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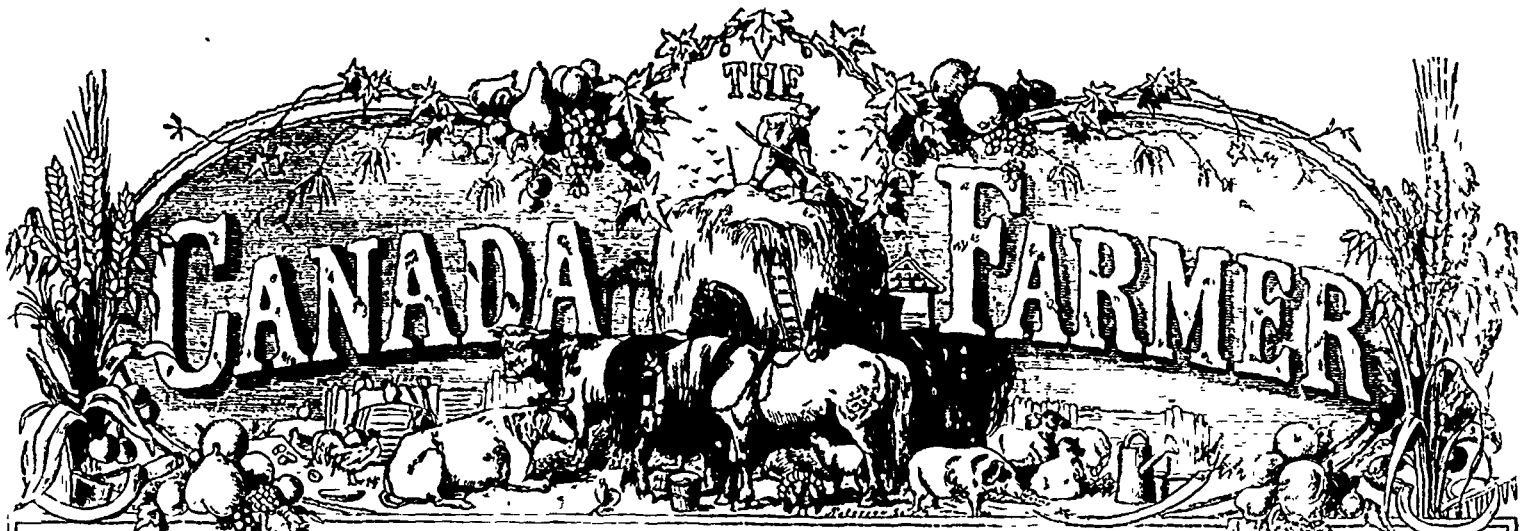
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VOL. IV. No. 3.

TORONTO, UPPER CANADA, FEBRUARY 1, 1867.

POSTAGE FREE.

The Field.

Combined Roller and Clod Crusher.

The implement of which we give an engraving, will, if it performs its work effectually, supply an important desideratum on many of our farm lands. Clod-crushers have been for some time in use in the old country, and are found to work admirably, especially on stiff clay soils. By this operation, the land is often brought into fine condition; and fields which would otherwise have to wait for the slower processes of atmospheric influence, or be repeatedly gone over by less effective implements, and perhaps after all receive the seed in a very unfavorable state, are thus speedily and thoroughly prepared, and rendered fit for sowing; much precious time and vexatious labour being thereby saved. The accompanying cut represents an implement manufactured by Mr. Abell, of Woodbridge, for rolling or crushing the soil. It is made upon the principle of W. C. Cambridge's improved patent double acting press wheel rollers and clod-crushers, which have obtained deserved notoriety in England. Mr. Abell's contrivance is composed of a number of Cambridge's old patent plain wheels with their cutting edges. A serrated, or notched wheel of peculiar construction is placed between each plain wheel, by which arrangement the effective action of the best clod-crusher and wheel roller is here combined. This implement, we understand, will work effectually in preparing land for turnips and mangold, also for rolling fallow lands, barley, grass, and especially for wheat when the wire worm has made its appearance in it. A prize was awarded this machine at the last Provincial Exhibition, as the best roller then shown.

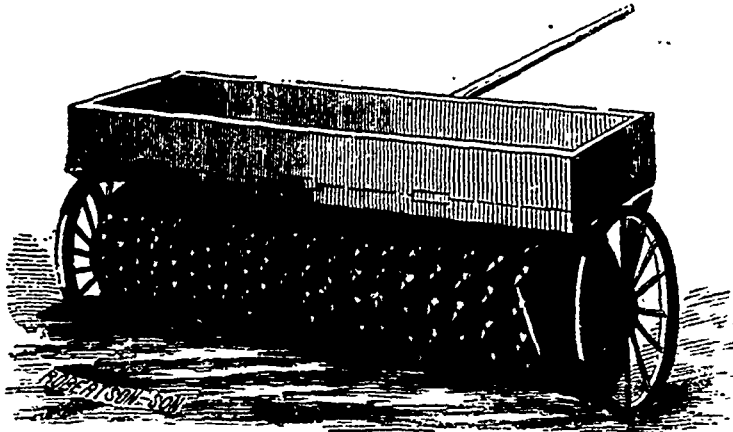
Professor Voelcker on Manures.

Our attention has been called by an eminent amateur agriculturist and horticulturist, to an article which appeared in the *Gardener's Chronicle and Agricultural Gazette* of the 15th of December last, it being a synopsis of a lecture delivered by Professor Voelcker before the London Farmers' Club, on the 10th December, on the subject of manures and the best method and time of applying them; and as there is much in the article alluded to which is interesting, we have much pleasure in entering on the subject.

Professor Voelcker is so eminent a man, not only as a philosopher, but as a lecturer to the practical farmer, and his opinions are so extensively received

and almost revered by that class of persons in England, that we cannot for a moment doubt his facts; we may differ in opinion, but even in doing so we should differ with great respect and with considerable hesitation.

The lecturer set out by remarking several new facts, or rather new doctrines founded on well-known facts, with respect to farm yard manure; he asserts that the farm yard manure may be considered a perfect manure, as it combines within itself all the elements which are to be found in the various kinds of artificial manure; but it is in the use of, and time of applying it, that he differs from what have been received opinions. He says that farm yard manure possesses within itself the means of fixing its own ammonia; that provided there is sufficiency of vegetable fibre, such as straw, &c., the animal portion of the manure, whether solid or fluid, will not part with its ammonia in a volatile state, but that the two substances work together to form a perfect manure: the animal portions liquid and solid, ferment and putrefy, and the straw and fibre by such



act of fermentation, resolve themselves into natural fixors of the ammonia, so evolved, and retain it in the shape of a soluble compound exactly fitted for the food of plants. He insists that for this kind of manure we have not to dread exposure to the air, or even to the hottest sun, but that rain in large quantities is fatal to its usefulness; unless the rain falls upon it when it is spread on the ground which it is intended to enrich; and that the entire of the leachings of manure in the farm yard are lost, either by running away with the surface water, or by sinking into the ground. He says that the benefits to be derived from the rotting of the manure in the farm yard, are more than compensated by the losses sustained by the action of the rain and the dissolving in a wrong place of the soluble portions of the manure. He therefore recommends that so soon as the manure of the farm yard can be said to be manure at all, and before leaching from rains has extensively taken

place, the manure should be taken to the ground on which it is to be applied and there spread abroad; so that whatever leaching takes place shall go at once into the surface soil and be absorbed where it is wanted, and where it will do good—he declares that all manure so applied possesses within itself sufficient elements of decomposition to render it efficacious, and that when so applied the ammonia as formed is dissolved, and fertilizes the soil in the best possible manner.

He does not for a moment object to ploughing in manure where it can be done most conveniently, but he says that ploughing in is not essential to its efficacy, and that provided it is spread abroad when applied it may be ploughed in at one time as well as at another, and it is this point that is most interesting to us in Canada.

Our seasons are so short and hurry each other so much that it is impossible to carry out in the spring all the manure made in the winter. Spring, and the growth of spring grain, demand every moment of the farmer's time and all his attention; he wants to plough at the earliest moment so as to get in his crops before the spring rains commence—but he has not time both to manure and plough, and consequently the ploughing is done, and the manuring is too often neglected—but if he could have done his manuring during the winter on the snow, or during the latter part of the winter before the frost is out of the ground, the difficulty would be met, and the manure spread on the ground at those times would be on the land ready to be ploughed in at the time of the cultivation for the spring crops.

According to received ideas, manure is comparatively useless until rotted, and reduced to a short grained mass, it then is not only most easily moved and conveyed, but is in the most popular state for fertilization; to get the manure into this state it must remain in the farm yard for many months, it must be turned up together, at least once, and is then believed to be in the best possible condition—but it what Mr. Voelcker says is true, we have by these operations lost some of the best and most fertilizing elements contained in it, all that can pass off by leaching has passed off, and we have a much less useful matter to apply to the soil than we should have had if we had used it earlier, and where all the leaching would have taken place on the soil to which it was applied—instead of in the farm yard. He also recommends that the farm yard manure should be applied to grass lands, clover leys, &c., as top dressings, and that artificial manures should be reserved for the root crops.

Now much of this argument may be applied most

usefully to Canada; not only because the broaching of new doctrines makes men think, who would not otherwise think, but because each practical farmer who may study them is pretty sure to find something applicable to his own case. But there is a great portion of it that will not apply to Canada at all—owing to difference in climate, differences in cultivation, the high price of labour, and various other circumstances.

