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VOL. V. No. 10.

TORONTO, CANADA, MAY 15, 1868.

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The Field.

The Reproductive Organs of Plants.

In former articles we have given a brief outline of the leading principles of vegetable structure and growth, under the heads of the Seeds of Plants, Germination, the Root, the Stem, and Leaves. To complete the summary, it now only remains to notice the Flower, or reproductive system of Plants. There is the closest analogy between a flower and an ordinary branch. Both spring from a bud, on similar situations of the stem; both follow the same order of arrangement, and in irregular or redundant growths one is frequently transformed into the other. The proofs and illustrations of the analogy of the two structures are numerous and extremely interesting, but cannot be more than merely alluded to in a notice of this brief and elementary character. It will be sufficient here to state that the flower is a branch, shortened and modified in a particular manner for the purpose of producing not buds for the growth of the individual, as in the case of ordinary branches, but seeds capable of independent growth, and destined for the perpetuation of the species.

As the whole flower is a modified branch, so are the separate parts of a flower modifications of leaves. The transition, indeed, is often very beautifully manifest, and the frequent substitution of one for the other, affords striking evidence of the truth of the theory. The parts of a complete flower are as follows:—An outer circle of small leaves, usually green, forming the flower-cup or calyx. The separate leaflets of the calyx are called *sepals*. Within this is another circle of generally larger leaflets, usually of some bright colour, and of very delicate texture. The whole forms the *corolla*, and the separate members are termed *petals*. Every one at all familiar with these beautiful formations knows that there is an endless diversity in both these parts of a flower. Sometimes the calyx is absent or deciduous. In other instances it is persistent after the corolla has perished, and forms either a covering or a conspicuous appendage of the fruit. Again, this outer circle may assume the bright hues and the general appearance of the corolla, as in the fuschia and other familiar examples; or it may indeed take the place of the corolla altogether, the latter being absent, or only rudimentary in the form of minute and inconspicuous scales.

These, though commonly the most showy portions of the flower, are nevertheless but the outer covering of the more important parts. They are merely the floral envelopes. The essential parts are yet to be noticed. Springing usually from the base of the petals, but sometimes adherent to them more or less, is a circle of delicate organs called *stamens*, consisting of a slender stalk or *filament*, supporting a slightly

enlarged head called the *anther*, usually two-lobed, and filled with a powdery substance, called *pollen*, which, when the flower is fully developed, is discharged through a fissure or opening of the anther,



and serves to fertilize the innermost organ of the flower containing the ovule or infant seed. This central portion is the seed-vessel or pistil, and consists, where all the parts are fully developed, of the



ovary at the base, enclosing the seed, and bearing a single or divided prolongation from the summit, called the *style*, capped by a slightly dilated head,

the *stigma*, which is moist, and destitute of the usual covering or cuticle that envelops nearly every other part of a plant. As might be expected, the filament of the anther and the style of the pistil are not always present, neither being essential to the organ. Where the flower is comparatively erect, the stamens usually surmount the pistil, and the pollen from the anther drops on to the adhesive surface of the stigma below. But in pendulous or drooping flowers, where the relative position of the parts is reversed, a corresponding modification is seen in the development of these organs. The style is then much lengthened, and carries its head beyond the stamens, so that, as the flower hangs downwards, the latter will still be above the stigma, in such a position as to shed their contents on the stigma below them. A beautiful instance, one among myriads, of the perfect and marvellous adaptation in even the most minute details of the handiwork of the great Creator. There are no oversights or mistakes in His creations.

It is easy to trace the analogy of the first of the floral envelopes, the calyx, to a circle of leaves, the transition and resemblance being often very manifest; and again, it is not difficult to see the close analogy of the next circle of petals to the sepals of the calyx, and consequently also to leaves. The transformation of structures essentially similar into stamens, and even into pistils, is equally evident in nature; and one of the best examples of this analogy is found in the white water lily (*Nymphaea odorata*), where the gradual transition can be very distinctly seen, as shown in the accompanying illustration, which represents a single member of the different circles of the flower. In this and similar flowers the circles are multiplied, and the gradation becomes more evident than in ordinary flowers where the parts are fewer and distinct. Any one can verify this statement by examining a flower of this beautiful plant, which is not uncommon in still and shallow Canadian waters. In our orchards, gardens, and fields, we also frequently meet with monstrous growths, in which the very central parts of the flower revert to their original type, and expand into green leaves, or even slender leaf-bearing branches. One of the nearest approximations to the leaf type of the pistil, is seen in the pod of the pea and other leguminous plants, in which the resemblance to a leaf folded inwards and bearing buds on its edges is very apparent.

The accompanying illustration of the Spring Beauty (*Claytonia Caroliniana*), almost the only common blossom to be met with at the present time, though not a flower of the most regular type, may nevertheless serve to show clearly the several parts which have been enumerated.

The members of both calyx and corolla are frequently coherent, forming cups or tubes of various forms with a lobed and expanded border. The

anther and the pistil, are the only essential organs of the flower, and are some times the only parts present. In the flower of grasses the coverings of these essential structures are mere scales. Usually the stamens and pistil coexist in the same flower; but sometimes they are separated, one kind of flower bearing only stamens, and another only pistils. We see an example of this in maize, in some strawberries, in the hop, and other well-known plants. In some instances the two kinds of flowers are found on the same plant, and in others they grow on separate plants. In the latter case it is necessary that both kinds of plants grow near each other, or the seeds, even though the fruit may ripen, will prove infertile. Insects, hovering from plant to plant, and carrying with them the pollen of the fertilizing flowers to the stigma of the seed-bearing flowers, become the unconscious agents in impregnating the latter and rendering their seeds productive. In artificial cultivation, man sometimes controls this reproductive process in plants, and by applying the pollen of one variety to the stigma of another, obtains from the seed thus fertilized a cross or hybrid, partaking in a mixed degree of the qualities of both parents. This is called hybridization, and has been turned, both in flower and fruit culture, to very useful account. Important results have also been gained, and may yet be still further extended by its application to the cultivation of field products, and new and hardy varieties of grain may thus be obtained. Of course there is a limit to the extent to which this crossing of varieties and species can be carried. Mul-tis, even in the vegetable kingdom, are apt to become infertile, a provision made by nature for the obvious purpose of preventing the confusion, and indeed the extinction of specific characters among plants as well as animals.

As soon as the ovule has been fertilized, the function of the flower ceases; the fertilizing agents and the floral coverings commonly perish, and the resources of the plant are concentrated in maturing the fruit, that is, in preparing the seed for its independent life. At the time of flowering the vegetation of the plant is in fullest vigour; the subsequent processes are exhausting, and the plant either dies or needs a season of rest. We should draw from this consideration one practical lesson at least, in the case of grasses, clovers, and other crops which are employed as fodder. If we wish to secure these in their very best condition, when they are most fully charged with nutritive juices, we should select for cutting, the time when they are in flower, before the blooms have begun to fade, and the seed-maturing processes, which exhaust the sap of the plant so materially, have commenced.

The endless varieties presented by the perfect fruit throughout the vegetable world, from the minute and almost naked seed, to the gigantic bread fruit, the manner in which the seed is shed, the numberless and curious contrivances for distributing and dispersing these germs of new life, the rich wealth of food thus stored up for the future plant, and ministering at the same time in nature's bountiful profusion to the wants of a higher order of beings, these and a hundred other topics must be passed by without comment, except to indicate the extent and interesting character of the boundless field of enquiry which this department of knowledge opens up to the student of nature. Nor can we allow ourselves in this place to expatiate on the wonderful beauty in form and hue of these perfect gems of the field; but we may, before concluding, just allude to a prosaic view of the subject which may suggest a new idea to some of our readers. Admitting that the lovely colours and shapes of flowers served no other purpose than mere ornament, we should not think the end attained a trivial one, or that the profusion of beauty scattered over the earth was any waste of creative power. But, we believe, there is another and a more directly practical object secured—that

these very shapes and hues serve an important purpose in the economy of vegetation. We know that the agency of the sun's rays in many chemical and organic processes is a compound agency, that the different coloured rays possess different properties, and it is natural to infer that the multiform and many-hued cups and chalice into which God's hand has moulded the flowers may be exactly adapted to separate by their peculiar tints, and concentrate by their reflecting surfaces, the special rays of light and heat which the fertilizing process needs in each plant,—that the curve of the corolla, and the blue or the gold of the petals, may be essential elements of a tiny yet perfect laboratory, where light and life are working out their marvellous operations, no less than the artistic finish of a beautiful creation designed to delight the beholder and satisfy the Maker's sense of what is fair and good. This view of the subject may induce the utilitarian to regard with more complacency the beautiful flowers of the earth, while it will detract nothing from the enjoyment of the poet or artist, and like every fresh contemplation of the theme, will invest with a new interest the lesson of the great Teacher, who best knew of what he was speaking when he uttered the injunction to "consider the lilies of the field how they grow."

Profitable Farming.

To the Editor of THE CANADA FARMER:

SIR,—I have read with pleasure two articles in your issues of November and December last, on improving land by sowing turnips, and rotting them where grown. This method has been tried in England. Neabit, in his lectures, states that some farmers had a gain of thirty shillings an acre, by rotting this crop, over the profit from feeding to sheep. But might not the same thing be done as well, and cheaper, after a somewhat different method? There is much labour in raising an acre of turnips, wages are high, and turnip-hoers scarce. The same work that would cost 10d. in England, will cost a dollar in Canada. After the roots are raised, the operations of pulling, topping, and tailing, storing them in cellars, and lastly, cutting and carrying them to the cattle, are labourious; and after all, nearly nine-tenths of the bulk are water. It is understood by sheep-feeders that 2,240 lbs. Swedish turnips make 14 lbs. of mutton. Then it is said that vegetable manure raises a crop with only half the nitrogen in it that many other manures will give. (See Johnstone's Lectures.) I have raised turnips here for about forty years, and began feeding about 100 lbs. daily, but have gradually reduced the feed to 30 lbs. daily. I believe my fields are in better condition now than they were when I first began with them. The farm was wild, broken with gullies, and swampy, when I began to chop on it. With your permission I will tell how it is now farmed. It is in eleven fields, two of these (22 acres) are in permanent pasture, the other nine fields, averaging 18 acres each, are used thus:—First field in oats, second divided as follows: two acres of potatoes, four of turnips, three of corn, sown thick for soiling, (after the corn is taken off I get a small crop of turnips,) and nine acres of peas or corn. The third field is in barley, or wheat, or both the fourth in clover, the fifth clover, the sixth clover, the seventh and eighth pasture, and the ninth, clover, (fisher) the rotation. Most of this land is drained with tiles or wood, some portions of it with stones, in parallel drains at twenty-seven feet apart. The wood is sawn hemlock or cedar, the cost being about the same as that of tiles, say, 1s 10d. the rod.

Such is my general plan. The details are as follows. To begin with the eighteen acres of oats. This field is ploughed in the fall, sown early with two-and-a-half bushels of oats, harrowed diagonally twice, with a heavy harrow, then dressed with two bushels of ashes, 75 lbs. of salt, one peck of water lime, 50 lbs. of burnt

bones, and 40 lbs. of sulphate of ammonia. The total cost of top-dressing is £1 2s. 0d. Afterwards harrow twice lengthwise with a common harrow. Fifty or a hundred pounds of sulphate of ammonia may be used. Under this treatment 100 or more bushels of oats may be raised to the acre. I expect seventy bushels. It is presumed there is plenty of lime in the land. If I fail low, when stumping or draining, I lay on 70 bushels of quick-lime on each acre. After that it wants 80 lbs. yearly. I keep the lime clear of yard dung and ammonia. The land should be well ploughed and sub-soiled.

The second field is chiefly a hoed crop. Two acres are planted with potatoes. This portion of the land should be ploughed in the fall, twice grubbed and harrowed in the spring, then drilled. Sow the following dressing:—8 bushels of ashes, 1 barrel superphosphate of lime, 100 lbs. of salt, 100 lbs. of plaster, 50 lbs. of burnt bones, and half a bushel of water-lime. Take a round light log and drive spikes in it, and draw it twice along the drill to mix the dressing with the earth. Plant the potatoes in the proportion of about 15 bushels to the acre; cover with the double mould plough. Before they are through the ground, I harrow with light harrows, then sow 50 lbs of sulphate of ammonia, and 100 lbs. of plaster, and afterwards scuffle. They will not want much hoeing. Scuffle again and set up slightly. Two hundred or two hundred and fifty bushels will probably be the return. Four acres are devoted to turnips, which should be wrought in the same way, only the manure is spread before the drills are made. The same manure and dressing are used as for potatoes. The crop with me is not below 800 bushels, nor over 1000 bushels per acre, and at 3d. the bushel leaves but little balance. Of the remaining land, nine acres are in peas. The land is ploughed and harrowed, and two bushels of peas are sown to the acre. The ploughing is four or five inches deep, with a gang plough. Top-dress with 48 lbs. of burnt bones, 200 lbs. of salt, and 300 lbs of plaster. Harrow lightly and roll lightly. The crop may be from 30 to 50 bushels to the acre, 36 bushels being about the average. The rest of this field, amounting to three acres, is planted with corn, sown thick for soiling. This is wrought in the same manner, and dressed as for potatoes. The corn grows very thick, and eight or nine feet high. The crop is worth at least \$10 an acre. My cows are fed twice daily, as much as they will eat. It is cut into lengths of five-eighths of an inch. Some turnips are given after the corn is cut.

The third crop is barley or wheat, ploughed in the fall, grubbed in the spring once or twice, and harrowed. Two bushels of barley are sown to the acre, put down with the gang plough or drill, top-dressed with two bushels ashes, 150 pounds salt, forty-eight pounds burnt bones, and one peck of water-lime. Harrow once, roll, and sow grass seeds, consisting of nine pounds red clover, three or four pounds Alsike Clover, five or six quarts of Timothy. Harrow lightly, mix 150 pounds of plaster with fifty pounds sulphate of ammonia, and sow it on the barley when two or three inches high. Cut before it is dead ripe. The crop is about fifty bushels or more per acre. The cost of plaster and sulphate of ammonia is about 16s 6d. In the fall let no beast feed on the young clover. Dress it with sixteen good loads of yard dung, and sow on the dung, after it is spread, 150 pounds plaster. The yard dung will be worth 3s 6d per load, besides spreading and carrying to the field. In spring sow two bushels ashes, forty-eight pounds of bones, 100 pounds salt, fifty pounds plaster, the cost, in all, being 13s 6d. There will be four tons (8000lb) of hay or more, as the fourth crop. After the second cutting do not let the after grass be eaten down. I cut as soon as the grass is in bloom, before seed is formed—last year I began on the 17th June. The cutting, curing, and drawing to the barn costs about 5s per ton.

The fifth crop is hay, top-dressed in spring with four bushels of ashes, eighty-four pounds, or more, burnt bones, 150 pounds salt, 300 pounds plaster, forty pounds sulphate of ammonia; 160 pounds sulphate ammonia would be better. The total cost will

be £1 13s 6d per acre. The amount of hay will be about the same as last year.

The sixth crop, hay, dressed the same way; the crop will be the same. The seventh crop is pasture, dressed in the same way; with two bushels ashes, 100 pounds plaster, 100 pounds salt, 18 pounds burnt bones, in all amounting to 11s 9d. The eighth crop, pasture, dressed the same. There will be little gain, the rent being £1 2s, top dressing, 11s 9d, making £1 13s 9d. The improvement on a beast will not exceed £2 10s, which would be a balance of 17s 6d left, for interest, profit, and risk. Would it not be better to cut all the grass, and feed the cattle in sheds?

The ninth crop is hay, dressed in the fall or spring with eighteen loads yard manure, top-dressing with three bushels ashes, 150 pounds salt, eighty-four pounds bones, 300 pounds plaster, the total cost of top-dressing being £1 3s. The crop will be four tons, at least. Do not let the after grass be eaten off in the fall, but plough it down for oats. Top dress as before, and subsoil after the oat crop in the fall; it does not do so well in spring. The ground is full of every substance that a crop requires, and it pays its way, and leaves a balance every year. The clover will leave about four tons of roots and about a ton of leaves and stalks, besides the greater part of the manure given to the last crop of clover. I have no doubt that the enriching with clover is as good as improving with turnips, and cheaper.

Here follows an elaborate account of cost and profit, which we should have been very glad to have inserted, as it contains much valuable information, but after patient study we have not been able to reduce it into proper shape for publication. There are inaccuracies, and discrepancies, and ambiguities which pass our skill to rectify without the assistance of the writer. If he will furnish the information in a clearer manner we shall be glad to publish it. The chief feature in the report, as will be gathered from the preceding portion of the letter, is the large amount of manure which he applies, and the quantity of stock which he keeps, comprising, besides the working horses, 60 cows for dairy purposes, 7 stall-fed, 33 pigs, 75 sheep, 1 bull, and 13 young cattle. The sum of all the produce, consisting of surplus grain and hay, the sale or product of sheep and pigs, and the cheese sold, amounted to £1611 2s 0d, or to resume the writer's own account:—

Value of Produce after being manufactured	£1611 2s 0d
The improvement on 18 cattle and 620 loads manure.....	130 0s 0d
Total value of incomes.....	£1741 2s 0d
Cost of working the farm.....	1239 16s 0d

The balance will be..... £501 6s 0d

There are many unforeseen losses, such as cattle dying, frosts and sickness, and the farmer's remuneration for his labours and risks must also be taken into account. I began this method of manuring four years ago. I have used ashes, bones and plaster, about twenty years, with recently some guano. I try to give, as near as possible, the substances contained in the ashes of the plants, less potash and more soda. My intention with so much plaster is to fix ammonia and supply lime and sulphuric acid. The hay and grain sold would feed over forty cattle, but I have not houses sufficient, although there are as many as would make a little village. As soon as cows calve, they are fed with good clover hay, cut into half-inch lengths, made damp with water, and grain broken fine strewed on the hay, with about twenty-five pounds of beets. In summer they have clover or corn stalks cut, twice daily, and when pastures are bad they are fed three times daily. I get from eight to ten tons of bones, burn them and grind them fine. The sulphate of ammonia is brought from England. I dissolved the bones for two years, but sulphuric acid got very high; in Montreal seven cents was wanted for it. I have used Snow's superphosphate, twenty barrels last year, and I have twenty barrels for this year. Vitriol can be got in England at 9s 6d per 112 pounds. For an acre of turnips or potatoes, 100 pounds burnt bones is taken, 50 pounds vitriol, 50 pounds water, and 50 pounds salt. The water is put in a pine tub with wooden hoops, add the vitriol, mix the bones, add the salt, stir; let it remain some hours. No ammonia is used except for top dressing. This is sufficient to raise twenty-five tons of turnips. The yard manure is put on the young grass, and great crops are the consequence.

