. The cows were an excellent exhibition. Lady Pigott was first in this section with her grand cow Victoria Victrix In the heifers not exceeding two years old, the Rev. Bruce Kennard took first prize with an animal of great symmetry and substance.

The show of horses was very fine, the 131 entries being divided as follows:—Agricultural horses, old stallions, 10; young ditto, 7; mares, 8; fillies, 6; hunters, thorough-bred stallions, 7; mares or geldings, foaled before 1870, 14; ditto foaled in 1870, 13; ditto foaled in 1871, 5; colt gelding or filly, foaled in 1872, 6: ditto, foaled in 1873, 5; mare and foal, 9; hacks, above 14 hands calculated to carry 14 stone, 4; ditto, above 14 hands, 11; ponies not exceeding 14 hands, 4; not exceeding 13 hands, 11.

The sheep were as fine a lot as one could wish to see. In Leicesters, Mr. George Turner, Jun., Thorpelands, who has recently been so successful in the breeding of this kind of sheep, took, in the yearlings, both first and second prizes, as he did also in the old ram class; and he was first also for the pen of five yearling ewes. In the Southdowns the judges went by quality and symmetry rather than by size. Mr. Rigden, Hove, and Sir William Throckmorton had nearly all their own way in the several sections. Mr. Russell Swanwick, Royal Agricultural College Farm, Cirencester, was as successful with Cotswolds this year as he was with them last year. He took first prizes in the old and the young classes, with very typical sheep of fine quality and excellent wool. In the yearling ewes, Messrs Thomas & Stephen George Gillet, Kilkenny, were first and second with very fine pens of five, which had gained honors at Oxfordshire.

Cambridgeshire and Isle of Ely Agricultural Society's Show at Newmarket.

This Society held its 11th annual show at Newmarket, recently. The weather was fine, and there was a large attendance. First prizes went to Mr Martin, Littleport, for the best stallion, to Mr. Briggs for the best entire three-year-old, to Mr. Dauntree, of Fenton, for the best entire two-year-old, to Mr. Ambrose for the best cart mare and foal, to Mr. Giddens, of Walpole, for the best hackney stallion, to Mr. Gilby of Hargrove Park, for the best hackney mare, to Mr. Archer for the best horse that would jump fences in best form. Mr. Archer also took the first prize for ponies, and Mr. Hall, of Ely, for the best hunter of any age. In the cattle classes, Lord Braybrook took the first prize for bulls, Lady Pigott that for the best bull one year old, Mr Jennings that for the best cow in calf, and Lady Pigott three other first prizes In the heifer classes, Mr. Beart, of Stow, Downham Market, obtained a first prize for a short-horn bull, and Mr. Jonas for the best bull. First prizes for sheep went to Messrs. Gunnell, Allwood, Ellis, Lord Braybrook, and Jonas.

United States Horse Sales

During the past month several important sales of horses have taken place in various parts of the neighboring states, chiefly in Kentucky and Tennessee. At the annual sale of Mr. A. Richard's thoroughbreds, at Scott, on the 23rd ult., 23 head were disposed of at an aggregate of about $5,000, the average being $217, a low figure for the class of stock, and which can only be accounted for from a scarcity of buyers, and consequent lack of anything like spirited competition. On Wednesday the 24th, the great Woodburn sale came off, at which over $40,000 were realized. At Lexington, on the 26th, the joint sales of Messrs. A. G. Peters & Co., and H. P. Thompson, amounted to $12,000; and at the same place on the 27th, 44 head belonging to H. C. Bowman and I. Jones made an aggregate of $11,000.

Royal Show at Bedford.—The entries both of stock and implements for the show of the Royal English Agricultural Society at Bedford are the largest ever recorded in Britain, and a grand exhibition is expected.

Sale of Her Majesty's Yearlings.—At the sale of the Hampton Court yearlings, the property of Her Majesty the Queen, recently, some very good prices were realized, one animal bringing $563, another $1,200, and a third the handsome sum of $8,400. A large proportion of the stock offered brought $400 and upwards.

The *Echo Agricol* gives a general review of the crop situation in Europe, which is condensed by the N. Y. *Bulletin* as follows.—Great Britain will have an average yield, Belgium and Holland have no reason to complain, and the cereals look well. In Southern Germany the rye crop has been injured, but the general aspect of the crops was good. In Austria-Hungary some provinces have suffered pretty severely, but the wheat crop is placed at 75 per cent. In addition to this the news from Southern Russia is very favorable.

The wheat crop now being harvested in the United States is unexampled in quantity and quality. From the Pacific to the Atlantic coast reports of the new crop are glowing. California has increased her wheat acreage from 1,696,622 last year to over 2,000,000 acres. The average yield last year was about 14 bushels to the acre but this year it will be 30 bushels, giving 40,000,000 bushels of wheat as the probable crop of that state, leaving a quantity for exportation much larger than that of the Russian Empire California produces now golden grain as well as grains of gold.

Nova Scotia.—Continued wet weather will, it is feared, prove very injurious to the potato crop.

New Brunswick.—The grass crop is looking splendid, but grain and root crops are backward.

Potato Bugs are doing considerable damage in the neighborhood of Kingston.

Mustard is said to be as destructive to the potato bug as Paris green. Try it.

Hailstones fell at Lindsay on the morning of the 4th, measuring 4½ by 6½ inches in circumference.

Manitoba.—The crops in all parts of the Province look extremely well, and present indications foreshadow a yield very much above the average.

A coarse Mexican grass called Tampico is now manufactured in Vermont into paint brushes and other brushes.

The grasshoppers have left O'Brien county, Iowa, without damaging the wheat or corn, notwithstanding the outcry.

The Delaware strawberry season is over. While it lasted, 7,470,400 quarts of berries were shipped North from the peninsula.

Baltimore is boiling down her surplus canine population into glue, by which the city gains five cents per dog.

Scott Wheat of this season's growth—plump, hard, and in every respect a good sample—was brought into Chatham on the 8th inst.

Early Rose Potatoes of large size and fine quality were offered for sale on Waldon Island (north of San Juan Island) as early as the 16th ult.

Three Hundred and Thirty Mennonites for Montreal, *en route* to Manitoba, arrived at Halifax on the 13th inst.

A large quantity of cheese was recently shipped from Belleville at 11¼ cents per lb. Several factories in that neighborhood have contracted for the season's make at the same figure.

Heavy Fleeces.—James Russell of Richmond Hill recently sold, in this city, forty-one fleeces of wool weighing 476 lbs., or an average of 11½ lbs. per fleece. Ten of the forty-one fleeces averaged 14½ lbs.

May Fair Cheese Factory is now using 12,000 lbs. of milk daily. The manufacture of cheese for the month of June reached 23,750 lbs., and was sold at 11 and 11-016 cents per lb.

The *New Brunswick Farmer* reports bears as very numerous and troublesome in the Nepris Valley. They are "a new kind, brown in color, with a long snout, very bold in their operations," &c.

The Editor of the *Meaford Monitor* enjoyed his first feast of new potatoes on the 3rd inst. They were of the Early Rose variety, and the best of them measured fully three inches in length.

England Importing Eggs.—It is stated that during the first three months of the present year, England imported £569,270 worth of eggs; during March, £310,455. We wonder, where from?

Newfoundland.—The month of June is said to have been considerably colder than the mean average of the last thirty years, and vegetation is very backward. Newfoundland will never be right until it becomes a part of our great Dominion.

The experiment of bringing the salt marshes at Scituate and Marshfield, Mass., under cultivation by building dykes, is proving very successful, crops of herds grass and vegetables being already well advanced.

Paper Flour Barrels are being extensively manufactured in some of the Western States. They are said to be air-tight and water-proof, to weigh much less than the ordinary wooden article, and able to stand more rough usage. One of the manufacturers predicts that in five years every barrel of western flour will be sent east in barrels made from the straw the wheat grew on.

Veterinary Department.

Sand-Crack or Fissure.

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

SIR,—A valuable horse belonging to a friend of mine has been laid up for some time with what is called sand-crack or fissure. His veterinary surgeon pared the hoof until it bled, then burnt the wound with caustic and applied tar. The animal is not doing well under this treatment. Your opinion, and the best mode of treatment known to you in such cases, given in your next issue of the CANADA FARMER, would greatly oblige.

How can sidebones on colts be cured without leaving blemishes?—I am, &c., YOUNG FARMER.

[In the treatment of sand-crack it is generally advisable to give the horse complete rest, remove the shoe, and cut the inferior border of the wall of the hoof below the fissure, also pare the edges of the fissure slightly, and if the sensitive parts are inflamed apply a bran poultice for a few days. A bar shoe may then be applied, so as to press upon the frog, and take the weight off the injured part. The growth of bone may be materially assisted by applying a common cantharidin blister to the coronet immediately above the crack. In some cases it is also necessary to apply a strap around the hoof, or use a clench or brass plate to prevent the edges of the fissure from moving and irritating the sensitive parts. A considerable time must elapse before a sand crack disappears, as reunion of the crack cannot take place except from above, but whenever the bone begins to grow sound and healthy, a horse, if properly and carefully shod, may be kept at ordinary work.