First, the great body of our farm yard manure with the exception of that from the horse stables, made in the winter, freezes as it is made, into a solid mass, and becomes immovable; and not only so, but until the cold weather terminates, it remains exactly in the state in which it came from the animal, and in which it was mixed with the straw; the fluid portions are all frozen, and remain so till spring, when, if there is more fluid than can be absorbed by the straw, it passes off as it thaws, and cannot be recovered, being mixed with the melting snow, and the early rains. Thus when spring first opens, and until the cold is so modified as to admit of fermentation, (which does not take place till the whole mass assumes a temperature of about 50°) we have merely wet straw and animal manure mixed together, ready to ferment indeed, but which has not fermented—it takes at least a month of open weather to bring the manure in the farm yard into such a state that it can be carried to the field, and by that time our spring work is on us in full force, and the manure is necessarily neglected until a more leisure period, by that time much of Mr. Voelcker's dreaded leaching has taken place, but the necessary rotting has also taken place, and the manure can either be turned up together or carried abroad.

But it is not only for the purposes of rotting that we require manure to remain in large bodies and to be heated, moved, and brought into a mellow state. Our course of husbandry is such that we are greatly overrun with weeds—the seeds of these pests are harvested with the grain—are thrashed with it, and go into the farm yard in one shape or another among the straw—the heating and fermentation of the heap destroys a large portion of these seeds—turning it exposes every part to the air and causes them to grow and a seed which once germinates in the manure heap is entirely destroyed. If we were to spread recent manure abroad in the field, all these seeds would grow and we should be totally overrun; as it is, we destroy, at all events, a great portion. Then again, with the eggs and cocoons of the various insect plagues, the heating of the manure heap causes them to hatch out and come to life at such a time that they are destroyed or come forth prematurely, and incapable of doing mischief; these, and many other reasons necessitate our farmers doing as they do, and prevent, and will continue to prevent, any other course being adopted. Could we have our cattle all housed with manure cellars under them, and proper means of removing the manure as often as required, we might adopt the system and have all our manure on the land, ready fermented, before the plough could enter the soil—but, (as a community) we have not such appliances, and must therefore, do as we now do, and that is, the best we can.

On one point we must with great deference differ from Mr. Voelcker, and that is in the matter of the fermentation or putrefaction of manure; The experience of ages has shown us that the necessary fermentation can only be had while the manure is in large bodies; we do not believe that manure spread abroad in a recent state will be equally efficacious with manure perfectly rotted and fermented and not leached by the rain. In Flanders, where every scrap of house sewage is saved in tanks of some description, and sold to the farmer in well barges, or in liquid manure carts: the farmer will not pay the price until a certain age is attained, and the ammonia and nitrogenous matter properly eliminated. In the old French war, when the English nation was cut off from its supplies of nitre, for making gunpow-

der, the nitre was obtained from manure fermented under sheds—but it was fermented, though not allowed to leach.

Small quantities of manure when put on the soil in a recent state, no doubt fertilize it—that is apparent in every pasture field, but would not that same matter have a more beneficial effect if properly fermented and then applied? This is a question which can only be determined by experiment, and one which is open to all to ascertain.

Situated as we are in Canada, we cannot do as we would, and in many cases as we ought; so many things interfere that on these points our hands in a measure are tied—and until capital is more abundant, and labour cheaper, we fear that but little improvement can be effected.

One great point might be attained were all the fodder chaffed, and fed to the cattle in that state: but then again the question of labour steps in; and so long as cattle can exist by masticating the straw in a whole state, we greatly fear that but comparatively little straw will be cut into chaff for them.

Our entire attention should be given so to keep our manure, that it leaches as little as possible—thick piles well turned and well thrown up, will effect this in a great measure. Covered yards would do it much better, but covered yards are out of the question at present. yet covered sheds, surely, to protect the manure heaps from rain, might be generally adopted.

Mr. Voelcker gives us one fact not generally spoken of in agricultural writings, namely: that nitrogenous salts, although so highly appreciated by plants, particularly the cereals, do not remain in the soil in a state of absorption, but that they separate from it by the action of water and pass off. Ammoniacal salts on the other hand enter into, and are absorbed by the clayey portions of the soil, and remain ready for the use of the plant, and cannot be leached out by water. For these reasons, nitrates must be applied on the surface, and in the spring when the plant is ready to take them up while growing, and before the action of the rain can wash them away, while ammoniacal salts, such as sulphate of ammonia, guano, &c. may be applied at any time, and remain in the soil till extracted by the roots of the plant.

Then, according to the Voelcker theory, leached farm yard manure is deprived of the whole of its nitrates, and of a portion of its ammoniacal salts—will not this account for the benefits which Mr. Voelcker states to be derived from spreading manure on the ground in a recent state, as soon as it can be applied? It is a matter which demands much consideration.

Familiar Talks on Agricultural Principles.

BUCKWHEAT.

This grain is said to have come originally from Persia, where it is found growing in a wild state. According to some writers its culture was introduced into Europe by the crusaders; others say the Moors brought it into Spain from Africa. The name buck-wheat is derived from the German buck-weizen, which signifies buck-wheat, from the similarity of the seed to that of the buck-tree. It is called wheat, because when ground it produces a flour in appearance very like that obtained from wheat. According to Norton the kernel of buck-wheat contains from 6 to 10 per cent of gluten, and 50 of starch, with 5 to 8 per cent of sugar and gum. It does not therefore possess a very high nutritive power, though it is by no means a despicable article of food. In China, Japan, Russia and Switzerland, it forms a considerable part of the food of the inhabitants, and there are few people in this country who do not regard buckwheat cakes as a most desirable article of breakfast diet in the winter time. The result of the analysis of the ashes, produced by burning buckwheat straw, as given by Vauquelin, is:

Carbonate of Potash.	29.5
Sulphate of Potash.	3.8
Carbonate of Lime.	17.5
Carbonate of Magnesia.	13.5
Silica.	16.2
Alumina.	10.5
Moisture and Loss.	9.0

Variation from the above showing will of course be made according to the soil in which the plant is grown. But carbonate of potash is evidently a most abundant element in the straw of buckwheat, so much so indeed that it has been suggested whether it might not be profitable to burn the straw for the purpose of obtaining this useful salt.

Buckwheat is by no means an exhaustive crop, and may be turned to good account in a course of renovation. It can be successfully cultivated on very poor soils, though it will of course thrive better on those that are more fertile. The reasons for its making such light demands on the land are, first, that its large leaves derive a great proportion of the nutriment the plant requires from the air; and secondly, that it needs but a small supply of mineral matter. It succeeds best on light soils, but will do well on almost any kind of land except heavy clay. It is frequently sown, and with excellent effect, to plough in as a green manure; for this purpose it is sown pretty thick, and when the plant is in greatest vigour and full blossom, a roller is passed over it, to lay it flat on the ground, after which it is ploughed under. It soon decays and greatly adds to the fertility of the soil thus treated. English agriculturists employ it largely for the reclamation of poor sandy soils, ploughing in the green buckwheat as a preparation for a first turnip crop, and then feeding off the turnips in the field, by penning sheep upon them. This treatment will sufficiently improve and consolidate the ground to make it fit for a crop of grain and for seeding down to clover and grass. There is no doubt but buckwheat might be more extensively resorted to with advantage as a means of bringing round the worn-out soils which are to be found in too many Canadian farms.

Buckwheat is sometimes cut in a green state for soiling cattle. It is not so nutritious as clover, but is said greatly to increase the milk of cows fed on it. There is however difference of opinion among experienced farmers regarding its value as a green forage plant, some thinking highly of it, and others regarding it as worth very little.

Buckwheat as a grain is sometimes fed to horses instead of oats, or mixed with them. It is recommended to bruise it when thus used. No grain is more eagerly eaten by poultry, and it is said to be highly productive of the laying propensity. In England it is grown in game preserves as food for pheasants and partridges. The meal ground is excellent for fattening cattle or pigs.

Being a native of a warm climate, the smallest appearance of frost in spring is fatal to it. Hence it is not sown in northern climates until all danger of frost is over, but its growth is so rapid that it requires only a short season to bring it to maturity. It is usually sown in June, but will do well if put in during July. Good crops of buck-wheat have sometimes been obtained from a sowing after a crop of barley has been taken off the land. About three pecks of seed per acre is enough, though some sow a bushel, broad cast. Once ploughing and a light harrowing is all the preparation needed. From the rapidity of its growth, and the dense shade it makes, it is an excellent cleansing crop, thoroughly exterminating troublesome weeds. A correspondent of the *Maine Farmer* recommends it as an effectual destroyer of that frequent pest of the field known as couch-grass. For this purpose it must be sown as early in the season as danger of frost will permit, and as soon as it is in full flower, it must be rolled and ploughed under. Another crop must then be sown on top of the first and harrowed in. If the season be an ordinary favourable one, it will ripen and afford a harvest before fall frosts come.

When ready for harvesting it may be cut, either with the scythe or cradle; the cradle does best. It is then raked or gathered into small bundles, which are fastened by twisting the tops, and left to stand and dry on the field. It dries slowly, and should be quickly threshed, since there is danger of its heating. It threshes very easily. The chief value of the straw is for manurial purposes. It is a valuable addition to the dung-pit, or compost heap.

We must not omit to mention that buckwheat is very useful for bee forage. Its flowers contain a large quantity of honey, and though it is of inferior quality and dark coloured, yet coming as it does when bee pasturage is apt to be scant, it is of no small help to the bee-keeper in providing winter stores for his busy little workers. Every farmer should keep bees, and grow a small patch of buckwheat, if only for bee-pasture, in the fall.

The Value of Nightsoil.