JOHN ROBERTSON,
Bell's Corners, Ont.

March 18th, 1868.

War Against the Thistle.

To the Editor of THE CANADA FARMER:

SIR,—A short article, over my name, published in the first of the November numbers of 1867, seems to have given material for sharp criticism from "Publicola," on my practical way of exterminating that much dreaded enemy, the Canada Thistle. But that is what we desire; the more of it the better. The practice or theory that cannot stand the scrutiny should go down. Too many false systems and humbugs have been imposed upon the farmer already, who, in many instances, have squandered time and money to no purpose; such as cutting in the moon, and sundry other trash, which my friend has quite ably exploded.

But, has he succeeded so admirably in undermining my position? We shall see. He has not, in all his long letter, ventured to deny that frequent ploughing and cultivating, at the proper times, will destroy the existing thistle; but, on the contrary, most positively affirms it. I need but refer you to his own experience in his cultivation of the Mangold-Wurtzel patch, which he says was as perfect a bed of thistles as Canada can produce, which he exterminated in a single season; and the instance of the young farmer's potato patch, which he gives, are arguments most conclusive, and ought to convince the most sceptical of the success attending the method set forth in my letter.

He begins by counting the cost attending my method, which sums up, according to his rendering, to \$8 per acre; and in the very next breath, rules me out of existence, on account, as he says, of falling being the most successful means of propagating the evil, by preparing the soil for the most favourable reception of the flying seed.

Perhaps he forgets, or does not know, that every farmer in this part of the country, at least, makes it a point to have a summer fallow every year, which he ploughs at least twice, and often three and four times, besides the cultivating and harrowing—thistles or no thistles. Then, as "Publicola" would say, why not "strain a point," and plough and cultivate at the proper times to kill the thistle? So you may see, sir, that his objection, financially, just amounts to nothing.

And the point he labours to make on the adaptation of the fallow to receiving the floating seed, I shall neither affirm nor deny. It is enough to know that the fallow, worked as I have directed, is no better adapted for its reception than any ordinary fallow ground. Neither was I arguing a system of warfare upon an imaginary foe, but against one really existing. Our Legislature has introduced a system of prevention, which I think both practicable and sensible. Would that it were better observed. So, with this at my back, I think myself safe at this point.

The circumstance which he mentions of the slip planted in the spring, producing five and a half lbs. roots in the fall, with enough still remaining in the ground to send forth sixty plants in the spring, is quite sufficient to show that the increase from the root is much more to be dreaded than that from the seed; and it is reasonable to presume that not one of a million of seeds ever produces a plant. Those who have taken any notice of the spreading of the Canada Thistle, must know that it is effected principally by patches, extending their borders yearly, and also by careless cultivation, changing bits of roots to places previously free from the thistle. And thus, in a single year, hundreds of plants will mark another centre of action, to send forth its invading army, subduing the country to itself.

I have kept fields in meadow for a length of time, and have mowed twice in a season, though perhaps not sufficiently "straining a point," and in some instances thought the thistle subdued, but when ploughing the field some would make their appearance again. By following the plan which I recommended in my letter of November last, I have destroyed every thistle in three twelve acre fields, taken in rotation, in three successive years, my friend's "seed bed" to the contrary notwithstanding. I have tried a sod field since, but did not wholly succeed, as the cultivation was necessarily imperfect. I

gave it, however, a double portion of clover seed, hoping to keep it at bay until I can give it another trial.

I have no doubt but the gentleman's system may be a successful one; and my own experience, as well as the many honorable testimonials which I could produce, must settle the fact, in my mind at least, that the method I have set forth is both practicable and successful. I can only hope that every farmer who is infested with this common enemy may adopt some true system, and that a universal and unceasing war may be waged until this scourge shall be banished from our soil.

PETER SHISLER.

Sandy Land.

To the Editor of THE CANADA FARMER:

SIR,—Although farming is not my calling, I have been a subscriber to your journal since its first issue, and always have taken a deep interest in agricultural matters. It therefore affords me much pleasure to observe the improved system of agriculture pursued here, as well as the increasing intelligence of the farmers generally, and for these your valuable paper may justly claim some credit, for I find it is constantly read by the leading farmers.

There has been a large influx of new blood to this county in the case of persons (generally of an intelligent and respectable class) who were compelled to leave their homesteads in older and wealthy townships, in consequence of the wheat failure, and seek a new home in our colder but more productive region. This influx indicates that the locality of Barrie and its back country has lost its ill repute for everything that was poor and miserable—a character, I dare say, you are aware it had about ten years ago, when it also had an unenviable notoriety for "sand." Yet it is concerning a piece of this self-same sand that I wish particularly to consult you. I have a piece (three or four acres) of land or "sand" which I would like to improve for pasture, and do something to it this spring, if possible.

Had I thought of doing so about three months sooner, I could have procured a good quantity of stable manure. This I would have top-dressed it with, and perhaps have ploughed down some of it, and sown clover. However, it is too late to collect manure now, and I have been advised to sow plaster (gypsum) over it on the sod. Do you think it would be of much use, and what is its *modus operandi*? I see Professor Liebig's theory is, that it fixes the ammonia of the atmosphere. If so, it would act equally on sand or clay soils.

There was a gentleman in this town some years ago, from a part of France where agriculture is made more of a science than it is here, and he held a theory and had a receipt principally composed of phosphate or super-phosphate of lime, ammonia, &c., and by which he said wheat or any kind of crops could be profitably grown on sand which had been deprived of every particle of organic matter by burning.

A CONSTANT READER.

Barrie.

NOTE BY ED. C. F.—We would recommend you to apply as much manure as you can possibly get to the land, and plant it with potatoes. Next spring plough in more manure, and sow clover thickly. After taking off a crop or two of this, plough it under. Raise a crop of grain, if you wish, and lay it down to pasture. Such land as yours requires the addition of materials for plant food, and this is best done by barnyard manure, and especially by ploughing under green crops, such as clover. By repeatedly following this plan, the land may be made rich and productive. We believe the plaster will do more to stimulate the growth of a growing crop than permanently add to the productive resources of the soil. The Frenchman's experiment on a small scale has repeatedly been tried, and only proves that if you supply to sand or burnt clay, or any other pulverized medium, the materials of plant food, vegetation will take place in such soil.

Stock Department.

"Young Conqueror."

BEST DRAUGHT STALLION, OF ANY AGE, AT THE LAST PROVINCIAL EXHIBITION.

The accompanying illustration is taken from a photograph of "Young Conqueror," the imported stallion owned by Mr. Simon Beattie, which obtained the diploma as the best draught stallion of any age, at the Provincial Exhibition of 1867, at Kingston. "Young Conqueror" was purchased from Alex. Giltzath, Croy, near Glasgow, and imported to Canada last fall by Mr. Simon Beattie, the present owner. He is a dark bay horse, five years old this spring. From his pedigree and performance, it will be seen he stands unrivalled or unsurpassed by any other draught horse in Canada, and was pronounced by good judges one of the best horses in either Scotland or England, last summer. Farmers should avail themselves of this valuable opportunity, and encourage such animals, and the enterprise of the proprietors in introducing them amongst us. This horse gained prizes—first at the show of the Royal Agricultural Society of England, at Plymouth, as a two year old in 1865; first prize at Peterboro'; first prize at Huntingdon; first prize at Ely, £30; prize from the Society of Strathendusk and Killearn, near Glasgow, last spring; the second prize at the show of the Highland and Agricultural Society, at Glasgow, last summer, where twenty first-prize horses showed in his class, the best in Scotland and England. Since his arrival in this country, he has gained, besides the diploma at Kingston, the first prize at the fall show at Markham, and the first prize this spring at Markham. "Young Conqueror" is no relation to any of the draught horses lately imported into Canada. This valuable horse is now standing, we are informed, in Markham. It is almost superfluous to add that we believe him to be a most important addition to our Canadian stock.

Animal Life.

In a series of articles just completed, the CANADA FARMER has briefly laid before its readers the leading facts and principles, so far as they are known, in regard to plant life, or vegetable physiology. It is now proposed to offer a similar sketch of the various vital processes exhibited in the animal kingdom. Nothing but the merest outline of these deeply interesting and important subjects can, of course, be given in a periodical of this description; and it may be objected that such an elementary form of instruction will only encumber these pages with commonplace truisms, and statements of facts with which every one now-a-days is acquainted. But although you, intelligent and well-informed Reader, these facts and principles may be as familiar as household words, are they so among the larger class of working men and farmers? If you think so, put

some elementary question in physiology to your neighbour, or ask the man who takes care of your horses what effect bleeding will be likely to produce on the system, or how the air becomes vitiated by breathing, and see what answer you will get. To those engaged in the care of stock, some little knowledge of the laws which regulate animal life can scarcely fail to be of service; and yet, with few exceptions, their ignorance on these points is as general as it is profound. A sort of "rule of Thumb" serves their purpose in ordinary cases, but it often leads them into grave error, and in any unusual emergency leaves them helpless. We hope that the proposed series of articles may, in some measure at least, rectify this blind, unreasoning practice.

Let us notice, in the outset, what are the elementary constituents of animal bodies. In plants we found that the essential elements were carbon, oxygen, and hydrogen. In addition to these a fourth element, nitrogen, enters into the composition of animal tissues. This element, it is true, occurs in many vegetable compounds, (necessarily so to render an

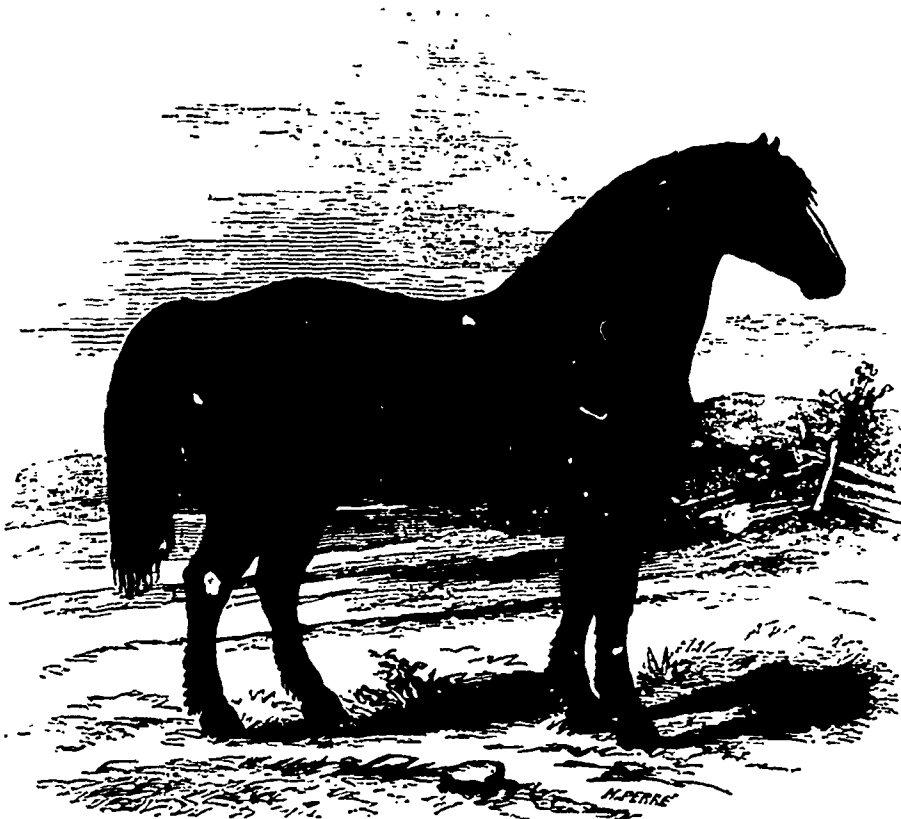
water, and about eight per cent. of albumen, a substance with which we are all familiar in the white of an egg. One of its most characteristic properties is that of being coagulated or rendered solid by heat, or by the action of an acid. It is this property which causes the "setting" of the white of an egg on boiling. It is this also which renders the serum of blood a useful clarifier in certain circumstances.

Fibrin cannot be distinguished chemically from albumen; but it possesses the property of spontaneous coagulation under certain conditions. Its coagulating or forming a clot when it escapes from its ordinary channels, and especially when exposed to the air, is one most important natural means of stopping the effusion of blood. It is readily organized, and exuding from inflamed or wounded surfaces, is the prime agent in the processes of growth and healing.

When fresh blood is allowed to stand in any vessel for about ten minutes, a yellowish liquid is observed to separate, and the red matter gradually loses its fluidity and shrinks in volume, forming a "clot."

The reason of this is, that the fibrin, on being taken from the body and exposed to the air, coagulates, and entangles, as it were, the blood corpuscles with it, and shrinking after becoming solid, diminishes the volume of the clot, and separates from the serum. If coagulation is delayed by cold or other causes, the red corpuscles, being heaviest, slowly sink; and when the fibrin begins to solidify a colourless layer is formed at the top. This, which is known as the buffy coat, is formed when the blood of persons suffering from inflammatory disease is allowed to coagulate, and is seen in the blood of horses even in a healthy condition.

The red corpuscles of the blood are flattened disks of a circular form in most mammalia, but in birds, reptiles, and fishes, oval. They are smallest in mammals, measuring in man $\frac{3}{1000}$ of an inch in diameter, and in the ox $\frac{4}{1000}$ of an inch. They are largest in reptiles, being $\frac{1}{1000}$ by $\frac{1}{1000}$ of an inch in the frog, $\frac{3}{37}$ of an inch in the



"YOUNG CONQUEROR," THE PROPERTY OF MR. SIMON BEATTIE.

exclusively vegetable diet fit nutriment for animals; but it is always in those which approach the most nearly to animal products. These are the principal constituents; but as in plants, so in different animal substances, other elements are also found in subordinate proportion, as, for instance, iron in the blood. These four, however, are present in nearly all, and constitute the largest part of all animal tissues.

The organized material from which all the rest of the animal fabric is derived, which perpetually builds it up and repairs its waste, is the blood, emphatically called "the life." It will be convenient, then, to begin with some account of this fluid.

If we examine a drop of fresh blood beneath the microscope, we shall find that it consists of a colourless fluid, in which are floating a number of bodies of a circular shape, known as "blood corpuscles." These are of two kinds, white and red, the latter being by far the most numerous. The colourless liquid is called the "liquor sanguinis," or fluid of the blood, and consists of a yellowish viscid liquid, named serum, holding in solution a substance known by the name of fibrin. It is composed principally of

Proteus. In the oval corpuscles of reptiles there is a central nucleus, but this does not appear to exist in the fully developed red corpuscles of mammalia, though their biconcave shape gives to them in certain lights the appearance of possessing such a central opaque body. They are composed of two substances, of which one, globulin, contains sulphur, and the other, hæmatin, contains iron. It is the hæmatin that gives to blood its peculiar red colour.

The white corpuscles, before mentioned, are much less numerous than the red, and are less regular in shape. They appear to be in an imperfect state, a state of transition, and indeed may be regarded as immature red corpuscles.

In vertebrata the colour of the blood which flows from an artery is bright red; of that which flows from a vein, dark red. But in invertebrate animals it is almost always colourless, and in those exceptions in which the blood is red, as in some worms, the colour is in the liquor sanguinis, and not in the corpuscles. We almost unavoidably use terms, as for example, artery and vein, which perhaps the beginner does not understand, but we shall come to the

explanation of them a little further on, in describing the circulation of the blood.

The following tables of the composition of the blood are given by Dr. Kirkes :

Average proportions of the principal constituents of the blood in 1000 parts.

Water	784
Red corpuscles.....	131
Albumen or Serum.....	70
Saline matters.....	6.03
Fatty and other matters.....	6.77
Fibrin.....	2. 2

Elementary composition of the dried blood of the Ox:—

Carbon	57.9 per cent.
Hydrogen.....	7.1 “
Nitrogen.....	17.4 “
Oxygen.....	19.2 “
Ashes.....	4.4 “

And this is so nearly the composition of flesh, that we may express it by the same chemical formula. The chief office of the blood is to repair the waste of the tissues. Among its subordinate uses may be mentioned that of carrying oxygen, derived from the air, to all parts of the body, and of removing effete matter from the various tissues to situations where it can be thrown off.

Classification of Stallions.

To the Editor of the CANADA FARMER.

SIR,—Will you allow me a little space in your valuable paper for a few suggestions on the classification of stallions at the Provincial Exhibition, and also at the County and Township Shows.

Under the present plan, Stallions are divided into four classes, viz. :—Thorough-bred, Road or Carriage, General Purpose, and Heavy Draught. As regards Thorough-bred and Heavy Draught, I would make no alteration, but I would divide the Road or Carriage class into two, making firstly Road Stallions showing speed (though not to the exclusion of other points), suitable for getting general light driving horses. Secondly,—Carriage or Coach Stallions, horses of good size, bone, appearance and action, suitable for getting horses such as ought to be used in gentlemen's carriages and other purposes where a certain amount of weight is required, with action. I would make it compulsory that these two classes should be shown in harness, so that the public can really see for themselves, and not be imposed upon by all sorts of circus performances that should count for nothing. These four classes would then include every kind of horse wanted either for business or pleasure.