In the treatment of sidebones it is altogether unnecessary to apply any remedy that is likely to give rise to a permanent blemish. We would recommend the trial of a blister composed of biniodide of mercury one part to eight parts of lard.]

Fractures and their Treatment.

EXCESSIVE lameness, or incapacity to move at all, will in the first place arouse suspicion of the nature of this disease. Probably distortion of the limb at a particular part, or in some instances a peculiar state of the extremity below the fracture, may at once indicate the character of the injury and its situation. But, failing this unequivocal evidence, it is necessary to use the points of the fingers to trace the outline of the bone which is suspected to be broken, in order to detect any inequality of the surface, and also to move the leg in various directions, for the purpose of discovering if any movements take place in parts where no joints exist—which movement can only occur when the bone is completely broken.

The fact of the existence of fracture having been ascertained, the proper method of treatment is to be determined on. Many circumstances will have to be considered before it can be definitely decided whether or not any attempt to cure shall be made, and the evidence on which the conclusion should be based has been already stated. We have therefore to assume that the case is one in which there is a fair chance of success, and the only thing to be done is to select from among the received systems of treating fracture the method which seems to be the most adapted to the particular instance which we have to deal with.

Details of treatment can only be regulated to meet the peculiarities of each form of fracture, but there are various plans of adjusting and securing fractured bones, which may be considered on their merits without reference to any particular kind of fracture.

First, the adjustment of the fractured ends of the bone must be made with great nicety if the cure is to be complete. Union will take place under almost any condition, but a perfect outline is in many instances indispensable to the cure, and therefore the veterinary surgeon is bound to use the utmost care in carrying into effect this important preliminary process.

In the larger quadrupeds the situation or direction of the fracture may render it impossible to adjust the bone in a proper manner, in which case, if the animal's action is of consequence, it will be better not to attempt treatment which must result in comparative failure. Smaller animals—dogs, for example—often get on remarkably well, notwithstanding that the situation of the fracture in a part which is thickly covered with muscle renders all attempts at adjustment fruitless. A certain amount of irregularity of action may be left when the union is completed, but the animal nevertheless moves without difficulty or pain.

Occasionally, in instances of transverse fracture of the thigh bone (femur), in the shoulder blade (scapula), in the arm bone (humerus), no displacement occurs, probably owing to the existence of that mass of muscle which would offer an insurmountable difficulty in the way of manipulation. Again, it now and then occurs that some accidental movement of the limb causes the fractured ends in either of these bones to slip into their proper places with a click, which is music to the ear of the operator who has tried in vain to effect their apposition, even with aid of chloroform and various mechanical appliances. These fortunate accidents leave little to be done by surgery, and the operator has all the credit of a cure which nature effects without assistance.

Whether by a lucky chance movement or by careful manipulation, the bone is properly placed, and the attendant has only to decide on the best method of keeping it in its position. In this matter the human patient is fortunately placed, as his intelligence will warn him against any movement which might tend to displace the adjusted ends of the broken bone. No apprehension of mischief controls the action of the lower animals under such circumstances, and the operator is therefore required to make his work secure before he sets the animal free.

The means at his command are splints of wood or leather, gutta percha, starch bandages, and adhesive plasters of pitch and rosin, or similar mixture applied while warm, according to the state of the tissues surrounding and covering the fractured part. The first application will be temporary or permanent. If there is much tumefaction, it is obvious that the subsidence of the swelling will leave the bandage loose and useless as a support, and any attempt to meet this difficulty by the use of extra pressure would only add to the mischief. Such cases, therefore, demand careful treatment, first, by the use of well-padded splints, which should be retained in position by a soft bandage applied with no more than sufficient firmness to prevent injurious movement of the part. Cold lotions and cooling medicines should be employed to assist in the reduction of the swelling, and as soon as the part has regained its normal proportions the first dressing should be removed, and a bandage, previously saturated with starch as used by the laundress, applied in its place. Considerable skill is required in conducting this operation, to avoid displacement of the ends of bone.

Ordinary cases of recent fracture may be safely secured, after proper adjustment by the use of the starch bandage, or the dry bandage, with splints of wood or leather, or gutta percha. Adhesive mixtures are most successful in cases of fracture of bones which are covered with muscles, when no splints or bandages can be used. In such instance a tolerably thick coating of warm Burgundy pitch and resin may be applied with a stiff brush, and a quantity of loose cow hair or soft wool immediately pressed on it; a second similar application may be made over the first in the course of an hour, and again if necessary until the part is covered with a dense mass of firmly felted material, which will adhere for weeks, and, by causing a feeling of stiffness when the limb is moved, tend to keep the animal in a quiescent condition.—*The Field.*

Shall I Dip my Lambs.

SUCH inquiry is a very frequent one at this season of the year, but flockmasters still appear to be somewhat divided as to the necessity for dipping lambs. Not a few good managers assert that ticks, lice, and other vermin, for the removal of which lambs are tubbed, are only the result of indifferent thriving and bad management. With a certain amount of truth the opponents of dipping assert that fresh pastures, plenty of room, and a few ounces daily of cake or corn, keep both skin, blood, and bowels in good order. Against the use of some dipping mixtures is urged the still more serious complaint that many of the lambs dipped thrive indifferently, and some even die within a few days. Such mishaps occur sometimes where nostrums compounded at home have been used, sometimes where mixtures are obtained from the chemist, and sometimes where the operation has been performed by one of the professional dippers who travel some counties at this season of the year.

But neither damage to health or risk to life ought to result from the proper use of fitting dipping mixtures. Where the wool after dipping separates in handfuls, as is sometimes seen, it is evident that some powerful poison, probably corrosive-sublimate, has been unadvisedly used. The liberal use of carbolic acid or other tar oils will frequently bring on congestion of the lungs and symptoms of nervous disturbance depending upon the absorption of the volatile active oil. Arsenic, too freely used, sometimes does considerable injury, not, as is commonly supposed, by getting absorbed into the system of the lambs dipped, but owing to the rapid performance of the operation and insufficient dripping of the flock before they are turned out; portions of the arsenical solution fall upon the herbage, are eaten by the lambs themselves or by other stock depastured; and thus arises inflammation of the bowels, and other familiar symptoms of arsenical poisoning. In this way a few years ago occurred the wholesale poisoning of upwards of 500 lambs belonging to a Northumberland farmer.

Such risks are, however, avoided by the use of the various non-poisonous dips now sold by most chemists. No very potent stuff is required to destroy either ticks or lice. It requires no skilled chemist to dissolve in tepid water about 7 lbs. of soft soap and 4 lbs. each of sulphur and pearl ashes, and make up, with hot or cold water, a bath of about 50 gallons. This, with reasonable care in dipping, should suffice for 50 good-sized lambs, will effectually cleanse the skin, destroy vermin, and for several weeks ward off the attacks of flies. One pound of arsenic in many districts is still added to the mixture, and with reasonable precaution may be used with perfect safety. Were it not for the expenditure of time and trouble we should dip twice a year, in spring and autumn, not only the lambs, but also the whole flock, for we are convinced that the operation rids them of tormenting parasites, lessens the chances of attacks of flies, favors the growth of wool, and conduces to healthy thriving.—*N. B. Agriculturist.*

NEW METHOD OF SLAUGHTERING ANIMALS.—Killing animals by the so-called *boutrole*, first used in Paris, and recently introduced into Vienna, seems preferable to the old method, since an animal can be instantly killed by a single blow with an instrument weighing scarcely five pounds, instead of the ten to fifteen blows with the heavy hammer usually employed. The instrument is simply a very convenient form of ax, with a hollow cylinder (like a gun-wad punch) about six inches long and one inch in diameter, with its edge ground sharp, on the end opposite the blade. A single blow with this end cuts a round hole in the forehead, and produces instant death.

THE STURDY—AN OPERATION.—The disease in cattle and sheep called *Coenurus cerebralis*, or more popularly known as gid, sturdy, turnsick, is one of the most prevalent, but at the same time one of the least understood by breeders and owners of stock. With regard to the usual form of sturdy, it depends on the presence of hyatid in one of the hemispheres of the cerebrum or brain proper. Under its influence the sheep turns right or left according to the hemisphere affected. The first severity of the attack seems to pass off, but the relief is more apparent than real, the disease becoming more intensified, the cerebral disturbance more marked, causing giddiness, finally paralysis sets in, followed by prostration and death. Having learned from a gentleman largely interested in sheep breeding that Mr. William Hyslop, of Stretton House Private Asylum, Church Stretton, successfully deals with cases of sturdy amongst his own and his neighbors' flocks, we waited for an opportunity of witnessing an operation for the disease on a sheep of the Stretton Hill breed. We may premise that the *coenurus* is in a kind of bladder, provided with a variable number of exsertile heads, and it is believed that the nervous substance may be excited by the heads which protrude from the bladder, and penetrate the brain substance nearly two lines in depth. The operation, like that of Columbus' egg, was exceedingly simple, but very ingenious withal. The sheep being firmly held by an assistant, Mr. Hyslop felt for the softened part of the skull, and having hit upon the precise spot he wanted, he pierced the brain with an instrument called a borer. He then drew off a large quantity of liquid from the cist of the parasite, through a canula by means of a syringe. He then extracted the bladder, which contained the agents of the disease, and announced that the animal would be entirely well in a few days. We have been at some pains to explain the disease and the operation for its cure, in order that those who have sheep afflicted with it may know where to look for a remedy.—*Shrewsbury Free Press.*

Breeder and Grazier.