We extract from the "Scottish Farmer" the following notice of the importance attached to this manure by the Chinese:

Dr Muecke has lately been writing to the *Adelaide Observer* in the following terms, on the value of nightsoil as a fertilizer:—

The second kind of manure is the nightsoil and certain parts of human or animal bodies. Davis, Fortune, and Hedde, say unanimously:—"It is quite impossible for Europeans to form an idea of the care with which the Chinese collect these excrements. To them this is the chyle to the earth, and to it alone they are indebted for the fertility of their country. The Chinese know nothing of private closets as we have them; but in the most convenient part of the dwellings they have earthenware vessels or cisterns, carefully lined with stoneware, and their ideas of usefulness entirely conquer their smelling organs. As Fortune says ("Tea Districts of China and India," vol. I, p. 24)—"That which is considered the greatest nuisance in every civilized city of Europe, is there looked upon with the greatest complacency by all classes—rich or poor and I am certain that nothing would surprise a Chinaman more than anybody complaining of the disagreeable odours arising from these cisterns. In large cities the excrements are condensed into powder and then formed into squares similar to bricks and forwarded to the most distant parts of the country. They are then softened in water and used in a fluid state like suds. The Chinaman does not manure the field but the plant, with the exception of rice. All animal or vegetable substances are collected carefully and turned into manure. Oily matters, horns and bones are valuable, also soot, and particularly ashes. The barbers save the shavings and cuttings from the beards and hair, and send them into the market, the quantity being very considerable from the millions of heads that are shaved and shorn daily. The Chinaman is also acquainted with the effects of gypsum and lime, and he often renews the flooring of his kitchen only to use the old as manure. (See Davis.) No Chinese farmer sows the seeds or cereals before it has been thoroughly soaked in suds and water, and has commenced to germinate. Experience has taught him that not only the development of the plant is thus advanced, but also that the seed is sheltered from insects. (See Davis.) During the summer months all sorts of vegetable shreds, chips or cuttings, &c., are mixed with grass, straw, turf, weeds, and soil, are then formed in heaps, dried, and ignited, so as to burn slowly for several days, and the whole is thus turned into a black mass. This manure is only used for the seed. When the time for sowing arrives, one man makes the holes, another follows and puts the seeds in, a third adds the black substance, and the young seed planted in this manner develops itself with such force that it is enabled to drive its roots through the firm soil and take up the elements it requires. (See Fortune.)

Eckeberg, in his reports to the Academy of Science in Stockholm, says the Chinese farmer sows the wheat in seed-beds, after it has been well soaked in suds from manure, very close, and transplants them afterwards to the fields. Sometimes the soaked seed is placed at once on the prepared fields about four inches apart. By this method they yield a hundred and twenty-fold corn and more, which rewards them amply for the labour and trouble spent over it. I can here close my quotations from China, as that which is already said is sufficient to explain and confirm my intention in describing a system of agriculture conformable with the laws of nature, so as to gain the highest possible produce, while the soil increases in fertility. The theory of manuring and the

truth of it are proved by the Chinese system perfectly just by this—that the acres of the Chinese farmer have retained their fertility undiminished and in lasting youth since Abraham, and the time when the first pyramid was built in Egypt, simply by giving compensation for the elements of fertility which have been taken from the fields by their produce with the help of a manure of which the greatest part is lost to our agriculture. "In Italy, especially in Nice and Genoa, the sewerage is sold by lodging-house keepers and house owners to the farmers at about five francs (4s) per annum per person. There is a difference made in the prices according to the mode of living of the various inhabitants. For the Protestants they have to pay one franc (10d) more than for the Catholics, and that of the monks of the Minorise Convent is not worth the carriage, because they live on very low victuals."

Facts for Farming.

There are some things in farming that are established, namely:

That manure must be applied, not only to get up land, but to keep it up. That wet soil must be drained, either by ditching or otherwise. That subsoiling is good. That grain should be sown earlier than it generally is; that it should be harvested earlier than it is done; that grass should be cut when in blossom; and never when ripe, unless for seed. That our soil is not sufficiently worked, especially in hood crops; that stirring the soil and keeping it well pulverised, is a partial guard against drouth. That the most advantageous grain for horses is the oat; that it improves fodder to cook or steam it. That warm shelter in winter saves fodder, and benefits stock. That the best blood is the most profitable. That there is much advantage in selecting the best seed, the earliest matured and the plumpest. That in-and-in breeding is not good in close and consecutive relationship, but must be carried on by foreign infusion of the same blood. That warm quarters and good treatment are necessary in winter to produce eggs from most hens. That top-dressing grass lands should be done with fine, well-rotted manure, applied close to the ground. That it is, in general, best to sell produce as soon as ready for market. That blackberries require rich soil; strawberries and raspberries vegetable mould—such as rotten leaves, chip manure, &c. That more lime should be used. That salt, in some cases, is good for land—also plaster, the phosphates, guano, &c. That fall ploughing is the best for clay lands; that land should not be ploughed wet. That young orchards should be cultivated. That compost heaps are a good institution. That clay and lime, rather than animal manure, be employed in raising fruit. That manure should be rotted before it is used. That agricultural papers are an advantage to the farmer. That a cultivated mind is requisite to high farming, and that a good reputation exerts a good influence on the farming community.—*Rural World*.

The Manufacture of Manure.

Many of our farmers complain that they cannot make enough manure, and I never yet have found a good one who has had too much. Now I think that if a farmer has hay enough there need be no difficulty in obtaining enough manure.

We see many of our barnyards constructed with escape holes in the wall along the lowest side of the yard, and from these holes a passer-by can scarcely fail to notice the very essence of the manure escaping. The most valuable portions of the manure are those which are soluble, and of course these are taken up by the water in its passage through the manure and out of the yard.

Not long since I was arguing with one of my neighbours upon the propriety of stopping up these holes in his barnyard wall, when he met my objection with the assertion that he could not keep his yard clean enough to keep cattle in. A farther investigation showed that his barn was not supplied with rain spouts, and consequently there was more water in the yard than fell there in direct descent. Yet this same farmer would complain that he "could not make manure enough," and this too when the most valuable portion of what he did make was escaping into the public road and into his neighbours' land.

If no more water finds its way into the yard than that which falls into it, there should be no difficulty in keeping it clean with the materials found on a common farm, such as coarse grass from the swamps and lowland, sods from the road side, tussocks from the meadows, whose removal, while it benefits the manure pile, also improves the appearance of the meadow. If these are all used up, then it will be time enough to complain of the difficulty of not being able to make enough manure.—*Cor. Germantown Telegraph*.

Lime as Manure.

To the Editor of THE CANADA FARMER:

SIR,—Conversing the other day with a farmer from Berwickshire, he decried the use of lime as a manure, pronouncing it to be a myth; I have certainly seen the benefit of it when applied to sour land; as in Cornwall, on many farms, the fields were very much divided by great earth banks on which hedges were planted; hundreds of these fences were pulled down, and though the earth was beautifully fine, "fit for a parsley bed," as the saying is, yet from a rising ground you might trace the sites of these rugged fences; all that attempted to grow there were sickly, the land was sour; but when lime was applied, it became fertile. As I have no lack of limestone, and a super-abundance of hemlock on my farm, and as other manures are scarce and expensive, I would gladly avail myself of the experience of any one, who would write to THE CANADA FARMER, the result of his experiments in the use of lime, as a manure. The facts to be come at are, on what soils will it be of most service; the quantity required; and if possible, the manner in which it acts? I have read a good many articles on the use of lime, but have never seen the results proved satisfactorily. T. S.

GEORGINA, Dec 1866.

SALT FOR PRESERVING FENCE POSTS.—A writer in the *Prairie Farmer* recommends the use of salt to preserve fence posts from rotting. He mentions the case of a neighbour whose fence posts, erected in this way, showed no signs of decay at the end of twenty-five years. He also adduces another instance, where two lines of fence had been put up as nearly alike in all respects as possible, except that in one case the posts were salted, and in the other they were not. At the end of eight years, these two lines of fence presented a marked difference, those posts which were not salted leaning in all directions, while those which were treated with salt stood firm and erect. The writer referred to gives the following directions for the process:—"Bore two holes in each post with an inch auger—one so that it will be about six inches under ground when set and the other about a foot above the surface—all the holes nearly full of salt and plug them up with short pins. To have the greatest effect posts should be salted and set while the timber is green, so as to prevent the sap from souring, which I think is the start of decay." As a further illustration of the preservative effect of salt on timber, he adduces the durability of old salt barrel staves, which may often be seen lying about for years, and seem almost indestructible.

PROTECTION TO WINTER WHEAT.—It is suggested by a Western farmer, says *The Maryland Farmer*, that wheat fields may be protected from the severe weather of winter by sowing oats with the wheat, or rather sowing oats first and covering them, and then follow in a day or two with wheat. It is thought the oats will help protect the wheat during the winter, disappearing, of course, in the spring. Another plan is to mulch the wheat, late in the fall, with fine manure, or lacking this, with a coating of straw. What effect either of these plans may have in protecting the wheat from the severity of the winter, we do not know. One or all of them might be tried on small lots of ground, and their comparative merits be tested at a trifling expense. As the country becomes divested of the forest trees the wheat fields are exposed to increasingly severe trials from wind and frost. Less snow falls now than formerly, and what does come is borne from the wheat fields by the winter blasts, which career over them since divested of the protection of surrounding forests.

Good fences always pay better than lawsuits with neighbours.

Query.—If you give two persons a seat in a cornfield, can this proceeding be called "setting them by the ears?"—*Punch*.

Canadian Natural History.

The Musk-Rat or Muskquash.