What is called “the General Purpose Stallion,” I would drive out of Canada, root and branch; he is doing more harm to our breed of horses than can be estimated, and the reason is plain. Of all kinds of mongrels there is none greater than “the General Purpose Stallion;” he is a combination of all known breeds; and you see shown in this class mongrel Clydes, mongrel Coach Horses, and a mixture of everything. Consequently the Judges get confused, and take refuge in the biggest of the lot, and give him first prize.

Unfortunately, these horses are more numerous than any other class, and their services are to be had cheap, which is balm to the pocket of many Canadian farmers. But in this, as in many other cases, cheapness is poor economy.

SPECTATOR.

HARDWOOD ASHES, rubbed in dry on the back of sheep or cattle, is an excellent exterminator of lice and vermin. Mix the same with oats or feed, and it is an excellent remedy for worms in colts or horses.

The Farmer (Scottish) says that a sow of the Essex breed, belonging to W. J. Beadel, Esq., who occupies Springfield Hall Farm, Chelmsford, had the extraordinary number of twenty-three young ones at a litter, twenty-one of which were born alive.

FASTENINGS FOR Ox-BOWS.—Every one who has yoked a pair of oxen has experienced the difficulty of holding up one end of a heavy yoke while inserting the bow and keying it in. The labor is much lessened by attaching a spring snap or catch to the bow.



FIG. 1.

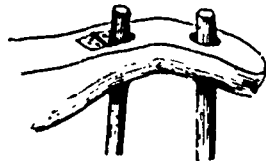


FIG. 2.

so that when simply thrust through the hole in the yoke (fig. 1) it fastens itself without any other attention. This is effected by inserting a large unannealed wire, so that it shall act on each side in a manner similar to the catch of an umbrella. A small iron plate with a hole in it as large as the bow, should be secured to the top of the yoke for these springs to rest upon.

Another mode of fastening the bow without employing a spring, is shown in fig. 2. A common butt or small door hinge is used for this purpose, and is screwed on to the top of the yoke, so that its movable part may cover about one-fourth or one-fifth of the hole: A notch is cut into the bow to correspond with this projecting edge of the hinge. On inserting the bow, this half of the hinge is thrust upwards, but drops and secures it as soon as it reaches the notch.

DISEASE AMONG DAIRY COWS.—The old disease, known as the “lung complaint” (*pleuro pneumonia*), which destroyed a large number of milch cows in the metropolis and suburbs, about ten or twelve years ago, has re-appeared in many of the cowsheds on the southern side of the Thames, and the dairymen have sustained very considerable loss by this epidemic.—*Pall Mall Gazette*.

Rural Architecture.

Useful Contrivances in Rural Economy.

We have collected together, from various quarters, but chiefly from the *Illustrated Annual Register of Rural Affairs*, a number of useful hints on various matters, which, though not strictly pertaining to rural architecture, are yet closely allied to it, and will come better under that head than in any other department. Where not otherwise specified, it is to be understood that the useful little manual already named is credited for the following articles and illustrations:

FRAMING TO SECURE WIDE FLOORS IN BARN.
Wide floors, unobstructed by posts, are often a great convenience in barns, and as it is desirable to know a good way to frame a bent so as to dispense with posts and make it a self-supporting truss through

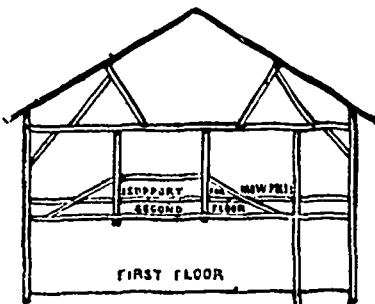


FIG. 1.

a part of its length, we have had the accompanying fig. 1, engraved. It represents a truss-bent in the barn of Rev. David R. Waller, of Bloomsbury, Pa, which supports the second floor of the barn, on one

side, and a hay mow upon the other. The barn has two stories and a basement, and all the hay and grain is drawn in upon the second floor, over a bridge, from an approach walled and banked up. This truss is of simple construction, philosophically braced and entirely secure. The size of the timbers would vary with the width of the barn and the extent to which it is self-supporting, as well as with the weight it is expected to sustain. —*Country Gentleman*.

IRON GATE LATCH.—A correspondent in Talbot county, Md., sends the following description of an iron gate latch (fig. 2), which he has found cannot be opened by mischievous mules or horses. The straight portion is made by bending a rod double and welding the ends to a sharp point, which is driven into the gate post D. The latch C is of iron, and plays in the space between the sides of this straight piece. The cross-pin at B prevents the

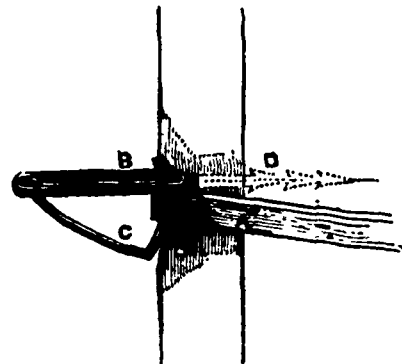


FIG. 2.

latch from flying entirely out, when the gate is shut forcibly. The gate is held shut by the pressure of the latch against cross-bar A, which may be a projection of the horizontal part of the gate, or a bar of oak, nailed or screwed to the stile.

SELF-SHUTTING GATE.—Various contrivances have been resorted to for causing gates to shut of their own accord. For small or light gates we have never found anything equal to the spring represented in the accompanying figure. One, which has been in use over ten years, appears to be as good as on the day it was put on. The dif-

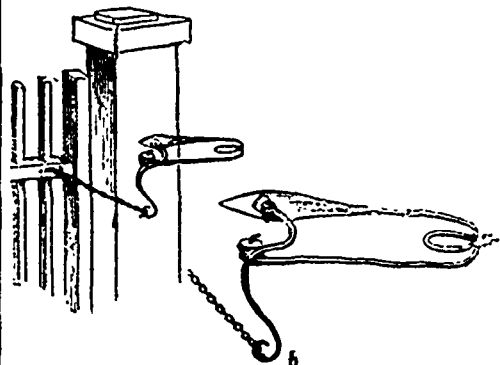


FIG. 3.

FIG. 4.

ferent parts are shown more distinctly in fig. 4, where a represents a spring which is screwed on to the gate in a horizontal position as is shown in fig. 3, having a small wheel at its outer end, in which the bent lever b moves in opening and shutting. In the outer end of this lever a small chain is hooked, connecting with the gate. When opened, the spring is bent as shown by the dotted line. In constructing this contrivance, the great point is to form the curve in the lever, in such a manner that there shall be a continued and uniform pressure upon the spring, at whatever distance the gate is opened. The form represented will nearly accomplish this purpose, the length being about equal to the distance b between the post and small wheel on the end of the spring. This contrivance was patented many years ago and retailed at \$1.50, the spring and lever being simply made of steel rod. The patent, has probably long since expired.

The Dairy.

Dairy Farm, in Chester County, Pennsylvania.

ROKEBY began farming four years ago, having about 100 acres of cleared land, for which he purchased twelve cows and two heifers. He engaged a farmer, who continued in charge two years, and made 1432 lbs. butter the first, and 1500 lbs. the second year.

This was principally from pasture alone, no provision having been made, by growing early rye, corn for fodder, or any other green food, to keep up a plentiful supply, either early or late in the season, when pasture is short, and it is so indispensable, in order to keep up the condition of the cows and their milk.

The third year the proprietor undertook the management himself, and made 2878 lbs. butter, and during the fourth year, ending April 1, 1867, he made 4055 lbs., having increased his stock from fourteen up to twenty head—five of the latter heifers with their first calves. He says:—

Now, I suppose, it will be asked by what management the butter was increased from 1432 lbs. to 4055 lbs. There was but little change in the stock, almost all of the original cows having been retained, and the increase being but three cows and three heifers; but the increase in the butter was from twice and a half to three times the quantity. The difference in the management was this: my original farmer kept the cows only, as I have before stated, on the pasture; the farm then had nothing grown expressly to fodder or soil them with, which was and is now the custom with many farmers in our country; neither was there any meal fed, except it might be to a cow that had calved early in the spring, before the pasture was sufficient to turn out upon; also, the cows were permitted to remain out, exposed to cold, wet storms (when they should have been stabled and kept warm and dry), thus early in the season checking the flow of milk, which is afterwards difficult to restore.

Early in the season the young grass, when cows are first turned out to pasture, is watery, and tends to make the cows scour very much; and although it will in that state increase the flow of milk, and also the quantity of butter, yet it will be at the expense of the condition of the cow, reducing her in flesh, and telling upon her during the whole season. At this time I consider it important that a cow should be fed with ship stuff or bran and cob meal, mixed night and morning. This not only assists in preventing scouring, but by keeping up the condition of the stock, increases the quantity of the butter to a very considerable extent. My opinion is, that meal fed at this time pays better, certainly as well as at any other time during the season, not excepting mid-winter.

I am well satisfied that the condition of the cow, in order to obtain from her a full yield, or one that will be profitable, must at all times be well looked after. She must be well watered and fed, so that when she comes out of the barn-yard in the spring, after and thralved, she is in good flesh, showing her keep much the same as when she was in the winter. I have too often on straw of the country, viz., dry cows, win-barn-yard until a shelter except the lee side of a late for the poor-in-calf is dropped, when it is too city.

A cow should at all times be supplied with meal; not stinthen milking, be fully ever, for that would certainly pro to excess, how-wards; but she must have a full and reaction after-at all times of good food and water. A plentiful supply pose I have grown early rye to begin with that pur-early season, before the grass is sufficient to fill the on; then after harvest, during the dry weather, with the pasturage becomes short, Hungarian grass, to be followed with corn sowed in drills for fodder, which cut morning and evening, and fed to the stock whilst milking, fills them twice a day, and, with the pasture, makes up all that is required. During the last season, whilst it was necessary to soil with Hungarian grass and corn for fodder, we have also fed two quarts of ship stuff each night and morning, as we feel satisfied that, although the Hungarian grass and green corn will keep up the yield of milk, yet they will not alone make as much butter as a full supply of pasture or the natural grasses.

I look upon a cow as similar to a steam boiler; no matter how good they may be, unless the boiler is well supplied with water and good fuel, also well attended to, the supply of steam will be short, or it will be in proportion to the fuel and attention. So also with the cow; no matter how good she may be,

if she is not well and plentifully fed and cared for, her product will be shortened.

Another very important matter with cows is that they should be protected from storms and bad weather. They should be fed and kept under shelter when the nights are wet and inclement; this more particularly in the early season, when the cow is fresh and in full milk; one exposure to a cold, wet night, has frequently reduced milk one-half. Also in the fall, when the nights become frosty, never let them remain out; be particular to stable them; and in the morning never turn them out on the pasture until the frost is melted off by the sun, as nothing, perhaps, dries a cow or reduces her milk more than eating grass with the frost on it. To many of these requirements the generality of farmers pay no attention whatever. In the early season, as soon as there is any pasture whatever, the cow is turned out of the barn-yard, to eat what she may find, and to remain day and night until the winter comes; there is also nothing grown or fed to eke out the scanty supply of pasturage that almost invariably occurs at some time in each season.—*Practical Farmer.*

How to Mak Gude Buter.

To the Editor of THE KANADY FARMER:

MAISTER EDITUR,—Havin been readin in your invaluable paper (from all sektion of the Kontry but this) how tha mak buter an greese, I wad jist gie u a bit inklin o tha way tha mak buter in our parts, an then you can gess abot the greese. In the fust place, tha don't stabel their kows, but feed em all winter on straw, an u ma expekt in the spring like this, tha com out sae pur, that unles the sun is sinin vera brite, it will tak too of em to cast a shadoo. Tha are also covered with so long an shaggy hares, that when u are mylkin the pale is half full of hares. Afr mylkin a boy an a dorg is sent wi em to the sumrfoler to pastr till evnin, when the boy an the dorg is cent afr em agin, an u ma xpekt tha com hom kanterin. Tha ar nou so restles tha will not stand to be mylkd, for which tha git a gude hamrin. Tha are nou klood in the yard till mornin. Mean whyle, the mylk is removd to the darey, where it is filtrd thre a kalndr straandr, to tak out som of the hares. The dary is somtims a gude one, but in ten kases out of one it is a pur konstrukt bildin, with shelf abov shelf, an plenty of holes for vatlaton—the upr story bein generally ocopyd by the poltry. Imeditly B.hind is [the syne stye, in order to be konvenent for the sour milk; or it may be a log bildin, chinkd an plastrd, with a hole 5 feet deep inside. On this groun floor, the mylk dishes is plaed; as there is no vatlaton here, the mylk molds B-4 it sours. Afr remainin in this state a konsidrabel tim, the kream is skimd in-2 a pork barrl, or othr vesel big enuf to hold it till a rany dae coms, when all the men is in. This tim havin arivd, the kream is put in-2 a churn, an workd for abot an our, withot synes of buter. Hot water is now added in konsidrabel quantities, when the buter is on hand rite awa. It is now removd in-2 a tub or othr vesel for the purpos, in ordr to get some of the butermylk out, after which it is salted an mad in-2 roles for markt. A boy is now sent afr the old mare, to tak it 2 the store, and bein redy 1 or 2 rols is put in eitrr end of a grain bag, an put on the hoss, an the boy dispatchd with the instruksions to get hiest markt price, as it is new. Previous to the boy's takin it, I was requested to taste it, and give my opinion on it. This I done after some reluktane, an said it was vera wh. and dry-lokin, but it was new. This was not near as good a eulogym as was expektet. Howsomewer o the yere. I axct em if tha ever red in the KANADY FARMER how to mak buter. The said tha never took it, but Sam Miser says that a Novel says it is not xactly the thing, as it rekomen a nice ary dary with clean dishes, and the kows well wandid-2. B.sids the kows are to be well stabld, an kept a gude pasture. This a puer man can't allways afford, besids we allways get the hiest price for our buter here. My at-tension was arested by a nok at the dore, which provd to be a halker wanting to sell some mylk dishes. I nou took my leave satisfied with this style of kontry buter.

THERESA HUBB.

Wardsville.

Veterinary Department.

Curb in Horses

The affection known as curb is one of almost every-day occurrence, and it appears as an enlargement situated upon the lower and back part of the hock joint. This enlargement is the result of a sprain of a ligament that extends from near the point of the hock to the outer side of the small splint bone. The name applied to this ligament is the *calcaneo-cuboid*, or superior straight ligament of the hock. From the position of this ligament, and also from the strain put upon it, especially in hocks of a curby formation, it is very liable to be injured. Curb appears in many instances so very suddenly, that the common expression used regarding its appearance is, that the horse has "sprung a curb." When it first appears it is usually somewhat soft, and very hot and tender; the least pressure of the finger at once makes the horse jerk his leg upwards. It is very easily detected, especially if a side view of the leg is taken. In that position, a very slight curb can be readily noticed, and frequently there is lameness present, which in many cases is very severe, whilst in others it is only slight. A curb is a great eyesore, but it is rare that lameness from it proves of a permanent character, though frequently a callous enlargement will remain through life.

The causes of curb are various, as violent and sudden strains in galloping or leaping, or in being forcibly backed when attached to a heavily-laden wagon. It is also frequently produced by travelling in deep snow. This is a common cause in young unshod horses of three and four years old, who are often driven considerable distances without shoes; the hoof is worn down, and the horse slips at every step, thus throwing great stress upon that particular part. There are certain forms of limbs very liable to curb, as narrow hocks, and those in which the point of the hock (or *calcis*) is not well developed. Where this conformation is decided, the least violent exertion is very apt to produce a curb. This affection generally appears in young horses; it is rare that a horse of seven or eight years throws out a curb, without having shown signs of it in younger years.

The treatment of curb is generally attended with success. The horse should have rest, and a shoe applied with a high heel. By so doing the strain is taken off the hock to a great extent. Either cold or hot applications may be used with advantage, according to the state and extent of the injury. When the parts are much swollen and tender we prefer hot applications, as fomentations of hot water, afterwards applying flannel bandages, and a mild camphorated liniment. When the heat and swelling are removed, blisters are sometimes useful, and either the biniodide of mercury or cantharides have very good effect. At one time the firing iron was very often resorted to in the treatment of curb; but we are of opinion that it is only in exceptional cases where such a severe remedy is required. In slight cases, cold water and refrigerant applications will often succeed in allaying the tenderness, even without laying the horse off his usual work.

Veterinary Queries.

To the Editor of THE CANADA FARMER:

SIR,—I wish you, or some of your numerous correspondents, would answer the question, "What is the reason we have so many ringbone, spavined, and unshapely horses in this country?" If there is any remedy for the prevention of this evil, it is high time that farmers and others were made acquainted with it, that our stock of horses, instead of becoming poorer, may be improved.

Also, answer "What is the best method of shoeing a horse who is turned out in the front feet, to prevent it from interfering?"

Also, answer "What breed of horses is best adapted for agricultural purposes in Canada?" We have various breeds, as Clydes, Bloods, &c., all possessing different qualities. Would you recommend crossing the breeds, or keeping every kind distinct by themselves?

AN OLD CARTER.

Ringbone and other diseases of the osseous system, in many instances, can be traced to some hereditary predisposition. Diseased and worthless animals, when unfit for ordinary work, are frequently kept for breeding purposes, and the progeny commonly inherit those diseases which may have existed either in the sire or dam. We are of opinion that if greater care were bestowed in the selection of good, sound and vigorous animals for breeding, there would be fewer ringboned and spavined animals to be seen.

To prevent interfering in a horse who is turned out in the front feet, the shoe should be applied to fit closely on the inside, and the nails applied around the toe and to the outside. In some instances a small piece of leather placed betwixt the sole and the shoe, and allowed to project outwards, has a very good effect in preventing interfering.

The last question is open to considerable discussion amongst practical and experienced men. At present we decline offering any opinion. Let our correspondents speak for themselves.

LOSS OF MANE AND TAIL.—The following is very useful in cases where there is a falling out of the hair of the mane and tail, viz:—Glycerine, two ozs., sulphur, one oz., acetate of lead, two drachms, water, eight ounces. To be well mixed, and applied by means of a sponge.