The Influence of Cold upon the Production of Wool.

Amongst the many products which the domestic animals supply to man, wool is one of the most valuable and the most in request by the manufacturer. Every means are employed to improve that of the indigenous flocks, and to introduce into our counties new species of wool-bearing animals—as the llama, the vicuna, the alpaca, &c. But a quite unexpected transformation has puzzled the breeders, namely, that the simple change of climate greatly modifies the character of the wool, and even causes it wholly to disappear. It is then replaced by a coat of another species, and of a commercial value much inferior to it, so that the object of the acclimations is completely baffled. This influence of the climate—or to speak more correctly, of the temperature—on the production and disappearance of the wool, has been proved by numerous observations, which it is not without interest to recall in a few words.

In order the better to describe these modifications, we must not lose sight of this fundamental observation that the coat is composed of two kinds of hair, variable in their proportions according to the several species of animals, but which may be made to reappear at pleasure under certain influences, of which the principal is assuredly that of temperature. Of these two sorts of hair, one is rigid, shining, coarse, well fixed. It is the *jarre*, which exists nearly alone in the ordinary conditions of the horse and the ox. The other hair, hidden under the first, is distinguished by being more curled and tangled and more dull than the jarre and much finer. It is the *wool*, which exists nearly alone in the Merino sheep and in the Cashmere goats. It is well known that the wool is greatly preferred to the jarre by the manufacturer. The wool, in fact, is much finer, curls more readily, and is found bristling with little scaly asperities (due to its mode of development), which render it more preferable for felting and the manufacture of tissues. From the coats of sheep, goats, rabbits, &c., the coarse and rigid hair is carefully removed. We have already stated that amongst our domestic animals (horses, dogs, cats, &c) a new kind of hair has been produced at the beginning of winter, which grows between that of the jarre, in order to guarantee the animals against the cold. This winter hair is wool, and it disappears in the spring with the return of warmth.

Let us take a few types of domestic animals, in order to follow in them these modifications of the temperature; we shall find the facts sufficiently curious. If we begin with the horse, we observe that in this country they have little coat except the jarre But let us go further north—to Norway, for instance, or Lapland, or Mongolia, or Siberia—and we shall find the jarre has disappeared, being displaced by a wool as thick as that of a sheep, constituted of a curled hair, which is a true fleece The same is stated of the wild horses of Asia and America; and if we should possess them for their wool only, we should soon be obliged to give them up; for when once taken and confined in a stable, they lose in a few months their abundant curled fleece, which is replaced by a bright and short coat of hair. This is the jarre which reappears alone. The wool, having become useless, has disappeared. Lastly, as we have often stated, the horses of India, clothed simply with the jarre, when they are taken to the mountains of Cashmere or Thibet, are soon covered with wool, these, like all other mountains, being much colder than the plains. When they again descend into the plain the wool disappears.

It is the same with dogs; and the Indian dogs, when taken to the mountains of Thibet, are covered with wool. On the contrary, dogs that are kept for a long time in a warm country have eventually no coat; such is the Guinea dog, called alternately Egyptian, African, Turkish, Chinese, Calongo, &c. Of oxen some curious observations have been published by M. Routin in a voyage to America. The following was noticed by him in the Cordilleras, where he found oxen at nearly all altitudes. At a tolerably high level, where the average temperature is from 9 to 10 degrees, animals of the bovine species have a long, close-pressed, badly-laid coat—in fact, a true wool. Lower down, and in the warm plains, the wool disappeared, and the scanty hair which remains is straight. This is the jarre (these animals are known under the name of pilones). Lastly, with very hot regions, the skin becomes entirely naked (Calongos); and it is observed the animals with a naked skin are never found in the cold regions.

Even in France we can observe analogous modifications, which are transitory on account of the variations of climate, but which a prolonged influence might render durable. In Auvergne the farmers often send, during the summer, the calves to pasture in the mountains. Those which have passed six months in those high regions—very cold—and which descend in the middle of October, are clothed with a true wool, long, curled, and cottony, very different from the jarre of the calves remaining in the low countries.

We now go back to find the same effects on the sheep. Our ordinary breeds are, above all, furnished with wool, but they have still a little jarre, this has almost wholly disappeared amongst the Merino sheep, the fleece of which, since the fourteenth century, has produced the fine wools of Segovia of European reputation. These flocks of Spanish Merinos were *transhumants*—that is to say, they were led to pasture in summer upon the mountains, and if that fine breed has been successfully established in France, it is because our climate is very like that of Spain. But we must not ascribe this fleece wholly to the effect of climate. A proof of this is, that our European sheep transported into warmer climates (to Peru, Chili, the American valleys, Guinea, &c.), lose their wool at the end of a variable time, and it is then replaced by a short hair, bright, well established—the jarre, in fact—and the wool never after makes its appearance. We have observed the same changes in the Merinos transported by the English into some of the islands of the South Seas.

The goats also present analogous modifications, according to the climate. The most renowned of these—the Cashmeres—live in the mountains of Thibet—that is, in the very cold regions. Their coats are composed almost exclusively of an abundant and very fine wool, which is manufactured into shawls of unrivalled beauty. Amongst the coat there is scarcely any jarre. When these are brought down into the plains, their wool diminishes and their jarre increases, which lowers the quality and the value of their fleece. In 1818, our celebrated manufacturer, Terneau, resolved to take from India the manufacture of these shawls; and he brought, at a heavy expense, from Thibet a flock of goats, intended for the foundation of a race destined to supply the wool for the Indian shawls. But the Thibet goats quickly degenerated in France. Other attempts proved also fruitless, and it was found necessary to give up the idea of preserving in these goats the quality of their wool in a climate different to their own. The wool of these goats disappeared completely in the warm climates, like that of certain low and burning valleys of America; and it is then replaced by a short, bright, well-set hair, which is no other than the jarre—a very curious example of the influence of temperature on the production and predominance of one or the other of these two species of animal coverings.

From what has been stated, the breeders of animals may draw a very clear conclusion that whatever food and care they may bestow upon wool-bearing animals, they are not the only condition proper to soften their fleeces. For exotic animals which we wish to acclimatise, it requires the nearest possible approach to the condition of the native climate; and for indigenous animals themselves the question of temperature has great importance. The jarre may be compared to summer clothing, and the wool to that of winter. Nature furnishes so much more abundantly the winter clothing, that the animal may resist the most severe frost. It remains to determine the extreme degree of cold that an animal can support; and, when once that limit is known, it will be necessary to approach the nearest possible to it, in order to produce in the animal all that it can furnish of the best in quality and quantity of wool. The mountains offer, at different heights, all the climates desirable, and may become a fertile field of experiments, of which all the known observations warrant the success.—*Mark Lane Express.*

Improving Dairy Stock.

Every succeeding year finds farmers increasing their stock, laying out their land so as to best suit its successful management, each year developing greater interest in the subject of the best breeds of cattle and the most profitable modes of managing them. With dairy stock it would almost appear as if there was no such thing as standing still. Unless improvement is aimed at constantly by weeding out those members of the herd which are getting past a useful age, or, after sufficient trial, are found to be inferior milkers, and by occasionally introducing fresh and, if possible, superior blood, through the agency of the sire, there is great danger of retrogression. A herd on the retrograde is neither profitable nor creditable to the owner; yet, without care in breeding and selection, the farmer will find his stock decreasing in stamina, and consequently less productive. No bad milker should have a permanent place in a herd kept principally for the produce of the dairy. To keep such a cow is simply to lose money wilfully, her keep costing quite as much as the best milker in the herd, and the trouble she occasions just as much as that given by the animal which gives double the amount of produce. It may be difficult for some years to have every cow in a herd first-rate, yet the herd may be so improved by judicious selection as to have good cows.

In a stock of a dozen cows we will suppose there are a few indifferent milkers. By testing the milk of these cows carefully, and ascertaining the amount of butter or cheese they produce to be under the average of what might fairly be expected from the care bestowed on each, it is certainly economy for the owner to keep such farrow, and at the end of the season dry them off, and with some feeding get them in shape for the butcher, and get rid of them without any further loss. To fill their place, let half a dozen heifers come into the dairy, and select from them to make good the place of those found unprofitable.

Such a course, persistently followed for a number of years, would make more first-class milkers in our dairies, and be more profit to the owners, while the herd would gain a character and reputation in the district for good qualities. Much can be done to improve dairy stock by holding over the offspring of those cows which have proved themselves first-class milkers, and breeding only from those with a view to getting into a permanent strain of milkers as far as this may be done in a limited time.

But it does not always follow that a heifer whose mother was an excellent milker, will in turn inherit her mother's good qualities in this respect; but when she is a descendant of a celebrated line of pail fillers, the probabilities are altogether in her favor that she will possess in a high degree the good qualities of her race By following such a line of policy as indicated, and taking proper care to secure males of noted milking stock, our dairy stock may be greatly improved, and, to say the least, far superior to the bad selection of common stock, bred with no reference to milking qualities.—*Farmer (Eng.)*

Barley for Horses.