[*Fiber Zibethivus.*]

The musk-rat, called also sometimes by its Indian name the Ondatra, is a native of North America, and is found between 30° and 69° north latitude. It belongs to the order *Rodentia*, or gnawers, so called from their habit of gnawing their food in a particular manner with their front teeth. The animals of this order feed for the most part on hard substances, or on food enclosed within a hard covering, such as nuts, grain, roots, &c.; and for this mode of obtaining a livelihood they are admirably fitted by the structure of their teeth. In the front of each jaw are a pair of long, slightly curved, chisel-like teeth, as every one has observed in rats and rabbits. The constant wearing away which these teeth undergo would in time grind them down, and reduce them to useless stumps, were it not for a beautiful arrangement by which it is provided that as fast as their upper surface is removed by friction the loss is repaired by the outward growth of the tooth. If by any accident the opposite tooth is broken, that which remains entire continues to grow, and not being worn away, sometimes attains exceedingly awkward dimensions. Cases, indeed, have been known where the tooth curved round until it penetrated the skull of its unfortunate owner, who thus perished miserably for want of a dentist.

The musk-rat forms a kind of connecting link between the voles, (*Arvicolæ*) of which the water rat and field-mouse are examples, and the Beavers (*Casorida*) Its colour is dark brown on the back, reddish on the neck, ribs, and legs, and ashy grey underneath. It measures from eighteen to twenty inches, including the tail, which is about seven or eight inches long. The incisor teeth are bright yellow. In shape it much resembles a rat, but is more robust and thick-set; and its muzzle is shorter. Its ears are nearly concealed in the fur. The toes of its fore feet are distinct; but those of its hind feet are fringed with stiff bristles, and the two middle ones are united by a short web. The claws are white. Its tail is long, pointed, and vertically compressed, (that is, flattened on the sides) and is covered with rounded scales interspersed with a few white hairs. It presents a sort of transition from the broad flat tail of the beaver, to the cylindrical, taper tail of the rat. The name musk-rat is given to this animal from the strong odor of musk which it emits, particularly in summer, and which the fur sometimes very persistently retains. It inhabits chiefly the banks of streams; and the whole colouring of its coat is often so wonderfully like the hue of the muddy banks where it resides, that a practised naturalist has frequently mistaken the creatures for mere lumps of mud, till they began to move, and so dispelled the illusion. Its food is mostly of a vegetable nature, though it seems also fond of fresh water musels and other mollusks. It is said sometimes to make depredations in gardens, gnawing and carrying away turnips, parsnips, carrots, and even maize, procuring the latter by cutting down the stalks near the

ground, somewhat after the manner that, for a different purpose, the beaver fells a tree. The motions of this animal in the water, its favourite element, are extremely quick; but on land it is slow and awkward, and may be easily caught. Though armed with formidable teeth it appears very inoffensive, and makes little or no resistance when captured—the writer has more than once taken them about his own dwelling, which was situated some forty rods from a stream, and found no difficulty in securing the meek and harmless intruder. The most common habitation of the musk-rat is made by burrowing in the banks of rivers; but occasionally it constructs a different kind of habitation, according to the locality and the soil. In the stiff clay banks of rivers it digs a rather complicated series of tunnels, some of them extending to a distance of fifteen or twenty yards, and sloping upwards. There are generally three or four entrances, all of which open under water and unite at their other extremity, in a single chamber where the occupant of the dwelling makes its bed. The couch of this luxurious animal is composed of sedges,



water-lily leaves, and similar plants, and is so large as to fill a bushel basket. On marshy ground, the musk-rat builds little houses of mud and reeds. These hut-like dwellings rise about three feet above the water, and look something like small hay-cocks.

As the fur of the musk-rat is rather valuable, and its flesh is by some considered nearly as good as that of the wild duck, it is exposed to no small persecution at the hands of man. If these creatures have taken up their abode in burrows, the hunters capture them by stopping up all the holes which they can reach, and intercepting the animals as they try to escape. But if the ground is marshy, and they live in houses, or "lodges," a different plan is adopted. Being armed with a four-pronged barbed spear, the hunter creeps quietly towards one of the houses, and with the full strength of his arm drives the barbed prongs completely through the frail walls, transfixing at the same time one or more of the luckless inhabitants. A companion, who is furnished with an axe, immediately hauls down the remainder of the walls, and secures the unfortunate victims, who are held down by the merciless steel.

In a work by Audubon and Bachman, the habits of these creatures are thus picturesquely described:—

"Musk-rats are very lively, playful animals, when in their proper element, the water; and many of them may be occasionally seen disporting themselves on a calm night in some mill-pond or deep seques-

tered pool, crossing and recrossing in every direction, leaving long ripples in the water behind them, while others stand for a few moments on little hurdles or tufts of grass, or on stones or logs, on which they can get a footing above the water, or on the banks of the pond, and then plunge one after the other into the water. At times one is seen lying perfectly still on the surface of the pond or stream, with its body widely spread out, and as flat as can be. Suddenly it gives the water a smart slap with its tail, somewhat in the manner of the beaver, and disappears beneath the surface instantaneously, going down head foremost, and reminding one of the quickness and ease with which some species of ducks and grebes dive when shot at.

"At the distance of twenty yards the Musk-rat comes to the surface again, and perhaps joins its companions in their sports; at the same time others are feeding on the grassy banks, dragging off the roots of various kinds of plants, or digging underneath the edge of the bank. These animals seem to form a little community of social, playful creatures,

who only require to be unmolested in order to be happy.

"Should you fire off a fowling-piece while the Musk-rats are thus occupied, a terrible fright and dispersion ensues; dozens dive at the flash of the gun, or disappear in their holes; and although in the daytime, when they see imperfectly, one may be shot while swimming, it is exceedingly difficult to kill one at night. In order to ensure success, the gunner must be concealed, so that the animal cannot see the flash, even when he fires with a percussion lock."

Traps are also largely employed for the destruction of these gentle but unfortunate animals. Their fur, like that of the beaver, is peculiarly adapted for *felting*; and besides the quantity used in this coun-

try, from four to five thousand skins are annually exported to England, for the manufacture of hats.

RARE AVES.—The movements of the feathered race to students of nature form certain prognostics of the coming weather. On the Continent, this season, the migration of birds southwards has led to anticipations being formed there of the ensuing winter being a severe one. From the appearance in this country of rare visitants, we are led to infer that a rigorous winter will also be experienced here. In the shop of Mr. Small, taxidermist, George Street, we on Thursday were shown a specimen of the Rough-legged Buzzard (*Buteo lagopus*), which was shot on Friday last at Billholm, in Eskdale. The bird was in fine plumage, and the feathering of the tarsi, one of the marks by which it is distinguished from the Common Buzzard, was very complete. Mr. Small has also had committed to him for preservation, a specimen of the Gadwall (*Anas strepera*), one of the duck tribe, which breeds in Holland, and is rarely found in this country. It was shot at Newburgh, in Fife.—*From British American.*

Some interesting experiments in raising fish, have been made by Mr. Samuel Willmot of Newcastle, C. W. These promise to be productive of important results, and to make up almost indefinitely the losses which our lakes and streams have suffered from wholesale methods of destroying fish. We hope to give some interesting particulars related to Mr. Willmot's researches in a future number.

Stock Department.

The Hampshire Downs.

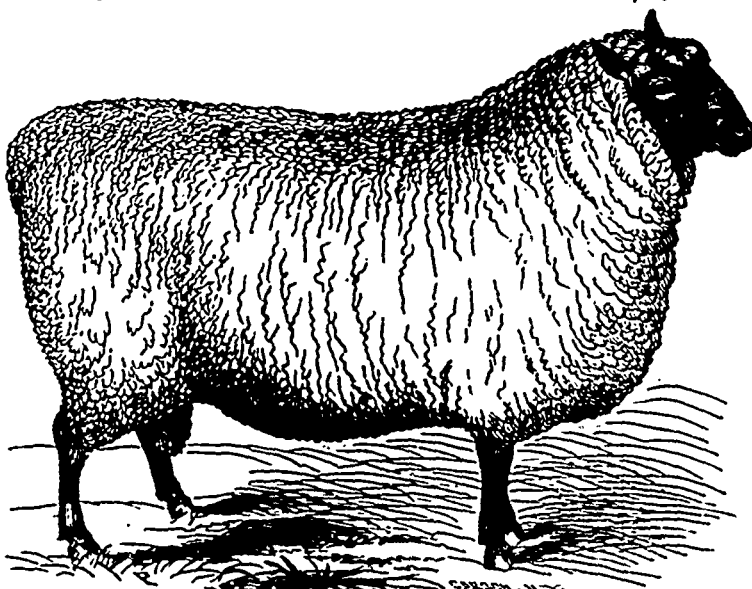
From time immemorial there has existed a hardy class, or rather classes, of sheep on the elevated formation of the chalk downs in Kent, Sussex, Surrey, and adjoining counties. Some improvement had been effected in these native animals by different breeders in various localities; but it was not till the time of Mr. John Ellman, of Lewes, who, now nearly a century ago, commenced his brilliant career, about the period of the celebrated Bakewell, that the sheep indigenous to the region of the chalk received an improvement that was destined to be progressive and permanent. The true Sussex Downs became spread by degrees over large areas of country, whose physical and agricultural features have, in some instances, but a slight resemblance to the region of the chalk. In Cambridgeshire, where the soil though not much sheltered is dry and calcareous, the late Mr. James Webb, carried the breeding of the pure Southdown to what may be called, without hyperbole, the perfection of form, early maturity, and quality. Many years ago we heard a distinguished breeder of sheep, who had just returned from one of Mr. Webb's ram-lettings, observe, that "he could scarcely see how the breeding of the Down could be carried further than what was already reached in the Brabraham flock."