SWOLLEN ABDOMEN.—A subscriber writes:—"I have a valuable mare now in foal to a blood horse, and about three weeks from foaling time she has become very much swollen all under her abdomen, and forward as far as her fore legs. I would not feel uneasy about her, only she had a foal three years ago, had the same swelling, and lost one teat in consequence. Can anything be done for her?"

Swelling under the abdomen is a common occurrence in mares previous to foaling, and is seldom productive of any harm. It is generally advisable, however, to give the mare gentle walking exercise daily, and every second night a teaspoonful of nitrate of potash, which may either be dissolved in water or given in a bran mash. This should be continued until four or five doses are given. She should also be sparingly fed for eight or ten days before foaling.

Poultry Yard.

Characteristics of various Breeds of Poultry.

A PAPER READ BEFORE THE ONTARIO POULTRY ASSOCIATION, BY THE PRESIDENT, A. MCLEAN HOWARD, ESQ.

As President of the Poultry Association, I have often been asked the question, which are the best varieties of fowls to keep? My answer has been, it depends altogether upon what you more particularly want them for, and this must always be kept in mind in making a selection.

I will now give briefly the leading characteristics of the various kinds, for the information of intending breeders, leaving them to select accordingly. My remarks will be, as nearly as possible, the result of my own experience.

I will begin with the Cochins, as they generally head the list. They certainly are the largest, if not the best. I have not found them, under all circumstances, a profitable kind to keep for general purposes. They are not the best layers, nor do they lay an egg at all in proportion to their size. They are

large feeders, poor foragers, inveterate sitters, but careless and clumsy with their eggs or chickens. They are very hardy, and when young, good for winter layers. The hens should not be kept over two years, as they then become lazy and good for nothing, and I pity the person who has to eat them at that age. In fact, I do not consider them first-rate for the table at any age, from their small proportion of breast meat. They are extremely docile, and from their kind and amiable disposition, are great favourites with some. They are very patient under confinement, and to parties having a small run or wishing to keep them out of their gardens, I consider them invaluable. I may say that I have found their chickens very easy to raise, and if hatched early attain a large size. I recollect hatching a brood of the well known buff Cochins on St. Valentine's Day, a number of years ago, and raised nearly all of them. I kept them in a vacant horse-stall in my stable. I think, as a general rule, the coloured varieties are larger than the white, though Col. Hassard had some at the fall show which I think quite equalled their buff relatives.

I shall now proceed to the Brahma Pootra, and I think if I were keeping a large fowl, I should prefer them to the Cochins, as they are better foragers, not so indolent, lay well in winter, if kept in a tolerably warm place, are quite equal in size, and the chickens are very easy to raise. They are not the best summer layers, often wanting to sit all the time, and subject to the same drawback in that respect as the Cochins. They are not quite so patient in confinement as the Cochins. The light Brahmas especially, from their extreme depth of colour, their rich creamy white, and light pencilled hackle, are a particularly handsome bird.

The Dorkings next claim our attention. I cannot speak with so much positiveness in regard to them, never having had any. They are considered, *par excellence*, the English table fowl, though I believe it is questionable how far some of the French breeds have usurped their place in that respect. I think, in point of profit, the coloured Dorkings surpass their white cousins, being larger and more vigorous birds, though, to my taste, not to be compared with the white in beauty. I have always considered the distinctive features between Dorking and Barndoor fowls not sufficiently defined for them ever to become a fancy breed. I believe their chickens are rather difficult to raise. They are fair mothers, and tolerably good layers.

I will now proceed to the Spanish, a breed which, to judge from the large numbers of entries at our Poultry Shows, appear to be rather popular. There is no doubt that, as layers, they may be considered first-rate, laying large white-shelled eggs. I have found their chickens very easy to raise, the young cocks being exceedingly precocious. They are non-incubators, requiring other hens to hatch their eggs. They have, however, one very serious drawback; they are very apt to get frost-bitten, from the great size of their comb and wattles. The cold soon checks their laying. They also moult badly. Upon the whole, I think them better suited to a climate where the mercury does not get below zero. I am sure the owners of Spanish must feel the truth of my remarks, from the result of their experience, after the severe frost we had during the past winter. In fact, several have complained to me of the effect it had on their birds. There is a breed of White Spanish, having the same characteristics as the black, though I do not think they are as beautiful, as the contrast of the white face is not obtained in the white variety. It may not be out of place, as showing the length of time eggs will hatch, after the removal of the cock bird, to state that, a number of years ago, I had a very superior pair of Black Spanish; the cock bird having unfortunately died, I was desirous of saving all the eggs I could, and set eleven that were laid after the cock died. The first five hatched, the re-

mainder were bad, but none of the chickens were strong.

The Games come next on our list, and I think that, take them all in all, nothing can surpass them. They are good layers of rich eggs, very hardy, which I think is a most important advantage, and from their great variety and extreme beauty, are general favorites. They are small feeders, and are, when in good health, always fit for the table, without extra feeding. The hens cannot be surpassed as sitters and mothers. Many think that, from their extreme pugnacity, they would be difficult to rear; but with ordinary care all that may be avoided; in fact, it is astonishing what order a good Game cock will keep in his yard. All the young stags are in dread of him, and in his presence are on their good behaviour.

I now come to the Polands. A great deal may be said in their favor; they are extremely hardy, and from the absence of comb are not so likely to be affected by the frost. They are good layers, but better in summer than winter, and are non-incubators. They are an extremely fancy bird, and like all the Spangled varieties, require great care in the breeding. I do not consider them so good for the farm as some other varieties, as they are more liable to be carried off by hawks, as well as together their top-knots dragged and spoiled in the manure heaps of the barn-yard.

The different varieties of Hamburgs are special favorites of mine, as I consider that, in point of beauty and when well bred, they cannot be excelled. As layers they cannot be surpassed by any other variety. They do not lay quite so large an egg as the Spanish or Dorking, though I think the Spangled and Black are an exception; but they are more continuous layers of most delicious eggs. They are non-incubators, and persons keeping them will not be troubled with chickens unless they get other hens to hatch their eggs. They are rather impatient of confinement, the pencilled ones particularly. But to persons having a good-sized grass run, they are invaluable, as they nearly keep themselves. They are an extremely noisy bird, either singing or cackling all the time.

I am not aware that the Malays require any very particular description. I do not consider them at all a desirable breed to have in the poultry yard, as from their cruel and vindictive disposition, with their great size and strength, they are very apt to prove fatal in their encounters with smaller birds. I should recommend them chiefly as a cross, to get size and weight, not from any merit of their own.

The different varieties of French fowls, which have come into favor lately, require some notice. The principal varieties are the La Flèche, Houdan, and Crève Cœur, specimens of which were exhibited at the last fall show. Of the three kinds, the Houdan seems to find most favor in England, though I think I would prefer the La Flèche, as I think the damp climate of the Old Country, which is so much against them there, would not affect them here. My friend, Mr. Wood, a member of the Association, imported some from Paris a year or two ago, and I believe was very much pleased with them, having found them to be most excellent layers.

There are some few rules that are applicable to all varieties of fowls, without the observance of which it would be unfair to expect any useful results. If many eggs are expected, no hens should be kept, as a rule, after the second year, as after that the fecundity of the hen diminishes considerably. Hens require a certain amount of warmth in the winter, but not stove heat, which is bad.

I have erected a glass shed or house on the south point of my fowl-house, out of some old sashes, where the hens can come out and enjoy the fresh earth without getting in the snow. They have as much buckwheat and screenings as they can eat, plenty of warm straw, green food in the shape of cabbage, an occasional liver, cool ashes to bark and dust in, with a good supply of fresh water. Attention to these particulars has insured me a plentiful supply of fresh eggs during all the past winter.



Township Societies.

To the Editor of THE CANADA FARMER:

SIR,—Having felt somewhat interested in the war of words that has been going on for some time past between the advocates of Township and County Societies, and some ideas occurring to my mind in connection therewith that appear to have been overlooked by our zealous friends, I venture to trespass on your valuable space for the purpose of making a few remarks on the subject. No reasonable person will for a moment pretend to deny that the country has been greatly benefited by our Agricultural Societies. That they have greatly contributed to our present prosperity as an agricultural country, must be evident to every one. They have awakened a spirit of enquiry and emulation in the breast of thousands, whose minds have become more enlightened as to the nature of their calling, and who have thus been stirred up to greater diligence in the prosecution of their business. They have done very much to elevate the calling of the farming community, not only in their own estimation, but also in the estimation of others, who were wont to look on the life of the farmer as one of constant toil and drudgery. They too have seen what wonders may be accomplished even in farming operations by the application of a limited amount of skill and capital, combined with industry and perseverance. Our agricultural exhibitions have enkindled in the hearts of many a feeling of honest pride and heartfelt satisfaction with their position in life, which should be felt by all who thus see gathered together the fruits of their luxurious fields, their richly laden orchards and their growing flocks and herds, while they have the happy assurance that with every returning season their substance is increasing, and that, with the blessing of Providence, they are above want and free from the fear of the fluctuations of merchandize or the embarrassments of trade. Doubtless but few will be inclined to dispute the fact of our having derived very great benefits from the existence of many of our Agricultural Societies, both Township and County. But while we admit all this, we may at the same time very properly enquire if all the good has been accomplished that might have been done. The above are, no doubt, very good reasons for keeping up our exhibitions to a certain extent. But is there not a possibility of carrying the thing too far? It is evident that a spirit of jealousy exists between the County and Township Societies; in some localities they are in direct opposition to each other. Now what is the cause of this, and where is the remedy for the evil? The cause of this opposition, it is clearly evident, arises from the holding of so many exhibitions; it is admitted by all that there are far too many. And if so, much valuable time and means are yearly expended that could be put to other purposes. It is doubtless a great mistake to suppose that all the good has been done that could be accomplished, when the annual revenue is given away by awarding prizes at shows. Much good might still be accomplished by introducing new kinds of seed, and thorough-bred stock, and encouraging a better system of farming; and here is a vast field of usefulness open to the Township Societies, which they can enter and work without coming in contact with the County Societies. In many parts of the country one show in a County would be quite sufficient. Especially is this the case in many of the newer sections of the country, where many small and weak societies have frittered away their means in the getting up of a few small paltry shows, where, perhaps, little or nothing could be shown worth the looking at; and after a few years the novelty of the thing has passed away, the people have become dissatisfied, and cease to take any interest in the affairs of the Society. To remedy this evil, our County friends proposed to swallow up a number of their

weaker neighbours, or starve them gradually to death by curtailing the Government grant. This I believe to be a wrong policy. Would it not be better to assist and encourage the formation of Township Societies, and induce them to occupy a different field of operations from the County Societies? Let them expend their means in introducing new varieties of seeds and improved stock. The introduction of improved stock is evidently the proper work for a Township Agricultural Society, as it is not every neighbourhood that can boast of a private individual of sufficient means and liberality to engage in this expensive business. And again, many are willing to incur the first cost of purchasing a good animal, but they think it useless to commence improving unless they see their way clear to keep up their standard of excellence, and they are aware that to do so requires frequent renewals at a great expense. But when an Agricultural Society engages in this business, and purchases a number of animals, they have a great advantage over a private individual in their not being under the necessity of sacrificing an expensive animal after two or three years' service; by moving them from place to place as often as required, their services are retained by the Society for a number of years. We see among merchants, manufacturers, and in almost every other kind of business, the great advantage of combining the skill and capital of numbers in order to carry on more successfully the business in which they may be engaged. And why should farmers be indifferent to the advantage of acting on the same principle in the carrying on of their operations? In our Township Societies we have the machinery all complete, and in no possible way could it be used to better advantage than in improving the live stock in a township. In conclusion allow me to add, that much as the wealth and prosperity of any country may depend on its commerce and manufactures, still we must look to agriculture as the true source and foundation of all national progress.

JAMES LOVELL.

Brooke, Lambton Co.

Queries concerning the Agricultural Bill.

To the Editor of THE CANADA FARMER:

SIR,—May I ask to have a few questions answered through your columns? They refer to "An Act for the Encouragement of Agriculture, Horticulture, Arts, and Manufactures," passed by the Legislative Assembly of Ontario, with the name of the Hon. John Carling attached to it.

As a rule, I think that Acts of Parliament are worded very carefully, so that it is next to impossible for any one, with average intelligence, to mistake the meaning intended to be conveyed; but, in the Act referred to, I fear there is room at least for a doubt as to its intention, so far as regards Township Societies. For instance, Sec. 42 says that "A Township Agricultural Society may be organized in each Township in Ontario, in which there was not one already organized at the date of the passing of this Act, or in any two or more such Townships together, wherever a sufficient number of persons, not less than fifty, become members by signing a declaration," &c., &c. Now, I do not think it is clearly expressed by the above quotation, whether this section has any reference to Township Societies which were organized before the date of the passing of this Act; for the words "in which there was not one already organized at the date of the passing of this Act," may be intended to prevent a Society being organized at the same time, or in opposition to such existing Society.

I also wish to know if it is necessary in future that all Societies, whether old or new, shall have at least fifty members?

Section 46, Proviso No. 1, says:—"But no grant shall be made unless One Hundred Dollars be first subscribed and paid to the Treasurer of the County Society, and to the Treasurers of the Township Societies within its limits."

I should like to know if the Commissioner of Agriculture means that each Treasurer of the Township Societies must receive one hundred dollars, to entitle the County Society to receive the Government Grant, or does he mean that all the Treasurers of the Township Societies must receive, at least, one hundred dollars in the aggregate?

From Section 48, sub-section 3, it would appear that only new Members, having paid the Membership

Subscription before the 1st of January, shall have the right of voting at the election of the office-bearers, and upon business applying solely to such year, as "all persons whose names are recorded on the books of any such Society, as legal members thereof, under this Act, shall have the right of voting on all other questions submitted to such annual meetings."

The above, in part recited section, does not tell me what I desire to know, which is—if it is necessary that any person, to be entitled to a vote at the annual meeting, must pay his subscription before the 1st of January, and if all members must so pay their subscriptions, or only new ones.

You will very much oblige me by answering these questions, for in a legal matter of this kind there should be no guess-work. I doubt not but there are some other backwoods Secretaries who will be glad to get a comprehensible version of this part of the Act.

A SECRETARY.

Note by Ed. C. F.—By the date of a private note accompanying the above communication, it would appear as though it had been sent some time since, but it has only now come into our hands.

In reference to the first enquiry, it is quite evident, and indeed is clearly expressed in sub-section 1, "That there shall not be more than one such Society in any Township." The section plainly declares that, if no Society already exists, one may be organized, under certain conditions. If such Society has already been established, it is recognized, and while it remains, another is inadmissible. With regard to the number of members mentioned in the conditions, it is meant, that at the first organization there must be at least fifty members. The provision does not affect the number of members of existing Societies, or of newly-formed ones subsequent to their organization.

In reference to Section 46, the meaning is—that the aggregate amount subscribed to the County and Township Societies must be at least \$100, and not that any one Society must have that amount.

The interpretation of sub-section 3, in Section 48, seems also perfectly plain—namely, that to entitle any person, whether new member or old, to vote in the election of office-bearers, for the year next ensuing—that is to vote prospectively—he must pay his subscription in advance; but on all other matters, affecting the business of the past year, any member, legally recorded on the books, is entitled to a vote. No distinction is made in regard to old or new members.

We trust we have been sufficiently explicit to enable our correspondent, and others in like difficulties, to comprehend the scope of the provisions in question.

While on this subject, we take the opportunity of rectifying the number of the chapter which appears on the title page of most copies of the Act. This is set down as chapter twenty-three, but in consequence of a different arrangement having been made since the Act was printed, it now stands as chapter twenty-nine.

A Dilemma

To the Editor of THE CANADA FARMER:

SIR,—I am very much interested in the question of killing the Canada thistle. A recent writer on the subject, in your journal, has gone fully into the question; yet I think it is very hard for any man to come to a definite conclusion, when there is such flat contradiction. He says that summer fallowing is the best mode of propagating the Canada thistle. Now, if we turn to the CANADA FARMER of November 1st, 1866, page 322, we find an article, taken from the *Western Rural*, in which the writer says he had purchased twenty-seven acres of land, and twenty acres of it was in wheat, and nine loads of it was nearly all thistles. He summer fallowed it next year, and sowed it in wheat, and when he harvested it, you could bind all the thistles from the twenty acres in one bundle. Now, I should like to know what "Publicola" would make of that. The fact is, I have a farm of fifty acres rented, and it

is entirely polluted with thistles and wild oats. I intended to summer fallow ten acres of it this summer; but since reading "Publicola's" letter, I have been puzzled what to do with it. I should be glad if he or any other correspondent would tell me what is the best thing I can do with it.

I would just remark that the people of Elma are getting more alarmed about these wild oats than they are about the thistles, and if any of your readers could give me, through the CANADA FARMER, any practicable way of killing these oats, they would be conferring a great favor on the people of Elma.

I would also state that I got one bushel of Mr. Mernery's wheat, last spring, and I sowed it on about three-quarters of an acre of new land, where there had been potatoes twice. I ploughed and harrowed it as carefully as I could. It grew well, but did not produce an extra heavy crop. I had one hundred and fifty-one sheaves, and it turned out thirteen bushels of wheat. This is certainly the best wheat I have ever seen. I do not know where it came from, but a storekeeper in Listowel got a barrel of wheat two years ago, and sold it for ten cents a pound. They call it California wheat, but I could see no difference in the wheat.

EDWARD HAMMOND.

NOTE BY ED. C. F.—The best method of exterminating the thistle and other weeds is a question respecting which thoroughly practical men have given certainly very opposite opinions, probably in part from experimenting under different circumstances. We cannot presume to speak authoritatively on the subject, but as a general rule we believe that *clean seed and deep and thorough cultivation* will supplant any weed with a more useful crop. We have in our own experience succeeded in nearly eradicating the Canada thistle by summer fallowing, in a field so over-grown with the pest that much of the previous crop had not been harvested. In another year, had we remained on the farm, we believe the field would have been perfectly free. We, however, commenced the plan of smothering out the thistle with clover, thickly sown, as recommended by "Publicola."