This cereal abounds in albumen, sugar, gum and, in fact, all the elements of animal nutrition, and contains in a very high degree those substances which enter most largely into the composition of fat and fleshy tissue. As a substitute for oats in feeding horses it is unsurpassed, its nutritive properties being, as compared with the latter, in the proportion of three to two; in other words, a bushel or 60 lbs of barley contains 39 lbs. of nutritive matter, whilst a bushel of oats contains only about 25 lbs. In Great Britain and on the continent of Europe a barley-mash in the evening is considered indispensable to the comfort and well-being of the horse, and there is little doubt that this course of treatment accounts largely for the plumpness of rib and glossiness of coat for which the cavalry horses of the English, French, and other European armies are so remarkable.

If Brutes Could Talk.

Farmers, very generally it is evident, fail to realize to the full extent how susceptible the beast is to pain, and how keenly it suffers from neglect, and to the same extent how fondly it enjoys a kind act from the hand of the owner. No farmer should be unmindful of his duty to his domestic animals, or let himself become so engrossed in his pursuits as to be blind to the necessities of the brute. Beasts cannot tell their suffering, and advantage is too often taken of this; there is money to be made by their services, and it makes no odds to many how hard they are worked or how grossly they are neglected after the day's work is finished. When the husbandman returns from the field at night after following the plough for many weary hours, he enjoys a good hearty meal and a soft bed; but does he always remember when enjoying these comforts that the team which has served faithfully all day is standing tied to a rack of musty hay and nothing but the hard floor of the stable to rest upon?

If our horses could talk there could be many stories of suffering and neglect told that would put the owners to shame. It is a comfort to know that there are humane men in the land, those who use the brutes in their keeping with the degree of consideration and attention that is a blessing to both servant and master; a blessing to the master in more respects than one, for in the first place he respects

himself in the consciousness of right doing; in the second place all his acquaintances respect him; in the third place he always has a team to be proud of, for it is fat and sleek from the very nature of the case; and fourthly, he gets a greater profit from his animals. His horses are always in condition to do a good day's work, and by having an extra amount of muscle can move a heavy load when required to do so. The cows of this farmer give extra quantities of milk; his sheep extra clips of wool; his swine superior pork; in fact, he has all the advantages. Kindness to animals always pays; and as they cannot tell when they are sick or suffering, their habits should be closely studied, and their management such that if they could talk a good report of usage would be given.

Pasturing vs. Soiling.

A correspondent of the *New York Witness*, discussing this subject, says:—

That pasturing cattle is a wasteful system is sometimes true, but, in the United States, generally untrue. Much pasture land is wholly unfit for such culture as to make it proper for mowing off green and soiling cattle. Some fit land is too remote from the barns, and, above all, labor is too dear to allow the practice with the means at the command of farmers. When land is very dear and well adapted to the necessary grass crops, also labor cheap and abundant, soiling will pay well; for instance, in England, Holland and Belgium.

I shall ever remember a day with Count Fellenberg, in Hofwyl, Switzerland. He had a large herd of about sixty cows, the largest and finest I have ever seen. If a cow at five years old, in June, would not yield 36 quarts of milk daily, he sold it as unfit for his purposes. Milking took place at 7 a.m., 12 m. and 5 p.m. The cows never grazed, but were soiled. He had, among other resources, a peculiar kind of pale green, broad-leafed grass, of very rapid growth, very juicy, and greedily eaten by cows. He was mowing it for the fifth time, in the latter part of September. It stood then about one foot high, perhaps 14 inches. The grass was carried to the stables in a light cart drawn by a donkey, to avoid packing the soil. The liquid manure was filled into hogsheads mounted on wheels with tires a foot broad, and sprinkled over his grain fields. Thus he had increased his farm products five-fold since purchasing the farm.

Feeding Value of Rye.

The use of growing rye for feeding sheep, cows and calves, may be very advantageously availed of when it is necessary. It would be well to give the crop full chance for fall and winter growth, but toward spring, when the ground is dry enough, it may be moderately grazed until the 10th or 15th of April. The manure of the stock, if fed to any extent with grain at the same time, would amply atone for any diminution of the mass of green crop.

The value of an early supply of green food for stock of every sort is not generally appreciated except by professional graziers. They well know that a few weeks of green feeding in early spring tells largely on the profits of the whole year's grazing. In the raising of spring lamb, especially, the value of such pasturage to give to the ewes a full flow of milk will be apparent.—*Maryland Farmer.*

PARENTAGE.—As a general rule the best bred parent impresses its character more strikingly on the progeny—a strong argument for using only sires of sound accredited descent. Still another consideration points to the importance of using first-rate male animals. Whilst the progeny inherit in tolerably equal proportion the qualities of both sire and dam, some of the most prominent and selling qualities of cattle are chiefly inherited from the sire. Size, skin, hair, horns, or absence of horns, the bony frame and the general mien usually follow from the male; whilst the internal organs, temper and constitution, come more notably from the female.

CAN'T FIND HIM.—Who? Why, the man that makes *poor* butter. We have hunted high and low for that man, but he has not shown his face. Every man makes the best butter in the state, and would black the eye of the man who says he don't. But, somehow, there is a wonderful difference in butter. We have it all grades and shades, from the sweet, rich, palatable, golden hues, that is as tempting as are the twenty dollar pieces behind the counter of a bank, to the cheesy-green and white colors of a pot of soap grease, with a smell about as inviting as that of a barrel of whale oil, and a taste—well, we don't know the taste—we have not been able to get that far along yet.—*Prairie Farmer.*

Poultry Yard.

Poultry Notes.—No. 14.

Caponing.

To deprive cockerels of the power of reproduction is a practice extensively pursued in France, in Italy, and even in China, the process there having been regularly systematized. The argument in favor of this proceeding is that the weight of the birds and the delicacy of the flesh is enormously increased by it; and on the ground of cruelty there is little to be said, whilst most of our sheep and all our oxen are prepared for the butcher in a similar way. Caponing is very little practised in England, and we believe not at all in Canada. In the United States we believe the practice of caponing has lately been more generally adopted, and the poultry publications there have contained detailed accounts of the operation, with descriptions of the instrument used. In Mdlle Millet Robinet's work on poultry, the French mode of operation is described. At the age of four months the cockerels are chosen from the other broods, and taking advantage of mild weather,—in the heat of summer the operation is attended with danger,—the caponing process is performed. Two instruments are used—a small curved knife, kept very sharp, and a curved surgical needle with some waxed thread. Two persons are required, one of whom operates while the other holds the bird; and in the Illustrated Book of Poultry the process is thus summarized. "The operator sits down, and the assistant holds the bird on his lap, with its head towards him and the right side downwards; the lowermost leg being held firmly along the body, and the left being drawn back towards the tail, so as to expose the left flank, where the incision is made. A few feathers being plucked off to expose the skin, the latter is raised up with the needle so as to avoid the intestines, and an incision large enough to admit the finger easily is made into the abdominal cavity, just at the posterior edge of the last rib; in fact, the knife is kept close to the edge of the bone as a guide. Should any portion of the bowels protrude through the wound, they must be gently returned. The forefinger is then introduced and passed behind the intestines towards the spine, on each side of which the two testicles are situated, being in a young bird of four months rather larger than a horse bean. One of the testicles being felt, it is to be gently torn by the finger away from its attachments to the spine and removed through the wound, the other being afterwards sought for and removed in a similar way. Care must be taken that the testicle does not slip away among the intestines after it is detached, when its detection and removal from the body may be difficult; but even if this accident should occur, it is not often followed by serious results, though occasionally it does excite inflammation. Both testicles being safely removed, the edges of the wound are brought together and kept in proper position by two or three stitches with a waxed thread. These are made in the usual surgical mode, each stitch being detached and separately tied, not sewn as a seam. In making them the chief thing to guard against is to avoid even pricking the intestines with the needle, much less including any portion of them in the stitch, which last would inevitably result in the death of the fowl. When all is done rightly there should be little bleeding or suffering; and the whole being safely over, the bird should be put under a coop in a quiet place, and given only soft food, such as sopped bread and water. After a few hours he may be put by himself in a run or yard, but until perfectly healed must not be allowed to perch, but obliged to sleep on straw. For three or four days the soft food alone must be continued; and when entirely recovered, the bird may be set at liberty, or put up to fatten."

In a somewhat similar manner pullets may be converted into *poulardes*, by depriving them of the power of producing eggs. "In France," says the authority already quoted, "it is usual to extirpate the ovary, but this is needless; the operation recommended by Mr Yarrell, of simply dividing the oviduct with a sharp knife, being quite sufficient. The flank is to be exposed in the same manner as in the preceding case, but the incision should be made close to the side bone. The lower bowel will then be seen, and close beside it the oviduct, which is then easily drawn forward by a blunt hook and cut across; this causes the bird to attain to great size. The Chinese operate somewhat differently from the French. The chickens to be caponized are fasted for at least twenty-four hours, and this is thought to diminish bleeding; the bird is then placed on the left side with the wing folded back, and kept under one foot of the operator, who works without an assistant, while its legs are kept fast under the other foot, or sometimes by an assistant. The feathers are now plucked from the right side near the hip joint, and the incision is made between the two last ribs, going just deep enough to divide them. Several rude instruments are used, and the testicles are usually removed by the sawing of a rough loop or ligature of cocoa-nut fibre across their attachments. In one respect, however, their process is better, the wound not being stitched up, but the skin being forcibly drawn on one side before the incision is made; so that when the whole operation is completed, and it is released, it covers of itself the wound in the flesh, and avoids the irritation which stitches sometimes produce. Generally speaking, it may be said that either capons or poulardes exceed in weight about one-fifth what the same birds would have been if fatted in their natural state; but the flesh is also whiter and more delicate, and the development plumper upon the table. In the case of pullets, we must say we think the operation unadvisable, the birds being valuable for laying; but the art of caponing cockerels might be extended in this country with great advantage, as fowls thus treated remain tender even if kept to the age of eighteen months, when they make enormous fowls, and may be employed in nursing chickens meanwhile. Hence the process becomes of considerable importance to all who consider poultry-keeping from a commercial point of view."