The Hampshire Downs are the result of a great many attempts, long persevered in, of crossing the native white-faced sheep of the county, which were mostly coarse, unsymmetrical and horned, with the improved Sussex or pure Southdown, whose very superior qualities became, by degrees, largely transmitted to the Hampshire, so as to raise that breed to the high state of excellence which it has now attained. This breed has now for some years obtained a strong position in the counties of Hants, Wilts and Bucks; and, though by no means so widely diffused as the pure Southdowns, it is to be found in several places out of its own proper district. Professor Wilson observes, that "their leading characteristics are, as compared with the Southdown, an increased size, equal maturity, and a hardier constitution. The face and head are larger and coarser in their character; the frame is heavier throughout; the carcass is long, roomy, though less symmetrical than the Southdown, and the wool of a coarser though longer staple. Their fattening property is scarcely equal to that of the pure Southdown. These points have all received great attention lately from the breeders; and the improved Hampshire Downs now possess, both in shape, quality of wool, aptitude to fatten, and early maturity, all the qualities for which the pure Southdown has been so long and so justly celebrated. The lambs are usually dropped early and fed for the markets as lambs, or kept until the following spring, when, if well fed, they weigh from 80 to 100 lbs., and command a good market." Another good authority (Mr. C. Howard) remarks: "Their improvement dates from the commencement of the present century, when recourse was had to the Southdown; from successive crosses this very valuable class of sheep was established; and I think it will be generally admitted that a flock of Hampshire Downs now present as great a uniformity in wool, colour, and general appearance, as their smaller but handsomer cousins, the Southdowns."

The Hampshires are in their present state of advancement no doubt entitled to the high appreciation

involved in the foregoing descriptions; but we very much doubt whether, as a whole, for average excellence, they will bear a very rigid comparison with the general flocks of the pure Southdown. This indeed would hardly be fair or reasonable to expect, since the former have not, as a breed, received the same degree of attention, and so prolonged an expenditure of time and money as the latter. There is still in some of the flocks of the Hampshires a tendency to produce several coarse and unsightly animals, which of course have to be carefully weeded out, and being slow feeders they are expensive in making up for the butcher, and after all rarely produce mutton of first rate quality. Some are of opinion that both Cotswold and Leicester blood has at different periods been more or less introduced into the Down flocks of Hants and Wilts. Of late years, however, there cannot be a doubt that many of the Hampshire Downs have been kept singularly pure.

Randall, in his "American Shepherd," says that the Hampshires have been introduced into the Northern States, where they are looked upon with favour, and have received first prizes at several leading Exhibitions. In some situations they are considered preferable to the Southdown, and great numbers were exported to the Southern States previous to the breaking out of the war.



From what has been said the reader will infer that the Hampshire, as a breed, are somewhat larger and coarser, both in carcass and wool, than the pure Southdown. The wool is rather of longer staple, and the weight of the fleece will vary according to feeding, attention, &c., from six to eight pounds. As the Hampshires have generally hardy constitutions, are prolific, and good nurses, they are probably a little better adapted to the colder and more exposed portions of Canada than the Southdowns, and are well worthy a careful trial. The illustration accompanying this article will afford the reader an idea of the general form of this valuable breed.

Educating Colts.

This is generally left until the colt is too old and strong, and has acquired a will of his own which is hard to overcome. Most of the faults, such as pulling on the halter, kicking and running back, may be attributed to this cause; the colt is allowed to run wild until he is strong, and if he pulls on the halter once and it gives way, the habit is acquired, and can seldom be broken off. The education of a colt should begin as soon as he is weaned; and even before, he should be handled and petted to make him tame, and overcome his natural timidity. As soon as he is weaned, he should be haltered and led about, then tied up with a halter which he cannot break. He should be taught to allow his feet to be struck or

raised. By the time he is one year old, he should be accustomed to the harness, by having it put on him, a piece at a time, until he becomes used to the whole. During this time nothing but rewards should be allowed. Some think a colt should be made afraid of the whip, but I think this a great mistake, and never allow the whip to be used until the animal is five or six years old, and seldom find it necessary even then. If the colt misbehaves, instead of whipping or punishing him, examine into the cause; you will generally find something wrong, and the cause being removed, the effect will cease. If the misbehaviour arises from an excess of animal spirit, nothing can do more harm than punishment of any kind. A colt should never be made afraid of his care-taker, but should always yield to his will more from affection than fear. Good behaviour should be rewarded by a handful of carrots, bread or corn, and bad conduct in a young horse should be overlooked. A colt, until he begins hard work, should not have much grain; roots, particularly carrots are much preferable. I have found that the less grain there is fed to the growing colt, the less will be required when grown. Some hold to the idea that a colt should do nothing until two and a half or three years old, and at that age should at once be put to hard work, "to keep down his spirit." Now, my object is not to keep his spirit down, but to keep

it up as much as possible; therefore, I believe that a colt of common size, at a year and a half old, may and should earn his keep. I now have two, one eighteen and the other twenty-two months old, which I drive every week, and sometimes twice-a-week, to a light trotting waggon, and have often driven them nine or ten miles at a stretch, and when brought home and turned into the field they were as frolicsome as if they had remained there. The eldest of these two I would trust a woman to drive almost anywhere, cars or no cars. I do not recommend hard work, or severe, fast driving for any young horse; but I think, after considerable experience, that moderate driving for a two-year-old colt is beneficial. If the driving is moderate, the exercise will be no greater than if the animal ran around

the field at will. I prefer driving a pair, because they keep up their spirits better and the work is easier. They should not be shod, and consequently should not be driven over frozen ground; but during the winter, when sleighing is good, moderate driving will be beneficial.

Too much hay is not good for any horse, and much less for a colt. As a winter feed, I can feed nothing much better than carrots, with a little hay. Too much hay has a tendency to distend the stomach, and consequently decrease the play of the lungs. The colt should be foaled in the spring, say the latter end of May; after being weaned let it run on pasture until fall, when it should be stabled during the winter. Some think that it is not necessary to take much care of a colt the first two winters, and therefore let them have little or no shelter; but I am convinced that the saving in food will pay for stabling, and the extra quantity and quality of the manure will pay for the trouble. It may be either tied up or run loose in the stable, but should run for exercise during the warmest part of the day. For the first winter I give it one feed of hay and two of carrots or other roots per day, from one-half to three-fourths of a peck of the latter is enough for one day. During the first winter the education should be commenced and carried on; and on it, in a great measure, will depend the future character and value of the animal. The carrots, with an occasional currying, will give it a coat which will compare favourably with that of a colt raised without much shelter or food.—Cor. Ger. Telegraph.

The Dairy.

American Dairymen's Convention.

We condense from the *Utica Weekly Herald* a report of the second Annual Convention of the American Dairymen's Association, which was held in Utica (N. Y.) on the 14th of January. The attendance was large and an unusual amount of interest appeared to be felt in the proceedings. The chair was occupied by W. H. Comstock, Esq., of Utica, President of the Association. In his opening address the chairman referred to the satisfactory results which had followed the labours of the Association during the past year, and to the encouraging progress it was making. He trusted that although the resolution of the last annual meeting relative to starting a Dairymen's Periodical had not yet been carried out, this desirable object would not be abandoned. He congratulated the meeting on the successful completion of Mr. Willard's mission to Europe, and informed them that American cheese was fast gaining a good name in England. He urged the attention of the Convention to the law relative to the adulteration of milk, to the propriety of making efforts for the removal of the tax on cheese, and to the question whether the cheese produced was not becoming greater than the consumption.

After the completion of preliminary business the following programme of subjects for discussion was agreed to:—

“Ought farmers to be taxed on the manufacture of cheese, and should not measures be taken to have the internal revenue laws or the Commissioner's decision in this regard changed? Milk differs from other raw materials, since it is of such a perishable nature that it cannot be disposed of in the ordinary way like other products. E. G. Storms, Montgomery, to open the discussion.

Is the branch factory system practicable; and is its adoption to be advised? Lemuel N. Brown, Oswego.

What are the requisites of purity of flavour in cheese; and how can it be secured? G. Williams, Oneida.

How can fair prices for dairy products be best maintained the coming year? J. Jones, Oneida.

Should not the convention adopt some measures to secure a more substantial and uniform cheese box? W. E. Paxton, Erie.

Best stock for dairy purposes; and should not choice calves be more generally raised for replenishing our dairies, rather than to rely upon droves from Canada and elsewhere? S. S. Whitman, of Herkimer, will introduce this subject.

The advantage and profit of connecting butter making with cheese manufacture. Opened by L. Carl, Herkimer.

What are the best hours for milking? and in what way should it be conducted to get the best results? Hiram Walker, Oswego.

Is there not danger that dairying in America is being too largely extended and increased? What is the present limit to which it can be safely carried? Discussion opened by Harvey Farrington, Canada West.

Best grasses and grains for dairy stock; and to what extent can soiling be generally adopted? Hon. Harris Lewis, Herkimer.

The cause in the loss of flavour in cheese which was made prior to or during the excessively warm weather in July. Opened by A. Barlett, of Ohio.”

The Convention then proceeded to the election of officers for the ensuing year. Mr. George Williams having been elected President occupied the chair during the remainder of the session.

In reference to the first subject for discussion, Mr. E. G. Storms, of Montgomery, remarked:—

A cheese is in its prime at from one to four month's old, according to the state of the weather; after that time it begins to deteriorate, and soon becomes too rank for the popular taste. Whether a reduced temperature and an air-tight composition or varnish would maintain the flavor intact for a greater length of time, remains to be determined by experiment. We are consequently compelled to sell or submit to inevitable loss by holding on. I had hopes, when the factory system was inaugurated, that we might in a measure control the market, or at least, by con-

centrating the business in fewer hands, enable the salesmen to act in concert, and thus realize better prices for their products. But I am fearful that the insane competition that is springing up among dairymen, will defeat the object in view, by multiplying factories and associations to such an extent that concert of action will be an impossibility. Manufacturers are in part responsible for this state of things; their charges are generally too high, and they do not sufficiently consult the interests of patrons. These are dissatisfied and immediately another factory is erected, and sometimes three or four, where there should be but one. I understand that by a decision of the Commissioner of Internal Revenue, or an act of Congress, the license fee will not in future be assessed upon dairymen, but as each assistant assessor interprets the law to suit himself, we may as well expect to pay it. As stated recently in the *Utica Morning Herald*, in Oppenheim no fee is assessed upon dairymen who take their milk to a factory, while in St. Johnsville, an adjoining town, the license is required. If Congress insists upon collecting the tax, it will be well to call its attention to some of the foregoing facts. At least the law should be impartially executed.