Oil-Cake—Hedges—Winter Wheat.

To the Editor of THE CANADA FARMER:

SIR,—In a recent number of the CANADA FARMER you stated that you believed oil-cake is manufactured only in Montreal. I wish to inform you that T. J. Cottle, Esq., has been running his oil mill in Woodstock all winter, manufacturing a fine quality of raw and boiled oil, and, of course, oil-cake as well, which he sells at \$30 per ton. Mr. Cottle has a very neat establishment—which includes a scutching mill. The press is a powerful hydraulic, and all the apparatus very complete.

I have been informed that there is a similar establishment at Berlin, I think, where the cake is sold at \$25 per ton. This surely must be cheaper feed than either oats or peas at present prices.

Your Dunville correspondent, writing in the No. for April 1st, in reference to hedges, evidently is unacquainted with the true buckthorn, when he speaks of it resembling the hawthorn in blossom, only the berry being much larger. It must be the thorn that is common all over the country, and which has been tried as a hedge plant by a great many, and in some instances done well. The buckthorn is hardy and free from enemies—either insects or animals—but it lacks the prickles spoken of by your correspondent, and must rely principally on the strength of its branches for resistance, hence it requires longer time to make a fence than more prickly plants. I have hedges six or seven years old, and which will resist sheep only. Two years more, I think, will make it a tolerable fence. It inclines to thicken on

the top, and all the pruning I can give it will not force the under shoots to strengthen. I planted thirty rods of the "hedge locust" last spring, but can only say of it that the foliage is beautiful in the summer season, and that it is as prickly as the osage orange. It is said that it will make an excellent fence in four years. So it was said of the white willow, but plenty of my neighbors have it three years old, and it is not yet strong enough to stand alone. It would not pay an agent to solicit orders for white willow cuttings here just now.

Any one wishing an ornamental as well as useful hedge, should plant the berberry. It has no faults that I am aware of, unless it is that it causes a blight to rest on grain crops in its immediate vicinity.

The hawthorn does not thrive well here. Mice are particularly fond of it. It is usually black with the bark louse, and does not thicken at the bottom as it does in England.

I have not seen, for many years at least, the winter wheat look as healthy and as little winter-killed as it is this spring. This has been a hard week for it, and may injure it yet.

R.W.S.

Woodstock, April 10th, 1868.

WHITE MELILOT.—Mr. John Manning enquires whether the seed of *Melilotus Alba*, recommended by Mr. Kirkwood, can be procured in Canada, &c. We do not suppose it is kept by Canadian Seedsmen, but they could, no doubt, procure it for Mr. Manning from England, with instructions as to the quantity of seed required per acre.

TARPAULIN FOR STACKS.—Can any of our readers reply to the following enquiry by a "Subscriber" from Goderich? "Will you inform me, through the medium of your paper, as to where tarpaulin stack cloths are manufactured, and also the name and address of the manufacturers. In the part of England where I lived, the covering used for large haystacks, during the building, was universally the large sail of a vessel. Would, therefore, thick sail-cloth be as advantageous as regards cost and durability?"

The Canada Farmer.

TORONTO, CANADA, MAY 15, 1868.

The Season.

We are glad to be able to put it on record, that the favourable indications referred to in our article on "The Month," in last issue, still continue, and that, so far, the prospects of the Canadian farmer for the present year are such as to render all grumbling and misgiving utterly inexcusable. Rarely has there been in this country so unvarying and protracted a term of fine weather. Hence spring work has been pushed along with unusual celerity, and a large breadth of land put into crop. The weather has verged somewhat to the extreme of dryness, yet on the whole the seed has been well got in, and the fields that are up, have a very healthy look. Fall wheat never promised better; indeed we hear of very few cases of winter killing, and the only matter of regret is that the experience of the past few years has dictated caution and moderation in reference to this crop until it has come to be grown but sparingly. With so auspicious a season, it is a pity the area of land thus occupied is not multiplied a hundred-fold. Meadows look well, but would be no worse of more rain. With pleasant weather for work, the air has continued somewhat chilly, so as to retard the fruit buds. This, however, is no misfortune, as late blossoms are more likely to ripen than early ones.

Book Notices.

THE CANADA SHORT HORN HERD BOOK.—This goodly volume of 507 pages will supply a want long felt by Canadian stock-breeders. In 1854 a manuscript register of Shorn Horn Cattle was established by the Board of Agriculture, which has been of much service. Something more permanent and more generally accessible was needed, however, and is now furnished in the work under notice, which has been arranged and compiled after the model of the English and American Short Horn Herd Books, and is, we hope, only the first of a long series of similar publications, in which the noblesse of Canadian cattle will have their origin and histories perpetuated.

The rule on which pedigrees have been admitted into the volume, is the same as that adopted in connection with the English Herd Book, viz.: four crosses by Herd Book bulls. Every rule is liable to exception, and there are a few duly noticed, in the Canada as in the English Herd Book. It may be of service to some of our readers, if we quote from the preface the following table giving the amount of pure blood shown by any certain number of crosses.

"Suppose the original dam to be an animal without any Short Horn blood, and that she and her female descendants are bred to thorough-bred Short Horn bulls, the result of the successive crosses in the amount of pure blood obtained, will then be as follows:

1st cross gives 50 per cent pure blood.			
2nd	"	75	" "
3rd	"	87.50	" "
4th	"	93.75	" "
5th	"	96.87	" "
6th	"	98.43	" "
7th	"	99.21	" "
8th	"	99.60	" "
9th	"	99.80	" "
10th	"	99.90	" "
11th	"	99.95	" "
12th	"	99.97½	" "

"The result of the fourth cross thus shows 6.25 per cent., or 1-16th of the old blood of the original dam remaining, while the seventh cross exhibits about 1-100th, and the tenth about 1-1000th of the old blood."

Considering how easy it now is for farmers to get hold of females with a dash of Short Horn blood in them to begin with, it will be seen, from the above table, that there is very little excuse for breeding native cattle, and nothing but want of the spirit of improvement to prevent every farm-yard from having superior animals and a constantly advancing herd in it.

The Canada Herd Book is embellished with a number of lithographic portraits of distinguished Short Horn cattle, "the Duke of Northumberland," perhaps the best bull of the breed, take him for all in all, leading the way, and eighteen other noted bulls and cows following,—among them, of course, the Hon. D. Christie's justly celebrated Athelstaneford females.

Of course it cannot be expected that we should go into a critical examination of such a volume. It would require a large amount of research to do that. We need only say of it further, that it bears marks of careful labour, and must have cost the compiler, Mr. Hugh Thomson, a large amount of painstaking and wearisome attention; that the typographical execution is very creditable to the firm (W. C. Chewett & Co.) by whom it was printed, and that our copy at least is well bound and lettered, so as to be quite ornamental on the book-shelf. We notice that the list of subscribers at the close of the volume is not very numerous, but we doubt not, that now the volume is out, it will command a wide sale. Every intelligent, progressive farmer in the land should have a copy.

AMERICAN CATTLE: THEIR HISTORY, BREEDING AND MANAGEMENT.—This is a book of some 500 pages, from the pen of Lewis F. Allen, of Black Rock, near Buffalo, N.Y., late President of the New York Agri-

cultural Society, Editor American Short Horn Herd Book, and author of some useful hand-books of rural industry. The object of the work, as stated by the author in his preface, "is not only to give a historical account of the Bovine race, to suggest to our farmers and cattle-breeders the best methods of their production and management, but to exalt and ennoble its pursuit to the dignity to which it is entitled in the various departments of American agriculture." From the little examination we have been able to give it, we cannot recommend it too highly. Every farmer should have a library, and this book well deserves a place in it. It appears to be rich in practical information about the breeding and care of cattle, and at the close gives the pith of "Lowson's Modern Farmer," one of the best works ever published on the diseases of cattle, and the best remedies for them.

TRANSACTIONS OF THE ILLINOIS STATE HORTICULTURAL SOCIETY, FOR 1867, pp. 283.

FIRST ANNUAL REPORT ON THE NOXIOUS INSECTS OF THE STATE OF ILLINOIS, pp. 103.

The two publications above named came to hand just as we were going to press with this number of the CANADA FARMER. We must therefore content ourselves with acknowledging the receipt of them, and postpone further notice until our next issue.

Act Respecting Cruelty to Animals.

We have received a copy of a Bill introduced into the House of Commons by the Premier, Sir J. A. Macdonald, the humane object of which is to prevent cruelty to animals, which passed its second reading on the 17th ult., and will, we presume, shortly become law. It is needless to argue the necessity for such a Bill, while there are in the world so many brutes in human form, who have no flesh in their obdurate hearts. Generally it is of no use to reason with such persons, as they are impervious to everything but legal suasion. Perhaps the penalties of the Act in question lean to the side of mercy. A fine of not less than one, nor more than ten dollars, with costs, is lenient enough surely. The Act also gives considerable scope for cruelty in permitting sheep, lambs, calves or pigs, to be bound for conveyance to market a distance not exceeding fifteen miles from the owner's house or premises, such animals not to remain so bound longer than half an hour after their arrival at market. We are unable to see any necessity for binding at all. It is harsh treatment, that may easily be rendered unnecessary by having a crate, small frame, or light wiring upon the vehicle used for transportation. Fifteen miles with a heavy load and slow team implies four hours of painful endurance for the poor dumb creatures so bound. When a butcher goes out to collect animals for the slaughter, the time may be much longer, and the distance actually travelled much further, because of the circuitous route taken in order to call here and there, though by the direct road it may not be more than fifteen miles from the owner's premises to market. We thoroughly approve of the principle and aim of the Bill, though we incline to think a little more stringency would improve it. While making a law on such a subject, it is desirable that there should be no wide meshes or large loop-holes through which barbarians may make their escape from the rod of justice.

PROTECTION OF SMALL BIRDS.—The Legislature of Quebec have passed a law for the protection of insectivorous birds, making it unlawful to destroy or capture any wild birds except birds of prey, wild pigeons, rice birds, kingfishers, crows and ravens, between the 1st of March and the 1st of August. For the true interest of agriculture, some similar provision should have been incorporated with the Game Law recently enacted in this province.

The New Patent Bill.

The new Bill for granting patents is now issued, and provides, among other new features, that the Commissioner of Patents is to have a seal, and that he may mark out such rules and regulations and forms as are necessary. He is to report annually to Parliament.

The chief features of the Bill are as follows:—It provides that any person having been a resident of Canada for at least one year before his application, and having discovered what was not known or used by others before his invention thereof, and not being at the time of his application in public use or on sale in Canada, with his consent or allowance as the discoverer thereof, may, on application, obtain letters patent therefor. The patent may be granted to any person to whom the inventor has assigned or bequeathed. The petitioner for a patent is required to select his domicile at some known and specified place in Canada. Instead of the period of fourteen years in the present law, patents are to issue for five years, and be renewable twice, making the whole period fifteen years. The Government may use the patentee's invention for a reasonable compensation. Patents are to be null within three years, unless the manufacture of the invention shall have been commenced by the patentee in Canada. Patents in all the Provinces shall remain in force, as if this Act had not been passed. The fees are greatly increased under the Bill. At present they are \$20 for fourteen years. By this Bill they are proposed to be \$20 for each period of five years, or \$60 in all. There is also an increase in the other fees charged. Intending applicant may file a caveat in order to cover an application for an invention which he has not yet perfected, which will be kept secret. The Commissioner has the power to repress a patent in certain cases. The applicant must be fully informed of the reasons therefor, and he may appeal to the Governor in Council. All documents are to be open to inspection by the public in the Patent Office. These are in the main the new features of the Bill. It is certainly an improvement on the present. Formerly, only British subjects resident in Canada could obtain a patent. Now, any inventor resident a year in Canada may do so. There is no clause extending patents in Nova Scotia or New Brunswick to the other Provinces, or the Dominion generally.

Dogs

SOCIETY is forbearing to a fault in reference to some of the burdens it carries, and endures without sign of complaint pretty severe exactions. We referred lately to the cost of the dog luxury (!) in a single Canadian township, which strikingly illustrated the truth of this observation, though it bore chiefly upon the amount of loss arising from sheep worrying. But the board of the creatures themselves, when they lead a harmless, innocent life, is no small item of national expenditure.

The March report of the United States Commissioner of Agriculture brings out some facts bearing on both these points. In 1866 *five hundred thousand sheep*, so far as reports were received, were killed by dogs in the United States, and their value was *two millions of dollars*. The number injured, so far as learned, was three hundred thousand, and the loss is estimated at six hundred thousand dollars. On the other point the Commissioner says:

"The cost of keeping dogs, most of them utterly worthless, when calculated for the whole country, assumes startling proportions. The estimate made in the report of 1863, of ten dollars per annum, or less than one cent per meal, cannot be considered extravagant, in view of prices paid for boarding dogs, the cost of keeping large numbers of them in cities, and their almost exclusive consumption of meat. As to their numbers, it is believed by many that they will nearly average one to each family, or about seven millions in the United States. In cities and

towns that average would not be reached, while many a pack of hounds and assemblage of curs of low degree might be found in the ownership of single families. Ohio, with a half million of families, is supposed by many to have a half million of dogs; there are, however, little more than one-third of that number found on the assessor's books. It may be asserted, in view of all the data obtained, as a low estimate, that there are five millions of dogs in the United States, and that their subsistence involves an expenditure of fifty millions of dollars."

SALE OF PRIZE DURHAM BULL.—We learn that Mr. John Snell, of Edmonton, has sold to Mr. Wm. Colburn, of Wilmot, the two-year old Short Horn Bull, "Loudon Duke," by Duke of Marlborough, 3866; dam, Mayflower 3rd by Airdrie, 2748. Loudon Duke was bred by Abraham Renick, Clark Co., Kentucky, and was winner of the first prize as a Yearling Bull at the last Provincial Fair.

Agricultural Intelligence.

Deep Cultivation at Yester

A FEW weeks ago the Marquis of Tweeddale, being Chairman of the Committee on Steam Cultivation, wrote a letter to the Directors of the Highland Society, offering to place a field at their disposal for the purpose of exhibiting the comparative merits of steam and horse-power in breaking up land which had hitherto not been ploughed above seven or eight inches deep. The Directors communicated with the various owners of steam ploughs; but these gentlemen, without exception, declined to send their machines. It then occurred to Lord Tweeddale that he might have in the same field a comparative trial of his ploughs, drawn by two, three, or four horses, with a view of testing the best way of applying horse-power, and also of the expense. The trial came off upon the 5th instant, when sixteen pairs of horses were divided as follows—one four-horse plough six ploughs with three horses, and five with two horses. The horses, as every one knows who has seen Lord Tweeddale's stock, are uncommonly well selected. The ploughs are well adapted for deep ploughing, and the men employed thoroughly acquainted with the work to be done. It would, therefore, be impossible to find horse-power more intelligently applied than at Yester. The field referred to is about a mile to the south-west of the village of Gifford, and is well adapted for a trial of ploughs, being comparatively free from stones, and there can be no doubt that the powerful steam apparatus of Mr. Fowler or others, would have broken it up effectively. It would, however, be very difficult to surpass the work made by the Tweeddale ploughs. The well-known Tweeddale four-horse plough, which has so long been worked at Yester, was at work nearest the road, turning a furrow fully fourteen inches deep, by fourteen inches wide, and the horses working easily.

The three horses yoked abreast were also working easily, turning a furrow of thirteen inches; while in the two-horse ploughs the horses seemed rather heavily strained. They turned a furrow twelve inches deep by twelve inches wide.

The field was visited during the day by several landlords and a number of practical farmers, who generally agreed that the three-horse yoke was the most economical of the three modes of applying the power.

Lord Tweeddale visited the field during the day, and all present were delighted to see the highly esteemed landlord and veteran agriculturist in such excellent health and spirits. A committee of farmers, having been asked by his lordship to inspect the field and the work done, drew up a report of a very satisfactory nature, in which they say:—

"An exact account of the time occupied in ploughing the field of twenty-five imperial acres has been kept by Lord Tweeddale's overseer, and it is equivalent to fifty-four days of a pair of horses working eight hours a day. The Marquis of Tweeddale calculated that the actual cost of a pair of horses, including the ploughman's wages, is one shilling per hour. The expense of ploughing an imperial acre—thirteen inches deep—is therefore 17s 3^d. We have to record our entire satisfaction with the work done, and of the great improvement effected by this deep stirring of the soil. The ploughs are exceedingly well adapted for the purpose, their peculiar construction allowing a deep furrow to be turned without bringing too great a quantity of the subsoil to the surface."—*Bell's Weekly Messenger*.

Preserved Meat from Australia.

We are glad to draw attention to a new process which has been brought under our notice, and which we believe is about to be tried in South Australia. This process is the one which has been patented in New South Wales by Mr. Mort, who appears to be acting for the inventor, Mr. A. Morris. This gentleman, we find, issued a circular about twelve months ago, in which he stated that an experiment was about to be made for the preservation of meat by freezing without the use of ice, and without the meat being touched by any substance except the iron tank containing it. "Should this experiment," said the circular, "be successful, an economical plan will have been devised, by which the superabundant meat of the Australian Colonies can be introduced into the European and Asiatic markets in the same condition, both in regard to freshness and quality, as it is daily supplied in our own local markets. Ships can be fitted with the apparatus, by which, without injury to their capacity for carrying any other cargo, they can convey all over the world fresh meat for sale, or for the use of their crews and passengers during the voyages from and back to our ports, and without any risk of the meat spoiling." In order to show how this great advantage was to be gained, the circular proceeded to state that a model of the apparatus would be exhibited, containing a large quantity of fresh animal food—meat, fish, poultry, &c., &c.—and that the experiment would be submitted to the severest possible test. The investigation took place, and the result now is that we have a process in full operation by which meat—many hundred tons in one apparatus—can be easily frozen and kept in a state of refrigeration without losing its flavour and without becoming putrescent when thawed, as meat does when kept in ice, or frozen in the open air. In fact, meat preserved by this process, after having been kept for months, has been eaten at the table of the Governor of New South Wales, as well as in many private houses, without any one being able to distinguish it from similar food just obtained from the butcher's shop. This invention appears to be an application of Faraday's discovery "of the liquefaction of certain gases by pressure, and the capacity of such gases for the absorption of heat on their release from liquefaction." The inventor, at all events, is convinced of the practicability of supplying the English market with fresh meat at a price far below the present rate, and with a view to this he has already left Sydney for the mother-country by the mail steamer. Mr. Mort has already patented the new process in the Australian Colonies, and additional protection is about to be obtained in France and England.—*Adelaide Observer.*

Ploughing Match.