After the operation of caponing has been performed on a chicken, and before letting it mix with others not so treated, it is well to put a permanent mark on it, otherwise it will be impossible to distinguish it. But as capons and poulardes are not for exhibition purposes, a mark which in other birds might be deemed a disqualification may be made. Frequently after the operation is performed, and while the wound is healing, the side becomes puffed by a windy swelling, which may be relieved by making a small incision or puncture in the skin, through which the wind escapes. The early hatched chickens always make the best capons, and enables the operation to be performed before the intensely hot weather sets in, which is of much advantage. It would be well if the beginner performed his first operation on a dead fowl; no matter how well he has learned theoretically the art of caponing, he will find some difficulty in putting it into practice. In commencing on a dead bird first, he will cause his next live bird much less pain.

It has been stated the operation of making capons and poulardes is attended with considerable danger, and that the advantages gained are slight in comparison with the risk of losing the bird, and the positive amount of unnecessary pain inflicted on the animal. But, on the contrary, it has been as positively asserted the usual mortality in France amongst the birds thus treated is only about one in forty, and the danger is thought so little that the operation is frequently committed to children. Birds, after the act of caponizing, are never subject to the natural process of moulting.

Sub-Varieties of the Spanish.

BLACK MINORCAS.—This variety of the white-faced Black Spanish is very common in Devonshire and Cornwall, England, and but little known in Canada and the United States. It is thought by many breeders that this variety is probably the progenitor of the white-faced Spanish, differing as it does chiefly in the face being red, the ear-lobe being white, as in the Spanish. In the Minorca, however, there is the same full development of comb and wattle, especially in the hens, some of which are inconveniently large; they are also lower on the legs and of squarer build than the true Spanish. It is believed that Black Minorcas were first imported from the Island of Minorca, in the Mediterranean, where they have been seen running about very generally. In size they are somewhat smaller than the Spanish, but very hardy and good layers, laying nearly ten months in the year. Pullets hatched the latter part of March will generally commence laying the latter part of September, and continue during the winter and on to the next moulting season, but they must have warm, comfortable quarters during the winter season, and be well and regularly fed. They, like the white-faced black, are of the non-sitting class, lay large white eggs and a good number of them, even as many as two hundred in the year; and as table fowls, being more rounded in form and shorter legged gives them advantages worthier aristocratic relations. The comb of the cock is very large, straight, and upright, the spikes being very wide at the base and tapering to the points. The wattles are very large and pendulous, the ear-lobe long, and as purely white and soft as a Spanish; but the face is red, with a purple tinge underneath the eye, the cheeks being very thin. The eye should be a very dark color, and the beak dark horn. The shoulders are wide, and, as already said, the legs short and carriage rather low, the tail very large and flowing. The comb of the hen falls over one side of the face, so as almost to conceal the whole of it, and even the bill; otherwise she corresponds closely with the cock, allowing for the difference of sex. The plumage both of cock and hen much resembles that of a rook, being a sooty kind of black. The weight of the cock averages about five and a half pounds, and of hens four and a half pounds. Black Minorcas are very useful birds; and being abundant egg-producers of large-sized eggs, could in all probability, by selecting eggs from only the best layers, produce a breed which would average considerably more than the number already mentioned.

WHITE SPANISH AND MINORCAS.—There are white varieties of both these breeds, resulting no doubt from the action of some peculiar constitutional cause, or, as some call it, the result of an occasional "sport." From such occasional sports, however, a white variety has been permanently established. In England they have freqently been exhibited at poultry shows, although no separate class is established for them. The directors of our Provincial Show set apart a separate class for them here, but it is now usually filled by entries of White Leghorns. The White Spanish is not by any means a nice-looking fowl, the plumage affording no contrast to the white face, but on the contrary giving it a sickly or ghastly cast, which is only less conspicuous when high health makes the color of the combs and wattles as bright as possible. It is different with White Minorcas; they are a much handsomer fowl, the red face presenting the contrast which the plumage seems to require. It is said by some breeders that they are larger birds than the Black Minorcas, taller, closer-feathered, and fuller on the breast, the cocks averaging seven pounds and the hens five and a half to six pounds; that they are more delicate but not such good layers, especially in the winter. The plumage should be a pure spotless white all over, beak and legs being also white. White Minorcas are by no means destitute of attractions, but are not good layers. They are, however, inferior to the White Leghorn.

ANCONAS.—Another variety of the Spanish, and presenting all its characteristics, general shape, large comb, upright in the cock and falling over in the hen, large wattles and ear-lobed. The face is red and somewhat resembles the Minorca rather than the Spanish type. The plumage is "cuckoo," a Dominique in color, and is the same in markings and colors as described in the Dominiques. There is scarcely any doubt that the origin of Anconas is to be found in accidental sports of this color crossing Black and White Minorcas. Mr. Wright says that "black and white being readily interchanged, and White Minorcas being rather scarce, the latter have, to our knowledge, been often crossed with black, most of the produce being black and white. The result of crossing any very dark fowl with white is, however, productive of a certain number of this 'cuckoo' marking. Anconas are always scarce, but we generally see a few every two or three years, and they could be easily perpetuated if desired. They are generally good for a prize in the 'any variety' class, and look decidedly attractive in a pen if of at all good points and quality. In the only case where we were able to make personal inquiry the owner, an innkeeper, whose hostelry rejoiced in a name which must surely have conveyed the idea of Paradise to these lucky birds, being no other than the '*Wheatsheaf*'—informed us they were hardy, and 'no end at laying.' Of course; how could they help it in such circumstances? These qualities, taken in conjunction with their scarcity, would be almost conclusive in favor of their origin in some cross, and a further corroborative argument may be found in the fact that all the specimens we can remember to have seen have had shorter legs than any other variety or sub-variety of Spanish."

That all the varieties of the Spanish have one common origin is evident in the principal characteristics of general shape, large combs, absence of the incubatory instinct, and the abundant laying of large white eggs. The differences in the sub-varieties are obviously the result of crosses, as in other varieties of fowls. One of the best varieties is undoubtedly the Black Minorca, and, both as regards usefulness and exceeding beauty when well bred, is well worthy the attention of breeders; but as for laying qualities, all the varieties stand high, and will always rank among the most useful races of fowls. Says the authority already quoted: "Most of the crosses make capital layers, the best in our opinion being that between the Spanish cock and the Brahma hen. Both this cross and that with the Cochin make capital sitters. The cross with the Houdan produces a nondescript bird, which often lays enormously, but usually sits at least once a year. In fact, as already remarked, laying qualities distinguish nearly all the cross-breeds. Another variety—the Columbian fowl—is the most promising of all the Spanish crosses, and might be made into a new and attractive variety with comparatively little trouble, this cross appearing to 'hit' well."

REMEDY FOR PIP.—Castor oil is called an excellent remedy. Give it every alternate day for a week.

THE COCHIN NOT DEGENERATED.—A veteran poultry breeder writes the *London Field* that, in his opinion "we do not possess any breed in a more primitive and less degenerated state than the Cochin; that the Cochin is one of the least, if not the least domesticated fowls we possess."

FOOD FOR YOUNG GOSLINGS.—The *Cottage Gardener* says that nothing is so good for goslings as grass; that is probably why so many are kept where there are commons. Oatmeal put in a pan of water is excellent food for them, and it is often wise to add some bran to it. Chickens should have bread and milk, chopped egg, cooked meat cut up fine, crumbs, sods of growing grass, fresh earth, and in bad weather, beer.

The Apiary.

Theories and their Advocacy.

It is during the working season that most of the theories of bee life are evolved from the apicultural mind. While the bees are busy building cells, the bee-keepers are busy building theories. There are minds that have a natural faculty for the construction of theories, even as bees have a natural faculty for cell-construction. Theories ought always to be the results of observation, and should be based on facts. But they are often like those pleasant stories we sometimes meet with, and which are headed, "founded on fact." This is generally fair notice that among what is strictly true there will be interwoven a good deal that is purely imaginative. Imagination is very well in its place, but it must be excluded from the realm of science. It is pleasing and useful in light literature, but considerably a nuisance mixed in with the solid and sometimes prosaic affairs of real life. Not a few of the most important of human interests have suffered from the tendency of mankind to spin theories out of cobwebs, and to go to the realm of investigation with their theories ready made. Most of the difficulties in theology have arisen out of preconceived theories, which their authors have sought to uphold, when framed, out of the Book. Bee-keeping has suffered in the same way. People have gone to the hive to get evidence in support of a favorite theory, instead of going to it without any theory, to gather facts as the material out of which to manufacture theory. A certain member of the British Parliament was frank enough to confess that he trusted to his memory for wit, and to his imagination for facts. Not a few draw on the imagination for facts, who have not self-knowledge enough to be aware of it, nor candor enough to own up about it. Theories require the utmost deliberation and care in construction and, like Italian queens, are not worth much until well tested.