Mr. Storms was followed by Mr. Wm. H. Comstock, of Oneida. Mr. Comstock took the ground that cheese making could not come under the head of manufactures, and made a motion that a committee be appointed to proceed to Washington for the purpose of getting the tax upon cheese packages removed. The motion was carried.

The next question for discussion was called up and opened by Mr. LEMUEL N. BROWN, of Oswego county.

Is the branch factory business practicable; and is its adoption to be advised?

Mr. BROWN read a paper advocating the branch factory system for a number of reasons. Our space will not permit a report of his paper.

A gentleman from Herkimer county succeeded Mr. BROWN, raising the question whether the uniform make of cheese in the branch factories would be as perfect as that in one large factory.

Mr. GEORGE DAVIS, of Little Falls, asked what object there could be in drawing the cheese together instead of drawing directly to market?

Mr. BROWN answered it was for the purpose of curing it.

Mr. FARRINGTON, from Canada, then took the floor, saying that the branch system had been adopted by one of the largest factories in Canada, and it had worked greatly to the advantage of the manufacturer. In answer to the question by Mr. DAVIS, of drawing the cheese to one place for curing, it was said the object was to save the expense of building branch dry houses. He was ready to endorse all Mr. BROWN had said. No extra expense was attending the branch system.

Mr. JOHNSON, of Oswego county, rose to ask if it was necessary to provide ice or spring water at each of these branches?

Mr. FARRINGTON replied that the branch system did not supersede the use of ice or spring water.

On motion of Mr. LEWIS, of Herkimer county, the question was laid on the table.

The next question was then in order.

What are the requisites of purity of flavor in cheese; and how can it be secured?

Mr. G. WILLIAMS, of Oneida, President elect of the Association, rose to open the discussion, saying he was not prepared to do more than introduce the question, having been frustrated in his plans by the report of the Committee on Nomination of Officers. Purity and flavor he considered to be the essentials of cheese. He did not think the quality of cheese depended altogether upon the manufacturer. It depends mainly upon the kind or quality of grass or grain upon which cows are supported. Grass must not only be pure, but everything with it must be pure. No pasture should be used which is mixed with weeds. Eating these impure articles of food invariably produced impure milk, and no good cheese can be made from impure milk. Cows must be in perfect health. It is the interest of dairymen to select only such cows as will produce pure milk, even sacrificing quantity to quality. Milk must be kept where nothing impure can influence it. Milk is a very susceptible article, and readily partakes of the properties of whatever surrounds it. Onions in the same room with milk will communicate their pungent quality to it.

Mr. FARRINGTON, of Canada West, could not exactly agree with the gentleman who had just left the floor. He thought there was danger of getting too much of the water out of curd. Where too much water was taken out sour cheese was invariably the result. Private factories he did not believe to be as good as large factories. He had tried it, and had given it up

in disgust. The private system could never be carried out, and it never would be tried generally again. Concerning purity in cheese, Mr. Farrington said, the impurity and bad quality of cheese during the past year, was owing, in a great measure, to the wet season. Mr. F. discussed this part of the question from a scientific point, attributing the impurity of cheese to the surplus of ammonia in the food of the cows. Upon the question of soil Mr. Farrington agreed with those who held that the quality of cheese depends somewhat upon the soil, citing the fact that different localities produced cheese of very widely different quality.

Mr. HIRAM WALKER, of Oswego, followed in the discussion, advocating the large factory system in manufacturing. He said that private factories were conducted in part by the women of the dairymen's family, and having other duties to perform, they frequently neglected the making of the cheese, thus producing a sour article.

On motion, the question was laid on the table.

The next business of general interest was the report of Mr. X. A. Willard's visit to England. It was an instructive, interesting document, going into very full particulars, and occupying some two hours in its delivery. At its close, a vote of thanks was tendered to the speaker, and a copy of the address requested for publication in the Annual Report of the Society. It would extend this account unreasonably to give even a synopsis now; but our readers may expect an abstract of this valuable report in our next issue.

The discussion of the next question on the programme was then taken up:—How can fair prices for dairy products be best maintained this year? On this subject Mr. Farrington, of C. W. was of opinion that the object would be best secured by co-operation and association. Mr. Comstock then reported from the Committee of the Weekly Periodical, stating their opinion that it was desirable for the interest of dairymen that a weekly circular be issued for the benefit of every cheese producer, containing a correct report from every American cheese producer, of the amount of cheese sold, for what market shipped, and the number of boxes on hand, together with the size of cheese and prices obtained. The report concluded with the recommendation that the Secretary issue such circular provided he receive sufficient encouragement to warrant such publication.

The question of a weekly circular elicited considerable discussion.

Mr. CHADWICK, of Canada, was in favour of the resolution. He had been highly gratified at the intelligence brought before this body. He was not a cheese manufacturer, but had taken a great degree of interest in the subject. There were many features to be learned, and these annual meetings brought them out. The subject under discussion was of great importance to cheese manufacturers. The information obtained by your agent in England has been of immense benefit to the dairy interest, and the statistics contemplated in circulars would result in great good. All that was wanted was to present it in such a way that persons could subscribe for it, and it would be a success. The people of Canada were only separated from you by an imaginary line, and would go with you in this movement. They were willing to reciprocate and further the cause. He hoped the resolution would pass. Mr. C. spoke at some length and was several times applauded.

Mr. CLARK, of Lewis, thought that it would be well if the statistics were published in some paper. The facts brought out would be valuable to all. The matter of the circular was discussed at length by Mr. Johnson, of Oswego, Mr. Lewis, of Herkimer, and others.

The question in regard to securing a better kind of cheese-box was now taken up.

Mr. NICHOLSON, of Oneida, said he was a manufacturer of boxes. He had investigated the subject, and come to the conclusion that dairymen are losing money by sending cheese abroad in frail boxes. They were not substantial enough to ship cheese to Europe. There was a struggle between the box manufacturer and the cheese manufacturer. The latter wanted a very cheap box, and insisted on a good box. The two were rather opposed to each other. Good materials were scarce, and it was a question whether we should not have to resort to another kind of box, on account of this scarcity of material. He asked why a band is better than a double cover? It was replied that the band is less expensive.

Mr. FARRINGTON, of Canada, said the trouble with boxes is that the heads were not sufficiently seasoned.

The heads shrink after being put together, and fail to press. The timber for hoops was too brittle. It was said that lumber was becoming scarce. If box manufacturers would send to Canada for lumber, they could have the finest in the world, and enough to last half a century.

A gentleman from Corland (name not announced) and he had been in favour of sawed hoops for boxes. He was satisfied that a sawed hoop is better than when it is cut. Timber is not generally steamed enough, they check and split. Sawed boxes do not split.

The question was now laid on the table.

The next subject taken up for discussion was—"the best stock for dairy purposes." Mr. S. S. Whittman, of Little Falls, the first speaker, alluded to the difficulty of procuring good cows. Inferior beasts might be obtained, but the better sort did not so readily change owners. Farmers might be induced to part with any unruly cow, especially if she was a real kicker, or milked so hard that it would make a man shed tears to think of milking her, or she might have some other defect—cows of this kind may be bought. But propose to buy the man's best cows, and you will hear another story; that cow is not exactly for sale; there will be some excuse. He must consult his wife, or the boys, or the girls, or something of the kind.

We especially commend the remainder of Mr. Whittmore's admirable remarks to our Canadian readers—He said:—

"This is not all; there is a real difficulty in finding and purchasing just the right kind of cows. Let a man go out in any of the counties of this State, and undertake to buy cows that come up to a desirable standard, say from 1 to 7 years of age, with udder and teats all right, with marks indicating a good milker, with fair size and good appearance, and coming in about the right time, we will say in April, and he will find it a slow business; and, as I indicated before, there are but few of these cows bought, more generally they are culls or second rate cows at best.

And there is another trouble to encounter. I refer to the injury the cow sustains by reason of transportation, and of their uneasiness on account of being in a strange herd and on a strange farm. This is so well understood by dairymen, that they do not expect that a cow will come up to her real standard the first season after purchase.

The above remarks have been made to show that a man will be very fortunate if he keeps his dairy up to a fair standard by purchasing his cows, saying nothing about the great losses that many dairymen have had by introducing into their herds that disease which has prevailed so extensively in some towns in Herkimer, Oneida and Lewis counties particularly, I mean abortion.

And now what is the remedy for this uncertainty, for this unpleasant and often unprofitable business of purchasing cows? All of you will have already anticipated my answer, and I scarcely need to say, raise your calves. When I say that, I have only introduced a subject of great importance, I had almost said the greatest importance to dairymen, and I'm only sorry that I am not able to present it in a way that will make an impression equal to its importance. When I say raise your own calves and fill up the complement of your dairy from them, I do not mean that you, in a hap-hazard way, raise anything you happen to have, and that by chance. I mean much more than this. I mean nothing less than the best you can procure. I do not claim that because you lavish a large sum of money in purchase of stock you will thereby be surely the gainer, but let not a few dollars, or a few hundred, deter you from obtaining the best results. For the purpose of raising good stock, the best breed and most perfect animals of both sexes should be employed in propagation. I know of no way that a dairy can be so easily improved as by obtaining a bull of deserved reputation, as of a milking family forming a regular character or type for a succession of generations, (if I may so express myself,) and then raise your calves from cows that have proved your best milkers, or from their progeny, remembering that ancestral influence is of practical importance, and the man who expects to improve his dairy must give it proper attention, for the law of hereditary transmission will show itself by marks that cannot be misunderstood. First fix upon a point you wish to attain, and then use the means resolutely and judiciously to reach it.