A PLOUGHING match, under the auspices of the Township of Hamilton Agricultural Society, came off on the Farm of Mr. Jos. Hore, Camborne, on Wednesday, the 15th of April. The weather was very favourable, and a large number of spectators were present. There were twenty-two ploughs entered, all of which ploughed. The Judges were Messrs. W. Underwood, J. Mitchell, and — Russell. The following was their award.

CLASS NO. I.	
1st prize, Wm. Robinson.....	\$10 00
2nd " James Crawford	8 00
3rd " James Raby	6 00
4th " M. Smith	4 00
5th " R. Defoe	2 00

CLASS NO. II.	
1st prize, William Mulholland, from Haldimand Township, a Spring Pump, presented by Jno. Lawless, of Baltimore, valued at	10 00
2nd " Nicholas Doidge.....	8 00
3rd " A. Ferguson	6 00
4th " Thos. Aitchison	4 00

CLASS NO. III.	
Boys under Eighteen Years of Age.	
1st prize, William Wright.....	8 00
2nd " William Isaac	6 00
3rd " James Davidson, a pair of Whippetrees and a Neck Yoke, presented by Geo. Hoog, Esq., of Baltimore, valued at.....	5 00
4th " Samuel Berry, a pair of Brides, presented by Mr. Thomas Haigh, of Baltimore, valued at	4 00

Agricultural Societies.

ADDINGTON.—In accordance with the new Agricultural Act, a public meeting, called by L. J. Hooper, M.P.P., was held at Harrowsmith on the 27th April, inst., to organize an Electoral Division Agricultural Society for Addington. The attendance was good, for the busy season of the year; about eighty persons were present.

It was Resolved, to adopt the By-Laws and Rules of the late Addington County Society.

The following gentlemen were elected as the office-bearers for the present year, namely:—J. D. Ham, of Newburgh, President; Schuyler Sibley, of Portland, first vice do.; Wm. Laurence, of Lohorrough, second vice do.; J. B. Aylsworth, of Newburgh, Secretary-Treasurer. Directors for Portland, Samuel Stuart and Geo. Denison; for Lohorrough, Wm. Colwell and James Lacey; for Newburgh, R. F. Hope; for Camden, Miles Stormes and John Wager; for Sheffield, James Aylsworth and John Stuart. As Auditor, Douglas Hooper, of Newburgh, and Joseph Watson, of Harrowsmith.

Resolved—That a copy of the CANADA FARMER be furnished to each member who pays a subscription of one dollar and twenty-five cents.

NORTH RIDING OF OXFORD.—President, John Craig; vice do., John Dunlop and James Lockhart; Sec-Treas., R. W. Sawtell. Directors.—Messrs. Parker, Butch, Pepper, Towars, Ross, Williamson and Watt.

Nova Scotia Agricultural Exhibition

Our friends in Nova Scotia are making preparations for a great Agricultural and Industrial Exhibition, to be held in the City of Halifax, during the second week in October, from the 5th to the 10th, inclusive. We have received copies of the prize list, which is very complete, and on a liberal scale, including all the departments and classes usually embraced in our own exhibitions. The Horticultural programme is especially full, and we notice again the energy and liberality of the Fruit Growers' Association, who have voted the sum of \$200 towards the prize list in this department. Prizes are offered, not for the best winter, fall, cooking, or dessert apples, as with us, but for the best dozen of special varieties. The same classification is adopted with pears and grapes, and is, we think, a commendable feature in the arrangement.

The competition is restricted to Nova Scotia, except in the article of models for vessels, in which they challenge the world. We very cordially wish success to the undertaking, and we trust that the results will be so encouraging as to lead to an annual exhibition, and an extension of the competition in all the departments to the sister Provinces, and the United States.

A Massachusetts farmer has paid \$300 for a barrel of the Rose potatoes for seed. D. S. Heffron, of Utica, N. Y., has sold a New Jersey farmer 125 bushels for \$180 per bushel—or \$10,000 for the lot.

Strawberries, blackberries, and almost every kind of garden vegetables have commenced arriving in Chicago, from the Gulf of Mexico regions, via the Mobile and Ohio and the Illinois Central Railroads.

PRODUCTION OF BEETROOT SUGAR IN FRANCE.—The last return of the manufacture of beetroot sugar gives the total quantity produced, from the opening of the season on the 1st September down to the end of February, at 206,61 tons, or 2621 tons more than in the corresponding period of the previous year. The stock on hand on the 1st September being included, the quantity disposable was 228,261 tons. Of that total, 181,731 tons were taken for exportation, consumption, or distilleries, and the remainder was in the manufactories, either in a finished or unfinished state. The entrepôts received, with the balance of last year's stock, 175,632 tons, and delivered 127,361 tons. There consequently remained on hand over 48,000 tons.

CLIFFORD.—The inhabitants of Clifford have agreed for the construction of a steam grist mill. It is to be in running order by the first of November next. There is some talk of erecting a carding and woollen factory the ensuing summer.

MAPLE SUGAR.—According to the last United States census, about forty million pounds are made in the whole country, and one and a half million gallons of syrup. The New England States, New York, Michigan and Ohio, make the most. Nearly one-half of the whole quantity is made in New York and Vermont. The value of this production at the present market prices is not far from eight millions of dollars. There is no good reason why more system should not be introduced into the industry, and the business be generally extended. Why should not better varieties of the sugar maple be sought out and multiplied by nurserymen, and orchards be planted on a large scale? There is no danger of a glut in the sugar market, and if the product were multiplied ten-fold, the price would be still remunerative. The tree will flourish in elevated positions, and on rocky land quite too rough for tillage, and its cultivation requires very little care.—*American Agriculturist.*

EMIGRANTS FOR CANADA.—The *Pall Mall Gazette*, of the 16th April, says:—"About 150 emigrants from the East-end, including men, women, and children, will sail this morning from the Thames, in the screw steamer 'St. Lawrence,' bound for Quebec. The men, for the most part, are blacksmiths, fitters, sawyers and labourers, in the prime of life, with families of various ages. They go out to Canada at the sole expense of the East-end Emigration Committee; and they have been selected by a committee of gentlemen connected with the locality, including Mr. Samuda, M.P.; Mr. Green, shipbuilder; Mr. Currie, Mr. C. H. Wigram, Mr. Buttevant, and the Rev. J. F. Kitto, incumbent of St. Matthias, Poplar, among others. Towards this object Lord Overstone has handed over £800, the balance of the Herbert Emigration Relief Fund, set on foot for a kindred purpose some years ago, and the Mansion House Relief Committee recently contributed about £200, the balance remaining in their hands on closing their accounts. None of the emigrants who go out by the 'St. Lawrence' have been in the receipt of parochial relief at any time during the prevalent distress. On arriving at Quebec they will be put into communication with Mr. Stafford, the Government emigration agent there, who will make arrangements for sending them to parts of the country where labour is most in request. Each of them is furnished with a plentiful supply of suitable clothing, with provisions and books for the voyage, and, besides the assistance which the Government agent at Quebec is expected to render in forwarding them to their destination, a little allowance in money will be made to each family on arriving there."

FISH CULTURE IN ENGLAND.—The experiments successfully carried out at Huningua of course attracted the attention of every person connected with the great fisheries throughout Europe. The British proprietors and lessees of river fisheries at once began to make their own experiments, the largest and best known of which is that of Stormontfield, on the banks of the Tay. The method adopted is to capture the gravid fish, procure the ova by manipulation, and artificially impregnate by the addition of the milt, as they do in the French establishment. It is scarcely necessary to describe the egg-boxes in which the hatching process is carried on. They may be seen in the shop windows of several of the sporting newspapers—indeed, the artificial process of rearing fish from the ova has become quite a fashionable amusement, and is now familiar to most readers. Upwards of a million fish have already been passed on to the Tay, and a rise in the rental of the fishery of the river of ten per cent. has been the result. All the fish so reared were marked, and at an early period of the experiment it was found that forty fish out of every thousand had been so marked. One tenth of the fish taken in the Tay have been, it is asserted on the best authority, artificially reared at Stormontfield. Mr. Buest ("Peter of the Pools"), who manages the establishment, gives a very clear idea of the gain to the river by the artificial process of raising. He states that of the thirty thousand ova produced by the salmon in a natural state only five fish survive fit for the table. The same number of ova hatched in the establishment, and reared carefully in the pools, turns out eight hundred fish, and this number is a very low estimate.



The Vegetable Garden

To the Editor of THE CANADA FARMER:

Sir,—In making a few brief hints on the selection, preparation and cultivation of a vegetable garden, I would say to the person intending to prepare one, that the great secret of successful gardening is commencing well, and taking care that what is done is done thoroughly.

In choosing a place for a garden, select a gentle slope, towards the south if possible, and sheltered on the north side by bush or hills, but when there are none, it should be protected by a high and tight board fence or wall; when thus sheltered it, will be several days earlier. The best soil for a garden is a sandy loam, but in the absence of this kind of soil from any place convenient to the residence, select the most suitable plot, and thoroughly underdrain it. Afterwards subsoil, or loosen the soil to the depth of two feet, without bringing any of the subsoil to the surface. Now haul some sandy loam to the garden, so as to cover it to the depth of five or six inches; if there is none on your farm, there is scarcely a place but what has some within a short distance. Manuring will be the next thing under consideration. If the soil is very light, ashes, well-rotted manure, and a little clay will effect a change; if heavy, ashes, manure, sand and lime will be beneficial. The size of the garden will depend upon the size of the family. It may be from one quarter to one half an acre; better too small than too large; for it is easy to make it larger if required, and there is nothing so unsightly as to see one end of a garden all grown over with grass and weeds. Now build a substantial fence, proof against garden thieves and fowls, for both of these classes are detrimental to gardening. All the time and money spent in the proper preparation of the soil is well spent; it is hardly possible to do too much in this way; it is the foundation of all after culture. It is like the foundation of a building; if an error has been made in this, it matters not how fine the superstructure may be, loss and disappointment will generally be the result. It does not cost much to put a small garden in good condition, while every dollar spent on its cultivation, when in bad order, is so much money wasted. But if put in good condition at first, it is both a pleasure and a profit to the owner. The implements necessary for garden culture are not very expensive. Only a few principal ones need be got at first, if expense is some consideration. A line will be found necessary, to lay out the garden walks and beds; a spade, a shovel, and a good hoe are indispensable, and these implements nearly every farmer has already. To draw drills, a drill-marker will be required, which every handy person can make; an iron tooth rake will be found necessary to finely pulverize and level the surface of the beds. A garden-trowel for transplanting, and a watering pot, made of good material, with a substantial wheel-barrow, are among the necessary implements for the garden. A necessary appendage for a garden is a hot-bed, so as to have vegetables early; for the majority of farmers do not reside near a professional gardener. A very good mode for constructing one will be found in the CANADA FARMER, vol. III, page 44. Also in the same volume, page 76, will be found a good plan for laying out a garden. No provision, however, is made in it for currants or gooseberries, but suitable places will readily suggest themselves to the reader, for these

useful fruits. The biennial and perennial plants should have the warmest plots in the garden.

In the next place, the selection of pure and fresh seed will be found necessary to give good satisfaction to the cultivator. The kind and quantity of the different vegetables and fruits should be left to the taste of the families, but it is not best to attempt to raise too many varieties at first. The pleasure and profit in gardening does not consist in having a great variety, but in growing everything well; many in commencing gardens want to grow everything valuable or new. This causes great trouble, expense, and ends in little satisfaction. The best method is to begin with a few good, tried plants, and add to their number as circumstances require and experience increases. By all means keep trees out of the garden; this is one great error which most farmers fall into, so that in a few years the garden looks more like an orchard than what it is intended to be. A manure-heap should be kept in one corner of the garden, upon which throw all the weeds and rubbish of the garden, together with the slops of the house, and turn it over two or three times, when an excellent compost will be made. Declare a war of extermination with all weeds, and you will have full satisfaction for all your trouble.

Ontario.

CULTIVATEUR.

Transplanting Fruit Trees.

DRY weather the first year kills many thousands of newly transplanted trees. The condition of the weather and season cannot of course be avoided, but the trees can be put in a condition to stand a moderately dry season. Most persons, on receipt of trees, are in too great haste to plant them out; and particularly so if the trees have been received from a great distance. I myself used to think it necessary to put the trees into the ground as soon as received, but have found out by sad experience that this plan will not always work well. If they have been received from a short distance, and are perfectly fresh, then it will do to put them in the ground immediately; but if they have been long on the road and are much dried up, then they must be restored before planting. To restore trees, bury their roots in the ground with their tops in a leaning position near the ground, so that they can be shaded and watered conveniently. If they had started to grow when received, keep them in the ground until the whole leaves become a dark healthy green; or if they were dry, keep them in the ground until they commence to grow. If the trees have become very dry, it will be necessary to bury them entirely, root and branch, by putting them in a trench and covering them with earth that will touch every part of their roots and branches. They must be watered frequently, and should remain in this condition from a week to ten days. Trees that have become quite dry, may be perfectly restored when treated in this manner, and when transplanted will grow vigorously, while those that were not treated in this way will be very apt to die.

The tops of trees need moisture as well as the roots, and when they are exposed to the wind and sun, instead of receiving moisture, they are dried out and killed. When setting out the trees, dig the hole large enough to admit the roots without breaking or bending them. Spade the ground up loose at the bottom and leave the middle considerably higher than any other part. This will induce the roots to grow downward in their natural position, instead of forcing them to grow upward, as is sometimes the case when they have been crammed into a small hole. Place the tree about the same depth in the ground that it stood in the nursery, then fill all spaces underneath and cover the roots with fine earth with the hands, leaving no openings for the air, but completely covering and touching the roots firmly on every part. After filling the hole about half full, pour in a pail of water and give it time to settle before filling in any more dirt. When the hole is filled up, press the earth around the tree to support it in an upright position. Cover the fresh dirt around the tree with straw or litter to the depth of four or six inches, which will obviate the necessity of watering, unless the season should be an extremely dry one. The frequent waterings which many people give their newly transplanted trees are oftener an injury than a benefit to them. If the season be an extremely dry one, it will be necessary to water trees once in two or three weeks. This should be done by removing the straw and loose dirt at the top, and pouring on a pailful of water. After the water has settled, replace the dry dirt and straw as before. Do not leave the earth around the tree naked and exposed to the sun, for it will bake and frequently

kill the tree. Watering the tops of the tree in the evening may be done as often as is convenient, with great advantage. It softens the bark and buds, and enables the tree to put forth its tender leaves directly. As to the time of planting trees, I will say that I have always had the best success with spring planting; although autumn planting has many advantages when trees are brought from a distance. But even in this case, I do not know but what it would be better to keep the trees over till spring and then plant them. Trees can be safely wintered in almost any climate by burying their roots in deep trenches. They should be placed in a leaning position, with their tops so near the ground that they may be covered with straw, corn stalks or leaves, to shelter them. Be careful and not cover the tops so closely as to smother them, for they require a small quantity of fresh air to keep them in a healthy condition.

If all these observations are heeded, in transplanting trees of any life at all, they will be almost certain to grow and do well.—Wis. Farmer.

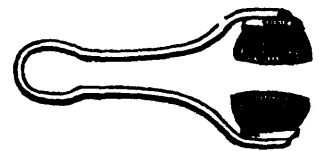
The Nursery Business.

WE are glad to learn that the nurserymen have been doing a brisk business the present spring. The season has been an extremely favourable one for lifting and planting trees, and it is well that it has been so fully improved. It gives us especial pleasure to learn that a very large proportion of the orders filled have been from farmers, and that the good work of orchard and shrubbery planting is going on most satisfactorily in all parts of the country. When visiting the Toronto Nurseries, the other day, we were surprised and pleased to see what an extensive clearing out had been made by the spring demands. Mr. George Leslie, jun., assured us that had there been on hand three times the stock there was, it could have been readily sold, so thick and fast did the orders come in. This is, no doubt, owing partly to the well-earned reputation of the nurseries in question, but it is also an evidence and result of the growing interest in fruit culture and rural adornment, of which there are so many encouraging indications on every hand.

To make Cuttings Grow

A correspondent of the Wisconsin Farmer says:—“I used to have a great deal of trouble to make currant and gooseberry cuttings or slips grow, until I tried the following plan: I boiled some potatoes until they were nearly done, and then stuck one on each slip and put it in the ground. Every slip sprouted and grew very well all summer, with but one or two exceptions. The idea of putting the boiled potatoes to the end of the cuttings was to furnish and keep moisture enough for them to grow, until the roots became large enough to gather this moisture and substance from the soil. I never tried it on grape cuttings, but do not see any reason why it would not do as well with grapes as anything else.”

APHIS BRUSH.—This very useful little implement was invented by the Rev. E. Bell of Colchester. It consists of two circular brushes, one inch in diameter, formed of very soft bristles, about three-quarters of an inch long. The handle is made of steel and is



elastic. Each leaf or shoot is brought between the two brushes, which are gently but firmly pressed together and drawn over the surface of the leaf, by which operation the aphides are removed without injury to the plant. It will be found very useful to those who keep plants in living rooms, or possess a small conservatory, but have no convenient means of subjecting their flowers and plants to fumigation with tobacco. The tediousness of the operation will, of course, prevent the use of the Aphis Brush on the large scale.—Farmer (Scottish).