When a theory is adopted on what are considered sufficient grounds, it should be advocated with modesty and forbearance. Haste in forming a theory is usually followed by dogmatism in contending for it. A man who is patient in constructing a theory, will be patient in urging it upon the acceptance of others. Slow in espousing it himself, he will not be surprised to find many who are slow as himself, if not slower. Impatience to get credit and honor from those to whom a theory is announced, not unfrequently betrays theorists into unseemly behavior. Some espouse theories as they do matrimonal partners, and afterwards illustrate the proverb about marrying in haste and repenting at leisure.

Theories, if well-founded, will bear the test of criticism, and the sensitiveness of many to a dissenting word argues no great amount of confidence in their own views. What is based on fact can never be overthrown. It is like the "tall cliff" immortalized by a great poet:—

> "Though round its base the rolling clouds are spread,
> Eternal sunshine settles on its head."

We commend these general and, as we think, timely remarks on "theories and their advocacy," to all and sundry who are engaged in bee-culture.

NATURAL SELECTION.—Darwin thus accounts for the proboscis of the bee. Special organs, such as the bills of birds, the long legs of water fowls, wings, the long, rough tongue of birds that hunt worms in rotten wood—all these things were gradually acquired by the constant exertions of the animal to supply its wants. "Thus," he says, "a proboscis of admirable structure has been acquired by the bee, the moth, and the humming-bird, for the purpose of plundering the nectaries of flowers." Will he tell us how the bee got along while the proboscis was being acquired "gradually?"

The Late Dr. T. B. Hamlin.

It is a painful duty to announce the death of so prominent an apiculturist as Dr. T. B. Hamlin, - one who as a friend was so highly esteemed by all who knew him. This sad event occurred at his residence, near Edgefield Junction, Tennessee, on the 24th of last May

Dr Hamlin was born at Red Hook, on the Hudson River, N Y., in June, 1810. At the age of sixteen he was left with no near relatives and but little education. His prominent position and financial success in life are wholly due to his own indomitable energy and perseverance, combined with his uprightness of character. At about eighteen he was foreman of the largest watchmaking establishment in Albany, N Y, and probably the largest in the United States. After preparation in dentistry at Albany and while watchmaking in Lee, Mass, he commenced the practice of that profession in Virginia While there he took an active part in the organization of the first dental association known in the world He afterwards removed to Alabama and thence to Nashville, Tenn., where for twenty-five years he followed his profession with eminent success.

More than forty years ago the young watchmaker of Albany, shortly after his marriage in Lee, Mass., where he had established in watchmaking, commenced the keeping of bees. This last named occupation was continued for many years thereafter in connection with his profession as a dentist. In 1861 his health, which had failed early in life, became quite poor, and he gave up the practice of dentistry and repaired to the sea-coast at Newport, R. I At the close of the war D. Hamlin returned to Tennessee and devoted his whole attention to bee culture and the nursery business. The extensive business of the "Cumberland Nurseries" which he established in connection with Mr. B. B. Barnum—a practical nurseryman, was conducted mainly by the latter, while he devoted his attention almost wholly to the apiary. He was the first to introduce the Langstroth movable comb hive and the improved methods of bee culture in the South, and to engage in the importation and rearing of Italian bees, which he did extensively, and aided in their introduction throughout the United States. He assisted greatly in establishing the "Tennessee Apiarian Society," of which he was President, and also, the "National Bee-Keepers' Association," being Vice President of the latter at the time of his death. His interest and enterprise in the promulgation of apiarian knowledge, especially in the South, are worthy the highest encomiums. His own success in increasing his bees from a few colonies to over three hundred, and continually getting large returns from them, furnishes a practical proof of the reliability of his teachings. His little work on bee culture has wrought a great change in the manner of keeping bees in many localties here.

Dr. Hamlin's marked energy of character, his perseverance, his lofty aspirations after perfection and his kindness and affection as a husband, a father, and a friend are well worthy of imitation An upright, zealous member of the Church, a prominent leader in the masonic fraternity, held in high appreciation by the members of his profession, and an enthusiastic master of apiculture, he is mourned by a large circle of friends and relatives, who alone are comforted by the knowledge that he so lived that

"When the summons came to join
The innumerable caravan that moves
To the mysterious realms, where each shall take
His chamber in the silent halls of death,
He went, not like the young slave, at night,
Scourged to his dungeon; but, sustained and soothed
By an unfaltering trust in God, he approached his grave
Like one that draws the drapery of his couch
About him, and lies down to pleasant dreams."

FRANK BENTON.

Edgefield Junction, Tenn.

Comparative Bee-Keeping.

Reports of extra large yields of honey, together with the often fraudulent representations of patent hive venders, have induced many of our farmers to invest in bees and patent hives, with expectations of large profits. Many are disappointed, and not a few really disgusted with the result. The cause is attributed to poor hives, bad luck, dysentery, or poor seasons; while the real cause of failure is due to want of proper care, and practical knowledge of the requirements of the bees themselves. Bee-pasturage varies in different localities perhaps as much as pasturage for sheep. Yet no farmer could be made to believe that wool growing did not pay, because it was necessary at times to provide provender for his sheep, or because they were subject to scab, foot-rot and pneumonia. The acquisition of *sudden* wealth in bees, as well as in other farm operations, is perhaps as uncertain as a fortunate investment in a lottery. Yet that bee-keeping can be made to pay a *fair remunerative income on the investment*, I will proceed to show from figures deduced from an actual account kept for five years, in a poor locality, and without any previous *practical* knowledge of the business. Profits for 1869, a *good* season, 100 per cent.; 1870, 50 per cent., 1871, 200 per cent., 1872, 30 per cent., 1873, 200 per cent. The winter of '72-3 was perhaps the most disastrous to bees ever known. But like disasters have frequently befallen other branches of farm industries. My wheat crop failed to pay for actual labor performed. Fruit also was a failure. Peach trees were killed by the hard winter.

Hogs have sold for less than value of corn fed in fattening. Cattle brought less than cost of raising. Poultry could be had for less than value of food fed them. Yet all required as much care as if sold at a *profit*. We would, however, *think that farmer very* unwise who would quit the raising of live stock or grain, because of low prices, or severe winters. If bee-keeping farmers would use as much precaution in *preparing pasturage and shelter for their bees* as they do for their live stock, I doubt not that a few years of experience, backed with a comparative table of facts and figures, would convince them that bee-keeping *would prove as remunerative as any business* in which they are engaged. The man who expects a large crop of fine fruit each year, without pruning or cultivating his orchard; he who hopes to harvest a heavy crop of wheat, corn, or oats, without properly ploughing and pulverizing the soil; he who expects to cut a heavy swath of hay, every year, from a meadow which he devotes half the year to pasturage; *and the bee-keeper who expects to get a* large yield of honey without giving his bees any attention whatever, are all sure to be disappointed with their business, and will declare "*It don't pay*"

I have known men to buy an improved hive and patent right at a high price, and *had not means enough* to pay 25 cents for a book or paper giving instructions on bees and their management, and even "had not the time to read" a book furnished them. They surely will say "bee-keeping *don't* pay"—*Cor Bee. Keeper's Magazine.*

How to make a Bee Hive.

Take an inch plank, (let it be smooth) 28 x 18 inches square, for the bottom; saw out of the centre a piece 6 inches square; cover this with wire cloth. Make a slide for the under side, so as to give ventilation, according to the weather. Let side pieces be same length, 12 inches wide, and set these on the bottom Nail from the under side, letting one be one inch from the edge (This is for the bees to have a place to light on.) Make an entrance under this for the bees to go in. Take strips, two inches wide, and nail on the outside at top on side board, extending above one inch Hang the frames inside of this on top of side board. For frames take strips $\frac{7}{8}$ x $1\frac{1}{2}$ wide, ten inches long; for the end pieces, for bottom and top, one inch wide; bottom piece, 15 inches long, top piece, 2 inches longer, extending 1 inch over each end piece when nailed together Nail through the top into the end and through the end into the bottom piece. For a guide take a triangular piece, tack it on the under side of the top piece. Cut out end boards $12\frac{3}{4}$ inches wide, and hang on just like the frames.

Next is a covering for the top; put this on with hinges, on the front side, and fasten on the other with a latch, or a weight on top will do When complete, frames should be $\frac{1}{4}$ of an inch smaller than the hive inside, giving room for the bees to pass around. When you wish to open this hive, unfasten the latch, raise the lid, slip off the end boards, and all is open to inspection.