In February, 1859, this same subject was before the Farmers' Club of Little Falls. At that time but few calves were raised, but some dairymen began to

see the bad policy of depending on purchasing cows to fill up their dairies. At that meeting Mr. R. D. Brown of Fairfield stated, that out of thirty-five half blood Durham heifers raised by him, only three had been turned off as bad milkers—all of the others proved to be superior milkers, and he kept them till they were completely worn out, having turned one off the year before, at the age of eighteen years, and he thought she yielded 500 pounds of cheese, even at that age. In raising these calves he made a selection out of seventy cows. By attention to breeding, Mr. Fish of Herkimer county, has improved the milking qualities of his cows so that he has succeeded in producing 834 pounds of cheese as an average per cow.

At a meeting of the Club of a more recent date, Harris Lewis stated that from a superior cow in his dairy he had scarcely failed out of six or eight of her calves he had raised, of having cows of like superiority. Alonzo Reed made a similar statement relative to the calves of a choice cow of his dairy. I might multiply facts of this kind if it was necessary, but it is not, for every observing dairyman present has known of cases of the same kind.

In 1859, a choice cow was estimated at \$30, and according to the estimate of Mr. Brown, a heifer at two years old had cost \$35. His items were as follows: Calf at four days old, \$1 25; two months, say to the first of June, \$1 50; the next five months to November 1, \$3 75; to April 1, \$8 00; the second year, the first seven months, \$7 00; the following five months, \$11—making \$35 at the end of two years. I will add that in the next three years she will more than pay the expense of raising, so that the farmer, instead of paying \$50 for a cow at five years old, has a cow already at his stable, kind and peaceable, that has paid all her expense; in other words, has balanced her account, and is ready to go on for the next ten years at a large profit to her owner.

All dairymen know that a good cow is much better than a poor one, but all do not appreciate the difference. To illustrate this difference, I cannot do better than give an extract from an essay by Mr. Reed, in March 1859. The whole of it is valuable, as all his essays were. He gives the statistics of the yield and profit of five of the best cows in his dairy, and also of the five poorest in 1857. They were obtained by measuring, and recording the amount of each cow's milk on the first day of each month, and are approximately correct.

Five best cows Cr. by average of 554 gallons milk each, which realized in butter and cheese 11½ cts. per gallon.....	\$63 75
Dr. to 2½ tons hay, at \$8.....	\$20 00
" 30 weeks in pastures, at 2s.....	7 50
" 200 ground feed in spring at 12s.....	3 00
" 10 per cent. interest on cost of cow, at \$45.....	4 50
	<hr/> 31 00

By balance in favour of cow.....	\$28 70
Five poorest cows Dr. to cost of keeping as above.....	\$35 00
By an average 243 gallons of milk each as above at 11½ cts.....	27 95
	<hr/> \$7 05

This is an average amount realized per gallon for the whole season; thus making a difference of \$178 80 for the season between the two lots of cows. It is needless to add that these cows were kept only one season.

Each breed has its advocates. As we do not go beyond (at this time) the milking qualities, the question turns upon the quantity and quality of the milk, including hardness and ease of keeping. For all these qualities, some of our native cows (I use the term by way of distinction,) have proved the equals of foreign breeds of later importation. Probably in the hands of a judicious breeder, much of the early importation from different parts of Europe, would have proved equal if not superior to the best late importations. But they have become so befuddled by all kinds of cross-breeding, that it is difficult to detect the original type except by superior milking qualities; and when we find this it should be improved upon by the best means within our reach.

In 1350, a French historian says, that in a certain seige the besieged could only receive their supply of butter from Holland, which had been famous for its dairy products for 500 years, and the Hollanders, in bringing their cows to America, would undoubtedly bring their best stock, as it involved a cost of several hundred dollars, and a voyage, at that time, of some six months. This stock of cows was scattered along the North River, and along the Mohawk, as far west as Palatine, and off south in Schoharie county, where, it is said, that traces of the same Dutch breed may be found to this day. Other breeds have their superior qualities, and earnest advocates, and when

the dairyman finds the desirable qualities in any of them, let him not fail to avail himself of their advantages.

I have endeavoured to show that it is neither safe nor profitable to depend on purchasing cows at random for filling up dairies.

That calves can be raised with better results as to cost and quality.

That care should be strictly observed in breeding for the dairy in the selection of the bull as well as the cow, so that the good qualities of the one may not be counteracted by the bad ones of the other, and by this means we may be quite sure of superior milkers.

That good cows are cheaper than poor ones, the best way you can fix it.

This subject might be extended to an indefinite length, but I have a multitude of facts to prove my position, and hope my few remarks will provoke discussion here and elsewhere till this subject shall receive the practical attention it so loudly demands.

Mr. ELLISON read an interesting statement given by Nicholas Smith of Herkimer county, relative to the production of milk from cows.

The next subject taken up was "The manufacture of butter with cheese at factories." The first speaker upon the subject was Mr. Johnson of Oswego county. He proved by illustration that butter should be manufactured with cheese at factories. The Oswego factories have been complained of as making skim cheese. There was no ground for the accusation. Their factories during the past year had made one pound of cheese from 9:13 pounds of milk. Had Oneida county factories done better than that?

Mr. CLARK, from Lewis county, said their factories had made into butter the cream which rose upon their vats during the night. He did not think the idea a good one. It did not have as good flavour as butter made in other ways. The speaker was able to make good cheese at his factory from partially skimmed milk.

Mr. ELLISON did not believe in skim cheese. He had seen that kind in Liverpool, and thought very little of it. To make cheese in this manner, would be to reduce its value in the market.

Mr. SLAUGHTON of Orange county gave his ideas on skim milk and butter. Some four years ago, people in his vicinity had tried the skim milk plan with success. Between this plan and others, he thought each one should intelligently choose for themselves.

Col. MILLER of Lewis county would like to ask Mr. Clark what his factory cheese sold at last year.

Mr. Clark replied they sold at 18 cents during the first part of the season, and 16 cents during the latter part of the season.

A gentleman said the skim cheese was best for the southern market, and full milk cheese cannot compete with skim cheese.

Mr. COMSTOCK said it was a misnomer to call the cheese under consideration skim cheese.

Mr. E. G. BAGO, of Oneida, rose to protest against the custom of extracting a particle of the butter quality from milk before making cheese. It was possible to hold every particle of the butter quality in manufacturing. Those who cannot do this, he would advise to skim; but for the good of the dairyman, he protested against the skimming system. Cold water is not good in the manufacturing of cheese. The animal warmth of the milk must be evolved gradually, and this could be done by the application of salt in sufficient quantity, and then gently but constantly stirring it.

Mr. WALKER, of Oswego, followed, saying his experience was that great loss was sustained by taking off any cream before manufacturing. It was his opinion that the process of manufacturing skim cheese was damaging to the interests of dairymen.

On motion the question was laid upon the table.

The question of making butter from whey was then taken up, and the discussion opened by Mr. RIGGS, of Lewis county. Mr. Riggs gave his experience in making butter from whey, showing that the latter article can easily and profitably be used for the purpose of making butter. He said the butter he had made he sold in New York for forty cents per pound, and was in as good demand as butter made from pure cream. Mr. R. gave the following explanation of the process:

After separating the whey from the curd, place it in a tin vat and add a liquid acid. One gallon to the whey of 50 gallons of milk, if the whey is sweet, but less quantity if changed. After this apply heat until less quantity it changed. After this apply heat until it indicates a temperature of from 200 to 212 degrees Fahrenheit. When the cream rises and is skimmed off and placed in a cool place, let it stand till the next day. Then it is churned at a temperature ranging from 56 to 68 degrees, depending on the weather, and it is worked over and salted in the usual manner of

butter making. It will produce on an average one pound of butter from the whey of 150 pounds of milk. The acid is made by taking any quantity of whey at boiling heat after the cream is extracted, adding one gallon of strictly sour whey to ten gallons of this boiling whey, when all the casein remaining in the whey is collected together in one mass, and is skimmed off. After the whey is let stand from 24 to 48 hours it is ready for use as acid. This process is repeated as often as necessity requires.

The question of time and process of milking was taken up and discussed by Mr. Walker, of Oswego county.

Mr. BOYER, of Herkimer county, said his practice had been to milk his own cows in rotation, beginning and ending with the same cow at each milking. He had noticed that cows are creatures of habit, and when they once get into the habit of being milked in regular order, their object to being ever milked out of that order.

Mr. JOHNSON, of Herkimer county, and Mr. JOHNSON of Oswego county, corroborated the position held by Mr. Boyer. The latter gentleman, (Mr. JOHNSON, of Oswego county,) adding that cows ought to be treated gently, and milking should be done quickly. He had noticed that a cow will give more milk for a gentle milking maid than for a crusty old bachelor. To this last statement several gentlemen said, "Hope the ladies present will hear this."

The question of whether the dairying was not being carried to too great an extent in this country was laid on the table, and the question of grasses and grain was taken up.

Hon. HARRIS LEWIS, of Herkimer, opened the discussion, saying that he thought it late to enter upon the discussion of the vital question of dairying. He then read the following statement of grasses:

Grasses for hay or meadows on good soils—June or spring grass, timothy, orchard grass, red-top, smooth-stalked meadow grass, tall fescue, and low meadow grass.