Entomology.

Antennæ of Insects.

In carefully examining the various parts and organs of insects, we are generally able, without much difficulty, to determine their special functions and properties; but there is one set of organs which has always been a puzzle to the student of natural history, viz., the *Antennæ*, or "Horns," as they are commonly termed. What is the real use of these appendages to the head, so universally found in all orders and kinds of insects, we are only able to guess at; what want of the insect they supply, or what sense they are the channels of, has not yet been ascertained with any degree of certainty. The difficulty is, that we and all animals whose functions and faculties resemble our own at all, and with which we are therefore better acquainted, have no organs that can be compared with these antennæ, or that resemble them in the least; we have thus no ground of analogy to go upon, but must base our views entirely upon the results of experiments. It is evident that they are used to a considerable extent as organs of feeling, and they have long been thought by many to be organs of hearing as well; at any rate the insect appears to employ them in deriving some sensations from the air as well as from surrounding objects, and in the case of ants we see them used apparently as organs of communication.

The late Dr. Clemen, in his valuable monograph on North American Sphingidæ (Hawk Moths) gives a detailed account of some experiments he made upon the antennæ of our largest Emperor Moth (*Samia Cecropia*). He states that he had long thought that the well-known habit of moths of spinning with their heads downwards, on any surface they chance to come in contact with, when they have singed their antennæ in a flame, was the mere expression of pain, and not caused by any loss of power of directing their movements; but that his experiments on these organs seemed to point to quite a different reason. He first tried the effect of cutting off the antennæ of a specimen that had just come out of its cocoon. When night approached, the insect having its wings then fully expanded, made no attempt to fly away, but remained quite docile, and permitted itself to be handled, without any desire to escape, or sense of danger. Upon being thrown into the air it seemed to have no control over its wings, but fell helplessly to the ground, and when forced at last to use its wings in flight, it appeared to be utterly unable to guide itself, and had completely lost all its usual power of hovering in the air. On other specimens, he made the experiment of cutting off only a portion of the antennæ at a time, and found that the more he cut off the less power the insect had over its wings, till at last, after finding itself quite unable to guide its flight, it ceased to employ its wings at all, and remained perfectly passive and helpless. From these experiments, he drew the inference that "the antennæ, instead of being the organs of any special sense, are in Lepidoptera instruments of atmospheric palpation, having especial reference to the action and use of the wings during flight." Of course, these experiments afford us no insight as to the uses of the antennæ of ants and other insects that are provided with these organs, even when destitute of wings.

But though we are unable to discover the exact objects and purposes for which insects are provided with these curious appendages, we yet cannot but admire their manifold beauties and wondrous variety of structure. Sometimes they are mere threads or bristles, at others they resemble saws, clubs, feathers, whips, strings of beads, spindles, combs, or even the leaves of a book; sometimes they are very long and composed of many joints, at others they are short and inconspicuous, with as few as only two joints. Some of the wood-boring beetles have antennæ five or six inches in length, with between

twenty and thirty joints in each, and a little moth, about a quarter of an inch long, has them five times her own length. This long-horn moth (*Adela*) is thus described by Mr. Wood.—"It sits on a leaf, basking in the glaring sunbeams, while its antennæ, waving about in graceful curves, are only to be traced by the light that sparkles about them. They are as slender as the gossamer threads floating in the air, and, like them, only seen as lines of light. They are too delicate even for Queen Mab's chariot traces. The grey-coated gnat might use one of them as his whip; but it would only be for show, as becometh the whip of a state-coach; for it could not hurt the tiniest atomy ever harnessed. And yet the little *Adela* flies undauntedly among the trees, threading her way with perfect ease through the thickest foliage, her wondrous antennæ escaping all injury, and gleaming now and then, as a stray sunbeam touches them."

We have referred above to the apparent use of the antennæ as organs of communication in ants; Kirby and Spence thus describe their language, if it may be so termed, as expressed by these organs. "When the military ants go upon their expeditions, previously to setting off they touch each other on the trunk with their antennæ and forehead; this is the signal for marching, for as soon as any one has received it, he is immediately in motion. When they have any discovery to communicate, they strike with them those that they meet in a particularly impressive way. If a hungry ant wants to be fed, it touches with its two antennæ, moving them very rapidly, those of the individual from which it expects its meal."

The same authors quote Huber's experiments to show that these organs have the same use with bees. "He wished to ascertain how, when they had lost a queen (intelligence which traverses a whole hive in about an hour), they discovered the sad event. He first divided a hive by a grate, which kept the two portions about three or four lines apart; so that they could not come at each other, though scent would pass. In that part in which there was no queen, the bees were soon in great agitation; and as they did not discover her where she was confined, in a short time they began to construct royal cells, which quieted them. He next separated them by a partition through which they could pass their antennæ, but not their heads. In this case the bees all remained tranquil, neither intermitting the care of the brood, nor abandoning their other employments; nor did they begin any royal cell. The means they used to assure themselves that their queen was in their vicinity, and to communicate with her, was to pass their antennæ through the openings of the grate. An infinite number of these organs might be seen at once, as it were, inquiring in all directions; and the queen was observed answering these anxious inquiries of her subjects in the most marked manner; for she was all ways fastened by her feet to the grate, crossing her antennæ with those of the inquirers. Various other experiments, which are too long to relate, prove the importance of these organs, as the instruments of communicating with each other, as well as to direct the bee in all its proceedings."

The Earth-Worm.

We have been applied to by Mr. Thomas Good, of Richmond, for some information respecting the common Earth-Worm. He desires to know "whether they are an injury to the soil, and if so, what would be the best way to banish them;" and he further states that "there are some fields in our neighbourhood polluted with them; one thing I know, they make the land very hard to plough."

We fear that Mr. Good has rather jumped at a conclusion. His land is hard to plough, and there are worms in it, therefore worms make the land hard to plough! Now, in reality, the very opposite is the case, instead of making the ground hard, the worms are doing their best to improve it. Their great office is to under-drain and till the ground, by burrowing through it in every direction, and thus loosening it and rendering it permeable by air and water; they do for the under soil what digging and ploughing do for the upper. In the first number of last year's volume of the CANADA FARMER (vol. iv, 1867, page 8), we

gave an account of the earth-worm, and some of the benefits we derive from it; to which we beg to refer our correspondent. It is true that it is sometimes injurious in gardens from eating off, at night, young and tender vegetables; but it is admitted on all hands, that the good done by this animal to ploughed fields, pastures, and meadows, more than counter-balances any robberies it may commit in the garden, while even there it is of great use. We should be very sorry indeed to suggest any method for its destruction.

The Apiary.

Bees and Fruit Blossoms.

The people of Wenham, (Mass.) have voted, by a two-thirds majority, that no bees shall be kept in the town; they have judged that bee-keeping and fruit-raising are incompatible, and that bees are a nuisance. In reference to this subject the *Bee Journal* remarks:—

A silly prejudice against bees is entertained by some fruit-growers, based on the notion that the crops of fruit are injuriously affected, both in quality and quantity, by the visits of bees during the blossoming period. A more unfounded notion, or one deriving less support from observation and science, can scarcely be conceived. Yet it regularly looms up once or twice in a century, and creates as much alarm and consternation among the wisacres, as the appearance of a comet used to do in by-gone days.

Repeated instances of the resuscitation of this prejudice are presented in the history of bee-culture in Germany, especially in the period between 1530 and 1800. On some of these occasions it was so widely prevalent and so rabid in its demonstrations, as to constrain the almost total abandonment of bee-culture in districts where fruit-raising bore away. To the aid of this, came the substitution of cider and beer for the ancient mead or methuegin, as the popular beverage; and amid such opposition and discouragement, bee-culture rapidly sank to be of very subordinate interest, except in some favourable localities.

In 1774, Count Anthony, of Torrings-Seeffeld, in Bavaria, President of the Academy of Science at Munich, striving to re-introduce bee-culture on his patrimonial estate, found in this generally prevalent prejudice the chief obstacle to success. To overcome it he laboured assiduously to show that bees, far from being injurious, were directly beneficial in the fructification of blossoms—causing the fruit to set by conveying the fertilizing pollen from tree to tree and from flower to flower. He proved, moreover, by official family records, that a century earlier, when bees were kept by every tenant on the estate, fruit was abundant; whereas then, when only seven kept bees, and none of these had more than three colonies, fruit was scarcer than ever among his tenantry.

At the Apiarian General Convention, held at Stuttgart, in Wirtemberg, in September, 1838, the subject of honey-yielding crops being under discussion, the celebrated Pomologist, Professor Lucas, one of the directors of the Hohenheim Institute, alluding to the prejudice, went on to say:—"Of more importance, however, is an improved management of our fruit trees. Here the interests of the horticulturist and the bee-keeper combine and run parallel. A judicious pruning of our fruit-trees will cause them to blossom more freely and yield honey more plentifully. I would urge attention to this, on those particularly who are both fruit-growers and bee-keepers. A careful and observant bee-keeper at Potsdam, writes to me that his trees yield decidedly larger crops since he has established an apiary in his orchard, and the annual product is now more certain and regular than before, though his trees had always received due attention."

Some years ago, a wealthy lady in Germany established a green-house at considerable cost, and stocked it with a great variety of choice native and exotic fruit-trees, expecting in due time to have remunerating crops. Time passed, and annually there was a superabundance of blossoms with only very little fruit. Various plans were devised and adopted to bring the trees into bearing, but without success, till it was suggested that the blossoms needed fertilization, and that by means of bees the needed work could be effected. A hive of busy honey-gatherers was introduced next season; the remedy was effectual—there was no longer any difficulty in producing crops there. The bees distributed the pollen, and the setting of the fruit followed naturally.

The Household.

Yet a Little Sleep.

MEN in the present age live fast. The amount of competition in every calling renders it necessary for almost every man to exert himself to the utmost to procure the very means of subsistence. Science, art, commerce; all the industries are feverishly busy; the Press teems with multitudinous productions, unapproached before in their variety, number, and the dispatch with which they are sent forth, at least, if not always so sterling and solid as the works of former times; steam and electricity are enlisted in what may truly be called the race rather than the pilgrimage of life. And if, with all this fast living, the term of life is not shortened, it is because science has done her share in counteracting, in various ways, the exhausting tendencies of the age. The growing insight gained into the laws of health, together with the improvements in the healing art, have in a very marked degree diminished the mortality among children and young persons; while the comforts and conveniences of an advanced civilization have contributed not a little to mitigate the attendant evils of luxury on the one hand, and over-strained mental activity on the other. It may have been needful in the past to urge to industry and effort; it is now, we think, more frequently necessary to enjoin rest and relaxation. Amongst other things, in the matter indicated at the head of this article there is often serious misapprehension and error, amongst both the well-meaning and the selfish and inconsiderate, either in what they allow themselves, or what they exact from others.

Sleep is the most efficacious and most essential restorative for the wear and exhaustion of the system, produced by mental, nervous, or muscular excitement and activity. A due amount of sleep is just as important in the preservation of health, as a sufficient quantity of food. Indeed there are many cases in which a large modicum had better be abstracted from the daily meals, than an hour or two deducted from the period of slumber. Early rising is no doubt an excellent habit, but is not unfrequently too indiscriminately recommended. We have all seen or heard from zealous advocates of the practice, very ingenious calculations of the number of years a man may add to his life, as it is called, by an hour or two daily gained in the time of rising. Now, the calculation is often grievously at fault, and the very opposite of the assertion may sometimes be the true statement of the case. A man does not necessarily add to his life in any sense the hours which he takes from his nightly rest. He may shorten his days by thus prematurely exhausting his powers, and he may render his working ability, either of head or hand, less energetic and efficient while it lasts, in the vain attempt to violate Nature's laws, and curtail the season of repose and reparation. Within the limited scope of the writer's observation, this has been exemplified in more than one melancholy instance. One striking case in point especially presents itself, in the short career of a physician, a man of surprising energy and indomitable will, who made it a rule never to retire to rest before two or three o'clock in the morning, supplementing a hard day's professional work with literary labor (for he was a voluminous writer), yet always rising by seven to commence another day's routine of toil. This man's life seemed a perpetual battle against nature, who would often assert her claims in the most unmistakable manner. In spite of all his efforts, he would drop asleep in the saddle, over his meals, and at other most inconvenient times and places. As might be expected, he was perpetually threatened with disease of the brain, and notwithstanding every care and precaution, except a proper amount of sleep, succumbed at length to the avenging malady. Sleeplessness, it is well known, is

a common precursor, and occasionally the cause of mental derangement.

Admitting or passing over these general statements, it may be asked what is an explicit rule in the case? What amount of sleep does a man require? An eminent English divine used to express his opinion thus: five hours for a man, six for a woman, and seven for a hog! This may be a nice and terse way of laying down the law; but give us, nevertheless, the hog's allowance, if not a little more. No exact rule can be given, equally applicable to all. Differences of circumstance, age, temperament, and constitution, require, in this matter, to be taken into account, and vary the needful and healthy proportion between the hours of rest and activity—sleeping and waking. Generally the young require more sleep than the old, the man of active life more than the sedentary, the nervous, excitable temperament more than the phlegmatic. Nature, if only allowed fair play, will commonly prove the safest guide in each case.

We would strenuously advocate early retiring. Then early rising becomes easy and profitable. Late hours, whether devoted to pleasure or to work, are a violation of the laws of health, and cannot be indulged in with impunity. Let children especially go to bed early; they will spontaneously wake when they have had sufficient sleep, and it is cruel to rouse them sooner. Let masters be considerate in this matter; and if they wish their laborers to make an early start in the morning, be careful not to prolong the day's work unreasonably, or rob their dependents in any measure of a healthful amount of sleep. With a slight modification, we commend the Irishman's logic, who, after having indulged in an extra morning's snooze, and commencing his day's work in consequence later, made the circumstance a plea for leaving off earlier than usual, for it would never do, he said, to be late at both ends of the day. We may, at least, take a hint from Pat, and safely lay it down as a general rule, that it is not well to be late at either end of the day.

How to Act when the Clothes take Fire

THREE persons out of four would rush right up to the burning individual, and begin to paw with their hands without any definite aim. It is useless to tell the victim to do this or that, or call for water. In fact, it is generally best to say not a word, but seize a blanket from a bed, or a cloak, or any woollen fabric—if none is at hand, take any woollen material—hold the corners as far apart as you can, stretch them out higher than your head, and, running boldly to the person, make a motion of clasping in the arms, most about the shoulders. This instantly smothers the fire and saves the face. The next instant throw the unfortunate person on the floor. This is an additional safety to the face and breast, and any remnant of flame can be put out more leisurely. The next instant, immerse the burnt part in cold water, and all pain will cease with the rapidity of lightning. Next, get some common flour, remove from the water, and cover the burnt parts with an inch thickness of flour, if possible; put the patient to bed, and do all that is possible to soothe until the physician arrives. Let the flour remain until it falls off itself, when a beautiful new skin will be found. Unless the burns are deep, no other application is needed. The dry flour for burns is the most admirable remedy ever proposed, and the information ought to be imparted to all. The principle of its action is that, like the water, it causes instant and perfect relief from pain, by totally excluding the air from the injured parts. Spanish whiting and cold water, of a mushy consistency, are preferred by some. Dredge on the flour until no more will stick, and cover with cotton batting.—*Scientific American.*

BEWARE OF BENZINE.—From the facility with which it removes grease spots from fabrics, this substance has come to be regarded almost as a household indispensable. But few persons, however, realize the explosive character of benzine or the dangers attending the careless handling of the liquid. Being the most volatile and inflammable product resulting from the distillation of petroleum, it vaporizes with great rapidity, so that the contents of a four-ounce vial, if overturned, would render the air of a moderate-sized room highly explosive. The greatest care should be exercised in handling this substance, in proximity to fire, and it is important to remember that the vapor escaping from an uncorked bottle will cause a flame to leap over a space of several feet.—*The Scientific American.*

Hints to Housekeepers

HOW TO WASH GRAINING.—Take clear warm water, a clean, white cloth, and wash a small place and wipe dry with another clean, white cloth. Do not wet any more space than you can dry immediately with your cloth, as it must not be left to dry in the atmosphere; it must be rubbed dry, hence the necessity for clean white cloths. If the paint has been neglected until very much soiled with greasy fingers, or specked with a summer's growth of flies, a very little hard soap may be put in the first water, and then rinsed off with clear water, but avoid soap if you possibly can, as it dulls the varnish, however carefully used. On no account must it be rubbed on with a cloth.

WHITE PAINT.—As little soap as possible should be used with this, and that in the water and not on the cloth. It not only makes the paint yellow, but, after a little while, removes it altogether. A friend of mine, noted as a housekeeper, would never allow either soap or hot water to be used on paint, except in case of grease. Cold water and a scrubbing brush were her weapons of offence in waging warfare with dirt, but I should rather pay for painting once in a while, than expend as much strength and time as such a process requires. However, it gives a very fresh look to paint, and saves soap and fire if one is inclined to try it. For greasy spots I prefer a very little soda (carbonate), in the first water, to be immediately rinsed off and wiped dry.

FURNITURE.—Mahogany may be washed in very weak suds made of hard soap, and immediately rinsed and rubbed dry with a clean cloth. Some think water must never touch furniture, but once or twice a year; this method may be used to advantage. It makes the articles look as if newly varnished.

White spots made by heat on varnished furniture, may be removed by rubbing with a flannel cloth saturated with coal oil. I have often done so with perfect success. It is much easier than the old hot-paper plan.—"R."—*Journal of Agriculture.*

Poetry.

Trees.

BY BENJAMIN GOUGH.