To put a swarm in this hive, raise the lid, put one end board in place, then seven frames, and then the other end board. Put a board or cloth on top of frame, raise up one end board 3 inches, empty the bees as close to this opening as you can When they all go in, let down end board, take board or cloth off of frames, let down the lid, and you have them. As they fill up put in more frames. You can make frames larger or smaller according to your fancy The principle is the same as Mr M Quimby's, but differently constructed. - *Cor Prairie Farmer*

HEARING OF BEES.—Naturalists have always differed in opinion on this subject Aristotle doubted whether they could hear; Linnæus and Bonnet denied that they could; Huber was undecided; Kirby and Spence affirmed that they could, and placed the organ in the antennæ Other naturalists affirmed and denied. The evidence is strongly in favor of the affirmative.

THE word honey is undoubtedly derived from the Hebrew *ghoneg*, which means delight; an appropriate name.

YOUNG BEES come to maturity from two to four days sooner in California than in Pennsylvania.—*Harbison*

NO OTHER branch of industry can be named in which there need be so little loss of material employed, or which so completely derives its profits from the vast and exhaustless domains of nature, as bee culture.

PURITY OF ITALIAN BEES.—A bee-keeper says that the purity of Italian bees is determined by noting that the worker bees have three distinct yellow bands, and the drones are distinctly marked with yellow on their backs and sides.—*Rural New Yorker.*

THE best districts for bees are those from which the timber has not been removed. The yield of honey in the mountainous part of Kentucky, is more abundant than in the blue grass region, where white clover abounds, which has generally been supposed to be one of the best honey plants, but which has proved of late years unreliable.

Entomological Department.

Insect Ravages.

In the great war against weeds we are in danger of forgetting that we have an enemy about of far greater power, because working often insidiously and unseen, which requires to be as much guarded against, namely, the insect enemy. We complain of weeds because they rob the plants of food, and like the place where a good plant ought to be; and we fight with the feathered enemy because he takes the fruit which has struggled through all other troubles; but the insect which we do not see rarely troubles us very much, though after it is too late to apply a remedy we see what terrible havoc has been done. *Then*, overwhelmed with our great loss, we think there is no help for it,—that it is one of those wise dispensations of Providence which, like the measles or small-pox, we cannot escape from, but which we had better patiently endure if not actually embrace. Yet we have the evidence everywhere about us that much less labor than is often expended by the exasperated farmer or fruit-grower in shooting birds that are rather his friends than his enemies, would be more than sufficient to preserve a fruit-crop against the worst insect enemies that ever existed.

We are moved to these remarks by a communication we recently read in a horticultural journal in regard to the celery-grub. All who have had experience in the culture of this vegetable know that they have much trouble some seasons from the operations of a very small worm, which gets underneath the surface of the leaf and feeds on its green cellular matter. Celery when attacked by this insect rarely does any good The correspondent had tried lime and ashes, and sulphur, and all the easy remedies so often named, but with no good at all. Finally he wrote, as every good subscriber does, to "his paper," and was told to go over the leaves on the first appearance of the insect and *pinch them* "dead." He thought this very absurd, and compared the advice to the "Irishman's remedy of killing fleas, by putting Scotch snuff on their backs," but he was tempted to try the advice, and found to his surprise that it took no more time than one or two good waterings or weedings, and he therefore writes to thank the editor for his advice, and praise his own good sense in having taken it. Yet this is no more than we in this department, and most other agricultural laborers, are continually inculcating, namely: the necessity of personal labor if we would do anything in this way with much hope of success.

This has been exemplified in the case of the curculio on the plum. All sorts of easy scareweevils have been thought of. Some dust the trees with lime, with sulphur, with ashes—others stick tar in rags about the tree. Numerous other nostrums have been popular, but the first great blow at the curculio, if we remember right, was suggested by Ellwanger & Barry, of New-York, who deliberately employed a man to place sheets under the trees, and with a mallet suddenly jar the trees and thus shake the insects off, which were then taken to a funeral pyre. In this way they have always had plums, and the plums have paid them handsomely. Dr. Hall, of Illinois, improved on this idea. He invented a sort of wheelbarrow with sheets spread on frames, which shook off and collected the insect at once. He also has plums in plenty, and find it pays. It is indeed

the experience of every one that the war against insects, as against weeds, is one in which one must personally engage if he would have success; and farther, we have the assurance of those who have tried it, that it is little more trouble than a weed-war would be to get a successful victory against them. People think that the climate is a fearful one, and look with envious eyes on foreign countries from which fruit flows so freely to our shores. But all who have had personal experience in these countries tell us that personal effort to keep off these animal pests is something enormous, and they laugh at us because we sit down and do nothing but cry over our hard fate.

Of course we can get some help from outside agencies, and of these birds are the best. But even these we have to assist in order to get the best results from their works. We remember once, when the cut-worm question was one of the most engrossing with the press generally, asking a farmer friend what he regarded as the best remedy; and we suspect that the great world of disputants would have been surprised at his answer—he encouraged the *blackbirds*, as the purple grakle is called in these parts. This, the white grub, and similar root devourers, he thought he kept completely down by encouraging them. His neighbors shot at them whenever they had a chance, and they flocked to his farm where they were protected, and they followed his plough and hoe harrow, to use his own words, like a flock of ducks, and thus kept them closely checked. When he found his corn or any of his hoed crop troubled in this way, he put the cultivator at once to work, and this gave the birds a chance. Whenever he found a piece of land encumbered with these pests, he put it purposely in hoed crops, and in this way he thought he never had much trouble.

These little hints may be of service at this season of the year, when we are entering on our fruit-gathering times. The war must be begun early, and with personal effort. The ways and means need not be specially referred to. Only let it be recognized that personal labor of some kind must be at the bottom of success, and how to do it will often suggest itself.—*Germantown Telegraph.*

The Canker Worm.

It has been discovered that the canker worm which has been spreading so rapidly throughout the North west for the last few years, destroying the foliage of apple trees, and making the orchards look as though fire had swept through them, can be exterminated, and that too with very little labor. The female canker worm rises out of the ground in the spring as soon as the frost is out, and crawls up the trunk of the tree (as she is wingless), and deposits her eggs under old bark or in rough places, which hatch in May or the fore part of June into small looping caterpillars, or so-called measuring worms, which soon spread over the trees, destroying the foliage. Many plans have been tried to prevent the worm from crawling up the tree, and with some success, but to "wipe them out" completely, so that there shall not be one of them left to tell the tale, is by the use of Paris green in water, applied with a large syringe—a tablespoonful of Paris green to a pailful of water. When the worms are all hatched as near as can be judged, give the trees a good wetting down, and if afterward it is discovered that they were not all killed put on more, but usually one wetting will answer. I know orchards that in 1872 were covered with this worm, the foliage and fruit crop completely destroyed. That were treated as above last year with perfect success—the worms were killed, and the orchards produced fine crops of apples. This liquid will not only destroy the canker worm, but the myriads of insects—too small to be seen by the naked eye—that are preying upon the foliage of trees. One party says that, after using it last year in his orchard, the foliage made such a luxuriant growth, and so dark a green, that it was almost black. It can be used just as safely in the flower garden, destroying the insects that infest the shrubbery, as in the orchard.

The canker worm has already made its appearance in some sections of the country, and therefore must be looked after at once. The above is a very simple remedy and very easily applied. I saw parties in southern Wisconsin two or three days since who told me they proposed to make up a barrel of the liquid, put it on a platform built on the top of a lumber waggon box, drive on the windward side of the trees, and shower them by means of a garden syringe.

I hope that this may meet the eye of tens of thousands of orchardists, and that they will act upon its suggestions at once.—*Cor. Prairie Farmer.*

Miscellaneous.

Building Houses.

Every man who contemplates building a dwelling for himself, will make it a home, an hospital, or a grave for his family, according to his plan. The driest houses are the healthiest, hence those built of wood are the best, they are more liable to complete destruction by fire, but not more complete than iron or granite. Brick houses are the least injured by fire, because they neither melt, scale, nor crumble. The damages to which they are liable may be prevented by two expedients. Lay placing a layer of slate or stone between layers of brick about a foot above the ground, the dampness from the earth is arrested, as brick soaks up water like a sponge.

The outer walls may be protected against the absorption of rain and fogs thus: dissolve three-quarters of a pound of mottled soap in one gallon of boiling water, and with a flat brush spread it over the outer surface of the brick wall, while hot, without allowing it to lather, in clear dry weather; next day dissolve a quarter of a pound of alum in two gallons of water, and paint it over the soap coating; the two combine and form a film of varnish which the rain cannot penetrate. There should be a space of about an inch between the brick and the plaster. The old fashioned comb roofs are best, as they shed water more rapidly, and give a garret, which protects the upper rooms from the heat of the summer sun. If possible, let the house stand east and west, the front facing the south, thus exposing three sides to the sun, and let the family room and all the habitually occupied chambers face the south, so as to have all the advantages of the warming, drying, and cheering influences of the sunshine. The house should be on an elevation, to allow the water to drain off in every direction. Plastered walls are cleaner than those papered, perhaps varnish is better than either, and is not so easily soiled, and is more easily dusted and cleaned from stains or grease spots.

Bare walls are dreary and barn-like. They can be ornamented with pictures and engravings and thus be made instructive, amusing and diverting to a very high degree. If frames are preferred, a very neat and cheap pattern can be made by getting a piece of pasteboard and a glass the size of the picture, which should be placed between the two, and a rim made to answer the purpose of a frame, as well as to keep all in place, by doubling over the edges a ribbon or strip of velvet. Ornamentation may go still further, and be made to afford quite as much pleasure to the eye as paintings, by simply placing a handful of heads of wheat in a vase of water. Each grain sends out bright green leaflets, and continues to replenish the fading ones for weeks together.

An exquisite transparency may be made by arranging pressed ferns, grasses, and autumn leaves on a pane of window glass, laying another pane of the same size over it, and binding the edges with ribbon, leaving the group imprisoned between. It is well to secure a narrow strip of paper under the ribbon. The binding should be gummed all around the edge of the first pane, and dried, before the leaves, ferns, &c. are arranged; then it can be neatly folded over the second pane without difficulty. To form the loop for hanging the transparency, paste a binding of galloon along the edge, leaving a two inch loop free in the centre, afterwards to be pulled through a little slit in the final binding. These transparencies may be hung before the window, or, if preferred, screened against a pane in the sash. In halls a beautiful effect is produced by placing them against the side lights of the hall door. Where the side lights are each only a single pane, it is well worth while to place a single transparency against each, filling up the entire space, thus affording ample scope for a free arrangement of ferns, grasses, and leaves, while the effect of the light passing through the rich autumnal colors is very fine. Leaves so arranged will preserve their beauty during the whole of the winter. Screens of this kind have lately been advertised in which the ferns, etc., prepared by a peculiar process, are guaranteed to retain their verdure for years.

The water-closets and drains of a dwelling are second in importance to no other consideration, for it is now found that typhoid and other low forms of fever are caused by what comes out of the bodies of other persons; in other words, are diseases of filth—of uncleanliness. A case of typhoid fever cannot originate in a clean house; it is impossible. If water-closets must be under the same roof with the dwelling, which need not be except in large towns, they should be located in the corner of the house, because then the windows can open directly out of doors, and thus keep them thoroughly ventilated, and in addition, the pipe can pass directly out through the wall in communication with the leader which conveys the water from the roof, thus washing everything away. An unwise practice is to have the water-closet so located that there is no window to it, and its contents pass down an iron pipe into the drain in the cellar; if this iron pipe is behind the plastering, so that if it should become defective at the joints or elsewhere it would not be detected, and filthy matters, solid, fluid and gaseous escape, they will send out insidious poisons, undermining the health and shortening the lives of the whole household—forever taking medicine and yet forever unwell, since the causes of the sickness remain in operation. It is not surprising that in so many cases there is a marvellous improvement in health by going into the country for even a few days. For similar reasons the waste of the house should be conveyed outside of it by the most direct route possible into the great drain of the street. The authorities of all our cities and large towns might profitably direct their attention to this subject, and compel an arrangement for sewerage of private dwellings which would accomplish the results above indicated.—*Hall's Journal of Health.*

Household Hints.

A Wisconsin man says that the flames of burning kerosene can be extinguished by throwing on flour. It seems reasonable that any absorbent material not readily combustible might be effective for such a purpose.

If you have been pickling or handling acid fruit and have stained your hands, wash them in clear water, wipe them lightly, and while they are yet moist strike a match and shut your hands around it so as to catch the smoke, and the stain will disappear.

Wet the spots of iron rust on muslin or white dress goods thoroughly with lemon juice, then lay in the hot sun to dry. Repeat the same if the color is not removed by one application. When dry, rinse in clear cold water. Lemon juice cannot be used on colored goods, as it will take out printed colors as well as stains. It will remove all kinds of stains from white goods.

Dusting articles of steel after they have been thoroughly cleaned with unslacked lime will preserve them from rust. The coils of piano wires thus sprinkled will keep from rust many years. Table knives which are not in constant use ought to be put in a case in which sifted quicklime is placed, about eight inches deep. They should be plunged to the top of the blades, but the lime should not touch the handles.

To remove mildew make a very weak solution of chloride of lime in water—about a heaping teaspoonful to a quart of water—strain it carefully, and dip the spot or the garment into it, and if the mildew does not disappear immediately, lay it in the sun for a few minutes, or dip it again into the lime water. The work is effectually and speedily done, and the chloride of lime neither rots the cloth nor removes delicate colors, when sufficiently diluted, and the article rinsed afterward in clear water.

The white of an egg has proved, of late, the most efficacious remedy for burns. Seven or eight successive applications of this substance soothe pain, and effectually exclude the burn from the air. This simple remedy seems preferable to collodion or even cotton. Extraordinary stories are told of the healing properties of new oil, which is easily made from the yolks of hen's eggs. The eggs are first boiled hard, and the yolks are then removed, crushed, and then placed over a fire, where they are carefully stirred until the whole substance is just on the point of catching fire, when the yolk will yield nearly two teaspoonfuls of oil. It is in general use among the colonists of South Russia as a means of curing cuts, bruises and scratches.

At this season of the year it is important for all housekeepers to be on their guard against the insidious attempts of the various species of ants and the detestable cockroaches to invade the kitchen and pantries or store rooms. Sprigs of wintergreen will make the small red ants leave their cherished haunts. Borax powdered and put into the crevices where cockroaches abide will finally cause them to disappear, but we have found concentrated lye melted into a sort of paste and applied with a knife a more expeditious mode of destroying these noxious insects. Scalding alum water is also certain death to cockroaches.

THE bees do not deposit in the cells all the pollen they gather. Many of the pellets are taken from the gatherers as they return with laden thighs, and are consumed, to qualify the workers for secreting wax or preparing food for the older larvæ.

Fly Paper.

As "fly time" returns again, our readers may be looking for means of getting rid of the troublesome insects. The following are approved recipes for making "fly papers," taken from the *Druggist's Circular:*

Dip filtering or bibulous paper in either one of these solutions:

The first recipe is, quassia chips, one ounce; water, one pint. Boil ten minutes and strain. Some add one drachm of powdered nux vomica, and boil it with the quassia.

The second is black pepper, one ounce; boiling water, one-half pint. Make an infusion and strain.

Another is arseniate of soda, ten grams; water, four ounces. Dissolve. The paper is to be simply immersed in the liquid and dried. When wanted for use, a piece of the paper is laid in a plate with a little sweetened water. The last formula is the surest, but requires caution in using.

We lit the poor fellow at dead of night,
The carcase continually turning,
So that every side might get its share
Of this new patent process of burning.
No pelting rain storm came wetting the pile
Of faggots to which we had bound him,
No Babcock extinguisher deadened the glare
That formed a bright halo around him.

WATERPROOF HARNESS BLACKING.—The *Journal of Chemistry* gives a formula for making harness blacking. It is good and easily made Before using, the harness should be thoroughly sponged with warm Castile soap suds, and the blacking applied while yet the leather is damp. To make the blacking, take two ounces of mutton suet, six ounces of beeswax. Melt and add six ounces sugar candy (in fine powder) two ounces soft soap, two and a-half ounces of lampblack, one-half ounce of indigo (in fine powder.) When thoroughly incorporated, add one gill of turpentine, and pour into pots and tins.

TO CLEAN PAINT.—There is a very simple method to clean paint that has become dirty, and if our housewives should adopt it, it would save a great deal of trouble. Provide a plate with some of the best whiting to be had, and have clean warm water and a piece of flannel, which dip into the water and squeeze nearly dry; then take as much whiting as will adhere to it, apply it to the painted surface, when a little rubbing will instantly remove any dirt or grease. After which wash the part well with clean water, rubbing it dry with a soft chamois Paint thus cleaned looks as well as when first laid on, without any injury to the most delicate colors. It is far better than using soap, and does not require more than half the time and labor.—*Coachmakers' Journal.*

RAIN-WATER CISTERNS.—My method of making cisterns is this. Dig a circular hole in the ground of such size as may be desired, slanting it in such a manner that the ground will not cave in, cover the bottom and sides of the opening with a good coat of hydraulic cement, and when the first coat is sufficiently set, finish it off with a second. This will soon become hard and firm and hold water like a stone jug. The top is covered with a wooden platform with an opening sufficiently large to admit an entrance for the purpose of cleaning, and in which a pump is inserted; a small spout on one side being necessary to carry off superfluous water. These are far superior in durability and cleanliness to the wooden tub or cask. Some will get a hogshead and place under the spout of their house or barn—and every dry time the wind will shrink them up, the hoops will fly off and they will leak all the water out, and washing days the women folks will scold. Now it is much cheaper in the long run to build a good cistern that will hold several hogsheads.—*Cor. Maine Farmer.*

A PECULIAR CONVEYANCE.—A Florida correspondent of the *Country Gentleman* says: "I wonder if a description would serve an artist as model for a sketch of a style of equipage much in favor in Florida. Imagine a small, shoft cart, perched high on two wheels, drawn by a cow—than which the lean kine in Pharoah's dream were never leaner—so miserable that all hair stands up the wrong way (the representative cow has generally lost one horn and the most of her tail), and then curled up on the floor of the cart an old colored woman, extremely dilapidated as to costume, smoking the stump of a pipe, and one or two younger women in front, with a man, whose attire is more picturesque than serviceable, sitting on the shafts driving. This conveyance, animal and all, appears to be peculiar to Florida; certainly I have never seen anything like it elsewhere, and it would be quite as striking in a picture as the group of gipsies that the painters are so fond of."

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