O ye beautiful trees, softly fanned by the breeze
As it languishes past,
Or swept by the wintery hurricane blast,
In forests and woods, and wild solitudes,
Or standing alone,
Like sentinels, far in the desert, unknown.
When Adam and Eve trod the garden of God
On the flower-spangled glade,
Trees of Paradise spread in foliage and shade,
And in glory and light, on Lebanon's height,
Grand cedars of old
Grew and flourished, God's planting, for men to behold.
O ye beautiful trees, of thousand degrees
All over the world,
I sing to the praise of your beauties unfurled;
Where the dark Indian roves, or in clustering groves,
Fresh, verdant, and free,
Wherever we wander, we welcome a tree.
The wonderful Oak, when Creation awoke
From chaos and night,
Stretched out his broad arms to feel for the light;
A monarch art thou, with a crown on thy brow,
Thou glorious old Oak,
A king whose sceptre can never be broke.
And the Birch and the Beech, how beautiful each!
With Holly and Yew,
And Fir, in endless variety, new:
Tall Poplars in rows of Sabbath-repose,
And fruit-bearing trees,
By turns our sight and our senses to please.
O chorus of trees, stirred by tempest or breeze,
Break forth into songs,
Sweet chorales of joy from millions of tongues:
Every leaf has a tongue, God's praise to prolong,
The Giver of Good;
Clap your hands and rejoice, O ye trees of the wood!
O ye musical trees, sing your Song of Degrees,
Te Deum divine,
No minster has psalmody equal to thine;
Through the months of the year, your hymns fill the ear:
By day and by night,
God's beautiful trees in anthems unite.

Mark Lane Express.

Miscellaneous.

Little things in Farming.

The whole success of a farmer hinges upon timely attention to little things. This, mainly, makes the difference between thrift and poverty. The philosophy of success is expressed in that old adage, "For want of a nail a shoe was lost, for want of a shoe a horse was lost, for want of a horse a man was lost." It is a little thing to keep accounts of the pecuniary transactions upon the farm. A half hour Saturday evening would enable most farmers to know just how they stand with the world. Yet, we suspect half of the men who cultivate the soil never make an entry in a book, and for want of this, the account runs up fearfully at the store, and many articles of luxury are purchased for which they are unable to pay at the end of the year. Debt accumulates, the farm is mortgaged, and finally lost, for want of a little paper and ink. It is a little thing to put up a tool in its place when not in use. Yet many have no tool-house, or place of shelter for any implement or vehicle. Things are left where they were last used, the plough in the field, the cart in the yard, the chains in the stable, the harness in the wood-house, the axe at the wood pile, and the rakes in the corn crib. Many do not even house the expensive implements they have bought, and reapers and thrashers are treated like old ploughs and harrows. The parts made of iron and steel grow rusty, and the wood decays. A machine that is good for thirty years with proper care is used up in five by abuse. It is a very little thing to turn a nut when it is loose; yet for want of the tightening the nut is lost, the bolt comes out, and the loaded wagon breaks down on the way to market, and a whole day for man and team is lost. It is a little thing to keep a horse properly groomed; yet for want of clean fetlocks the skin cracks and the horse is lame, and the owner loses the use of him for months or weeks. Ventilation is a small affair; yet for want of it the health of stock in stables suffers severely, and disease sets in. It is a small affair to provide good seed at the beginning of the year, but the whole success of the season depends upon it. It is an easy thing to deal fairly with your neighbors and make a name that is better than "precious ointment." Many cheat on small occasions, do not deliver what they sell, and get a reputation for meanness that stands in the way of their success.—*American Agriculturist.*

Filing Saws.

In the first place you should be careful in selecting your saw at the hardware store. If you see one with the teeth standing straight out at right angles with the edge of the blade, or nearly so, hands off from that one: it will cut as well one way as the other, and not very fast either way. Look for one with the teeth considerably raking, that is, pointing downward; not too much, however. The lower edge of the teeth should not be at right angles with the blade, like a mill or hand-saw, but about half-way between that and the large cross-cut saw. See also that the line of the edge is straight or rounding, not hollowing. Then file the teeth quite beveling, carrying the file nearly at an angle of forty-five degrees from the blade. This will give a sharp, chisel-like edge to the teeth, longest at the extreme outer edge, which will thus go a little ahead and sever the fibres of the wood, and leave the balance of the end of the tooth nothing to do but clean out the chips of the kerf. In filing, keep the filed edge of the tooth straight—not round it off towards the point—and carry the file level, keeping the hand well up so that you think it is a little more than level. A saw thus filed will need but little set, and in that little the teeth should be kept straight on their sides two-thirds of the way from the point to the base, and not turned short out just at the point. If one side is set out more than the other, the saw will run from a straight cut towards that side. If the teeth are filed shorter on one side than on the other, it will run in the opposite direction. In filing, you should bear the file hardest against the teeth on the side toward you, or it will cut the opposite side most, and make the teeth the smallest on that side. A hand-saw should not have quite as much rake as a bucksaw, the object being smoothness rather than rapidity in cutting. In other respects, the same rules will apply. A slitting saw, that is, one for sawing lengthwise of the grain, should have the lower edge of the teeth stand at right angles with the blade, with a light set, and filed nearly square, beveled just enough to leave the outer corner a trifle the longest. In buying a saw file, never buy the lowest priced. One that costs twenty cents is worth four ten cent ones.—*Wisconsin Farmer.*

Punch advises farmers to sow their P's, keep their G's warm, hivo their B's, shoot their J's, feed their N's, look after their potatoes' T's, and take their E's.

A House rents are so exorbitant in New Orleans, that a "grasping landlord" advertises to let a splendid hog-head, just vacated by the former occupant, who leaves it for no fault. The premises are a sweet location for a family with young children, are in thorough repair, with bunghole centrally situated, and hoops in good order.

A CHEERFUL VIEW OF THINGS.—"How dismal you look!" said a bucket to its companion, as they were going to the well. "Ah," replied the other, "I was reflecting on the uselessness of our being filled; for let us go away ever so full, we always come back empty." "Dear me! how strange to look at it in that way!" said the other bucket. "Now, I enjoy the thought that, however empty we come, we always go away full. Only look at it in that light and you'll be as cheerful as I am."—*The Moralist.*

AVARICE OUTWITTED.—The following case is reported as having been decided in one of the courts of law. A wealthy man died, leaving the singular will that his executors should have the use of his property until his son, then a young man, should come of age, and that then they should give him such a portion as should please them, having full confidence in their friendship. When the time came the greedy executors assigned him one-tenth of the estate, and kept the rest. The young man, being naturally dissatisfied, brought a suit against them, a trial was had, and the judge decided that he should have the nine-tenths, and the executors the one-tenth, on the ground that they had shown by their conduct that the nine-tenths pleased them.—*American Agriculturist.*

SELF-POSSESSION IN A DIFFICULT SITUATION.—On Friday, 8th inst., as Mr R. Skead, jun., was riding on horse-back over Sapper's Bridge, Ottawa, his bridle suddenly broke, and the horse taking alarm at the accident, dashed away at full gallop, whilst the rider was apparently without the means of guiding or checking his course. The accident was observed by a large number of persons, who all became alarmed for the consequences; as quick as thought, however, the young gentleman leaned over the horse's neck, got his hand into his mouth, seized his tongue, and brought him to before he had got two hundred yards from the spot where the bridle broke. This splendid feat, says the *Times*, elicited the admiration of all who beheld it.

Advertisements.

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WARRANTED IMPORTED FIELD, GARDEN AND FLOWER SEEDS, are now ready. Descriptive Catalogues free on application.
25 Packages of Choice Flower Seeds by-mail for One Dollar.
Also a fine stock of the celebrated Goodrich, Gleason and Harrison Potatoes. Address, S. GOLDSMITH, St. Catharines, Ont. v5 7-4t

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(Late J. Jones & Co.)
Dairymen's Furnishing Store!
—AND—
DEALERS IN BUTTER AND CHEESE,
No. 141 Genesee Street, Utica, N. Y.

DAIRY necessities of every description always on hand, particularly **Pure Annetto**, an article in much request among dairymen.
No Duty on Annetto purchased in the United States.
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TWO THOROUGH BRED DURHAM BULL CALVES—one eight, the other three months old.
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Duncan's Improved Hay Elevator.

PATENTED April 13th, 1867.
THE cheapest and simplest constructed Fork in use in the Dominion of Canada. County or Township Rights for the manufacture of the above Fork may be obtained from the undersigned.
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IMPORTANT TO DAIRYMEN AND CHEESEFACTORS.



TRADE MARK.

R. J. FULLWOOD & Co.'s

(Late R. J. Fullwood & Bland's)

HIGHLY CELEBRATED

EXTRACT OF ANNATTO

FOR COLOURING CHEESE AND BUTTER.

THE superiority of this truly excellent, pure, and unadulterated Annatto, consists in its producing in Cheese and Butter, that rich, permanent bright golden cowslip tint colour, so much desired by all Cheese and Butter Factors...

IN COLOURING BUTTER it will be found by far superior and much cheaper than any other article in use for that purpose, and their Cake Annatto has stood unrivalled for the last 50 years.

ANNATTO WORKS,

SOMERSET PLACE, HOXTON, LONDON, Established 1785.

* Sold throughout England and the Colonies, by Chemists and Druggists, but see you get "R. J. Fullwood's," with a Stag, v5-8-2t-c.o.t.

CANADA WEST FARMERS' MUTUAL & STOCK INSURANCE COMPANY.

Incorporated by Act of Parliament, 1852

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12,700 Policies in Force.

AMOUNT INSURED, - - - \$8,700,400 00

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CASH IN BANK OF MONTREAL, \$ 14,600 00

A three years risk on Frame Barns and Dwelling Houses and contents, taken at One per cent. Premium, and no Premium Note required. Losses paid in full without deduction.

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Price Reduced to 58 Dollars.

IT sets up its own work, knits all sizes, narrows and widens, fits the heel into the stocking, and narrows off the toe complete—producing all varieties of knit goods. It is simple, durable, easily operated, and guaranteed to succeed in the hands of every purchaser.

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TO FLAX GROWERS.

THE undersigned will have, this present season, a supply of FLAX-PULLING MACHINES, which we can guarantee to do good work, having been fully tested last season. Now improvements added this year send for cut of Machine and Price List.

OSWOLD & PATERSON,

Woodstock Iron Works, v5-9-6t.

MILLER'S

INFALLIBLE



TICK DESTROYER FOR SHEEP!

DESTROYS the TICKS, cleanses the skin, strengthens and promotes the growth of the wool, and improves the condition of the animal.

It is put up in boxes at 35c 70c, and \$1, with full directions on each package. A 35c box will clean twenty sheep.

HUGH MILLER & Co.,

467 King Street East, Medical Hall, Toronto. 14-1f

Markets.

Toronto Markets.

"CANADA FARMER" Office, May 14th, 1868.

There has been rather more doing recently in produce; the market, however, is still very quiet. The sales taking place are principally on private terms.

FLOUR AND GRAIN.

Flour—The market has been very dull. At the date of our last report \$7 15 was the price ruling for No. 1 superfine; to-day, however, \$7 10 was accepted for 500 barrels of a good brand of No. 1 superfine.

Wheat—There is rather a better demand since our last report. Within the last few days the demand has improved, and several large lots changed hands at fair prices. Yesterday, 10,000 bushels changed hands, and to-day about 15,000 bushels. The sales were principally of midge proof and golden drop, which sold in large lots at \$1 70 for midge-proof and golden drop. In fall wheat there has been nothing doing. On the street market there has been very little doing. The prices paid were \$1 65 for spring, and \$1 80 for fall.

Oats—The market has been firm. Yesterday a lot sold at 54c, and to-day 1 car changed hands at 56c, in bags. On the street market from 55c to 60c is paid, the same prices ruling for retail lots.

Barley—The market has been very quiet. No sales except retail lots took place since our last review. Quotations nominally unchanged.

Peas—During the week the market was firm, with an advancing tendency; to-day, however, owing to an advance in Atlantic freights, buyers reduced their bids. Sales were made during the week at 91c; to-day lots were offering at 91c, with no buyers at over 90c. On the street market a few loads sold to-day at 88c.

Hay—Per ton, \$15 to \$21.

Straw—Per ton, \$10 to \$13.

PROVISIONS.

Butter—A consumptive demand only. Tub, per lb., 13 to 20c. Rolls, 22 to 25c.

Cheese—New, 10 1/2 to 11 1/2c.

Pork—Primo Mess per bbl., \$16 to \$17.

Bacon—\$9 to \$10 60.

Eggs—Packed, 10 to 12c; retail, 12 to 13c.

Potatoes—There is a fair supply. The current rates are 65c to 70c per bushel by the load, and 90c. to \$1 03 per bushel by the bag.

Apples—The market is advancing as the fruit becomes scarcer. For choice samples as high as \$3 would now be paid. Dried apples dull at \$1 25 to \$1 50.

CATTLE MARKET.

The market has been firm for first-class cattle, the supply, however, has not been equal to the demand. We quote per 100 lbs. dressed weight: 1st class, \$8 00; 2nd do. \$7 00; 3rd do. \$6 00. There has been a good supply of 2nd and 3rd class cattle, but few 1st class. The late Guelph and Elora fairs were attended by a good many buyers from Montreal, Toronto, and Quebec, a few American buyers also being present. About 15 car loads of cattle changed hands at from 6c to 6c per lb. live weight.

Sheep of all kinds have been in good demand. We quote.—1st class \$7 00 each, 2nd class \$6 00 each, 3rd class \$5 00 each.

Lambs have been in better supply, and are lower. We quote.—1st class \$2 50; 2nd do. \$2 00; 3rd do. \$1 50.

Calves: 1st class, none offering; would bring \$8 00 to \$10 00; 2nd and 3rd class—market perfectly glutted; bring only from \$1 50 to \$1 00.

Hamilton Markets, May 12.—Fall Wheat, per bushel \$1 62 to \$1 72; spring wheat per bushel \$1 55 to \$1 62; barley do., \$1 25 to \$1 40; oats do., 60c to 65c; peas do., 85c to 90c; corn do., 65c to 70c; potatoes, per bag, \$1 25 to \$1 50.

London Markets.—Grain—Fall wheat per bushel, \$1 60 to \$1 65; spring wheat \$1 55 to \$1 65; barley \$1; peas 80c to 82c; oats 45c to 48c.—Hay, per ton \$3 to \$10; straw per load \$3 to \$4; potatoes, per bushel, by load 60c to 70c, carrots, do. 25c.

Montreal Markets, May 13.—Flour—Superior extra, \$8 to \$8 25; extra \$7 80 to \$7 90; fancy \$7 60 to \$7 70; Welland Canal superfine \$7 25 to \$7 50; Superfine No. 1 Canada wheat, \$7 30 to \$7 45; superfine No. 1 Western wheat \$7 25 to \$7 50; superfine No. 2 Western wheat, \$7 05 to \$7 10; bag flour per 100 lbs. \$3 60 to \$3 66.—Wheat—Canada Fall, none; Spring, \$1 72 1/2 to \$1 75; Western \$1 65 to \$1 70.—Oats—Per 32 lbs 47c to 48c.—Barley—Per 48 lbs \$1 10 to \$1 15.—Peas, 87c to 88c.

Chicago Markets, May 13.—Wm Young and Co.'s report.—Wheat—Receipts, 21,000 bushels, shipments, 53,000 bushels. No. 2 firm at \$2 11 1/2.—Corn firm at 6c; receipts 115,000 bushels; shipments 34,000 bushels.—Pork dull at \$25.

Galt Markets, May 12.—Flour—Spring wheat \$4, fall wheat \$4 50. Grain—Fall wheat \$1 63 to \$1 77, amber wheat \$1 60 to \$1 65, spring wheat \$1 55 to \$1 62, barley 55c to 60c, oats 55c, peas 80c to 85c. Seeds—Clover seed \$4 to \$4 50, timothy seed \$2 to \$2 50. Hay—\$10 to \$15. Butter—16 to 15c. Eggs—9 to 11c. Hides—\$6 to \$7. Sheepskins—70c. Wood—\$3 50 to \$4. Potatoes—70c to 80c. Pork—Per 100 lbs., \$5 to \$5 50.

Guelph Markets, May 12.—Fall Wheat—Per bushel, \$1 75 to \$1 80. Spring Wheat—\$1 60 to \$1 64. Oats—56c. Peas—80c to 85c. Barley—\$1 20 to \$1 25. Hides—Per 100 lbs., \$6. Beef—do., \$7 to \$8. Pork—do., \$5 to \$6 00. Straw—\$3 to \$4 per load. Hay—\$9 to \$11 per ton. Eggs—10c to 11c per doz. Butter—13 to 14c per lb. Apples—Per bushel, 50 to 60c. Potatoes—Per bag, 90c to \$1. Sheepskins—70 to 80c.

New York Markets.—Flour—Dull; receipts, 7 377 barrels; sales, 5,100 barrels at \$8 40 to \$9 for super state and Western; \$9 60 to \$10 05 for common to choice extra state, \$9 60 to \$10 50 for common to choice extra Western. \$7 00 to \$13 60 for common to choice extra round hoop Ohio. Wheat—(Unchanged); receipts, 7,600 bushels; sales, 66,000 bushels at \$2 37 to \$2 38 for No. 2 spring, \$2 48 for No. 1 do., \$2 78 for Amber Penna., \$2 82 1/2 for Amber Canadian. Rye—Firm, sales 9,000 bushels Western State at \$2 05 to \$2 07. Corn—Easier; receipts, \$3 900 bushels; sales, 41,000 bushels at \$1 17 to \$1 18 1/2 for new and old mixed Western soft and in store. Barley—Quiet. Oats—Firm and quiet; sales, 12,000 bushels at 88c for Western soft. Provisions—Pork dull and heavy at \$28 43 to \$28 55 for new mess; \$27 50 to \$27 62 for old do. Lard—Quiet and steady at 18c 10/16.

Contents of this Number.

Table listing various sections and their page numbers, including THE FIELD, STOCK DEPARTMENT, RURAL ARCHITECTURE, THE DAIRY, VETERINARY DEPARTMENT, POULTRY YARD, CORRESPONDENCE, EDITORIAL, AGRICULTURAL INTELLIGENCE, HORTICULTURE, ENTOMOLOGY, THE APIARY, THE HOUSEHOLD, POETRY, MISCELLANEOUS, and THE CANADA FARMER publication details.