For pasture on good soils—Clover, red and white, smooth-stalked meadow grass, timothy, orchard grass, meadow fescue, sweet-scented vernal grass, and last, but not least, June grass.

For pastures and meadows on moist soils—Rough-stalked meadow grass, red-top orchard grass, tall fescue, June grass, and floating fescue.

For soiling—Winter rye, lucern, red clover, fall oat-grass and millet.

For pastures and meadows on exhausted or wet clay soils—Red-top, couch grass and quack.

Mr. LEWIS said he was aware he should meet a fierce opposition in advocating the good qualities of quack grass. He said it was the most tenacious of life and did better than timothy or clover for pasture. Quack grass would grow either end up on the poorest soil, and even on rocks (provided the rocks be covered deeply enough with soil), or even in the best cultivated and richest soiled garden. Quack produced better hay than timothy for cattle. Mr. LEWIS urged upon the attention of the convention the fact that nature never designed that timothy and clover should grow on every kind of soil. Soils that will not sustain these popular grasses will produce abundance of rich hay from other kinds of grass. On the subject of grain Mr. L. said he had not had experience lately in grain feeding. He had let his grain go to grass until his friends had called him a Nebucadnezzar on grass. After mentioning the different kinds of grain and their quality as food for milk cows, he advised the feeding first oat meal, second oat meal, and third oat meal, thus expressing his opinion on the grades of grain for food.

Delegates were present at the convention from Vermont and other New England States, from several of the western States, and from Canada.

The Apiary.

More about the Worker-Bee.

THE workers are also the producers of wax, out of which they construct their combs, exhibiting a mechanism that far surpasses the skill of the human mind. The scales of wax are secreted between the rings of the abdomen, of which there are six of unequal breadth. Wax is a natural secretion of the bee, as tallow is of the ox, requiring a large amount of feed to produce a small portion of wax. It is produced, however, from any kind of sweet. If the bees are fed upon the darkest coloured sugar or molasses, equally white wax is secreted as when they

are fed upon the purest honey. During the honey harvest, when the bees are building comb in glass boxes, a careful observer may see here and there a bee with scales of wax protruding from between the rings of the abdomen, busily engaged in constructing the cells. Other bees may be seen to remove a portion of the wax with their mandibles as they pass along and, moulding it into shape, apply it wherever it is wanted. Each individual worker is a mechanic. What is commenced by one a dozen may unite to finish. Eternal wisdom is their instructor, imparting to them an instinctive knowledge of all things necessary to their welfare, which can never be impaired through all time.

The abdomen is attached to the posterior part of the thorax by a very slender ligament, like that which unites the thorax and the head. It contains the first stomach or honey-bag, the small intestines, the venom-bag, and the sting. The honey-bag when full is nearly the size of a small pea and contains about one drop of honey. It is so constructed as to enable the bee to disgorge its contents. The second stomach, which appears almost as a continuation of the first, is the receptacle for the food, which is there digested for the nourishment of the body and for the elaboration of wax. The sting with its appendages lies close to the last stomach, and is lodged in a sheath, formed by two horny scales, along the groove of which, when the sting is extruded, flows the poison from a bag or reservoir in the body of the bee near the root of the sting. The sting is furnished with several teeth or barbs, which give it the appearance of an arrow, and which retains it in the wound it has made till the poison has been ejected. In fact, the sting is so difficult to remove from the wound that the bee often leaves it behind with the whole apparatus attached, and even part of its intestines; death is the consequence in less than twenty-four hours. Although the sting is detached from the insect, it will, unless removed immediately, force itself still deeper into the flesh, ejecting its poison until the poison-bag is empty. It should, therefore, be removed immediately and a drop of honey put upon the wound to exclude the air, or otherwise apply *aqua ammoniac* (hartshorn), soda, or blue-button, to neutralize the poison which is found to be a powerful acid.

Bee-hive Dimensions.

To the Editor of THE CANADA FARMER:

I AM obliged for Mr. Thomas' explanations in No. 17, though I must say I am yet somewhat in the dark as to the prevention of swarming. The examination to be of any value must take place weekly, which where any considerable number are kept, would be rather a troublesome affair. I also understand the only way with Italians is to divide again.

I am pleased to see that Mr. Jewett's letter of 30th Aug. has provoked discussion. I was induced to conclude (backed by his experience of 26 years) that large hives were after all the right thing. That a large hive affording more room for the deposit of eggs (which Langstroth tells us in the height of the breeding season amount to two to three thousand a day) does not require a greatly increased number of nurse bees, but will contain a vastly larger number of honey gatherers. Two very important objects are thus attained, the bees are increasing faster, and laying in honey more rapidly. If we take the capacity of the Queen at 2,500 per day (and Italians are said to be more prolific) 100 superficial inches per day for 21 days are required to receive her eggs.

We might infer from "Bee Fancier's" remarks that the size of the hive is a settled point. Langstroth says, (p. 329) "the ablest practical apiarians are still at variance" and "that so much depends on seasons, and localities, and on whether the bees swarm or not, that no rule applicable to all cases can be given." When Quinby wrote "every inch over 2,000 is

worse than useless," he referred to common box hives, at the same time he ignored all patent hives, and it is only in a postscript that he admits the value of movable combs, and at once advocates a hive of 2925 inches. Being only a novice, it appears to me that the object of keeping bees should have some thing to do with the size of the hive. If it be for the sale of swarms, then not so large, but if for the accumulation of honey, I cannot understand how they can be too large. Mr. Jewett's larger hives are respectively 4455, and 5513, and he says he finds them answer.

Unfortunately "nearly all leading apiarians" are also Bee-hive vendors, and their interest may lie in a different direction from the mere producer of honey. I have for some years watched a successful Scotch bee-keeper; as long as there was a good demand for bees, he kept small hives, but when his profits are depending on honey, he increases the size of his hives. I can understand how in a large sized box hive the space is worse than useless, for it will be filled with honey which, (theory to the contrary notwithstanding) will candy in the comb, and is therefore not available for the bees; but in any properly constructed hive the surplus can be removed.

BRIAR.

County of Carlton, }
November, 1866. }

P.S. Since writing the foregoing I have met with Taylor's manual, in which he gives the following extract from Gellen: "one of my chief objects, has been to ascertain what shape of hive is the most profitable; and with this view I have tried all the different kinds, and have invariably remarked that bees thrive better in low than high ones; that in general those that are broad and flat amass more honey, thrive better, and give out stronger and earlier swarms than those which are high." Without in any way intending to endorse either opinion, here is further evidence that the size and shape of hives is not by any means a settled matter. Following your advice I remitted one dollar Am. Currency in a registered letter to E. Vanslyke, 180 Broadway, for the Am. Bee Gazette, and that is the last I know of it. This was before I was aware of Mr. Thomas being the Canada Agent.

The above was written long before the issue of 15th Dec., containing extracts from Mr. Jewett's second letter.

NOTE BY ED. C. F.—The above communication has been mislaid for a time, but the subject is of constant interest, and therefore not out of date. It will do good for practical bee-keepers to discuss such questions and experiment upon them. It is never a good plan to register a money letter destined for the U. S. Remittances that have to cross the lines are much more likely to go safely in unregistered letters. Still the letter may have reached the Gazette office. From various complaints that reach us we fear all is not right with that periodical.

Replacing Bees—Rearing Brood.

It is asserted by Messrs. Bidwell Brothers, Minnesota, in an article on wintering bees, "that when from improper ventilation or cold the number of bees in a colony becomes diminished, they seek to replace the bees by rearing brood." In reference to this assertion, Mrs. Ellen S. Tupper, of Iowa, says she has never found this to be the case. She has observed that the laying of the queen, and the rearing of brood, commence and terminate in nearly all colonies about the same time—the common bee commencing about the end of February and the Italian bee a little earlier. In October the brood sensibly diminishes, and is nearly gone in all hives by the last of November. The only exception to this uniformity was observed when very young bees just fertilized have been introduced into new colonies late in the fall. These young queens have under these circumstances commenced laying, and continued to do so for about a month. Mrs. Tupper concludes from all her observation on the habits of bees, "that they are very uniform in their instincts, and that in spring—all other things being equal—the brood reared is in proportion to the honey and bee bread in store, and not in proportion to the number of bees."



"AMERICAN BEF GAZETTE."—John Jewett, of Lucknow, enquires if the above periodical is still published. We are unable to give any further information on this point, except what our correspondent may infer from the fact that our own copies have also failed to reach this office.

OX-EYE DAISY.—We observe in our American exchanges that this pest (respecting which a correspondent recently applied to us for advice as to the best means of extirpating it) is very prevalent in some parts of the Eastern States, and is rapidly making its way westward. One writer says, "salt is sure death to it; and that the expence of its application does not exceed \$3 per acre." We should be inclined to think that the amount of salt requisite to destroy the daisy would as effectually destroy the grass; and should still place more dependence on the means we recommended to our correspondent—enriching the soil, ploughing up, and seeding afresh.

DOSE OF LAUDANUM FOR A HORSE.—To the Editor of THE CANADA FARMER. Sir,—Some of your readers are anxious to know from the authority of a V. S. what is the largest dose of laudanum that should be given to a horse, and also what effect six ounces would have if given in three hours. (Signed) BALAKLAVA.

ANS.—The dose of laudanum for a horse is from one to three ounces, and in some acute diseases six ounces may be administered in the space of three hours without developing any of its physiological actions. If given to a healthy animal it would most likely produce a short period of excitement, followed by a secondary depressing action, afterwards producing febrile symptoms more or less. The dose of laudanum should always be regulated by the age and strength of the horse, and also by the nature and intensity of the disease.—VET. ED.

MR. HOWARD ON IMPLEMENTS WITH SEATS.—"Another Bedford man" writes us from Toronto respecting Mr. Howard's views of American agriculture, and while agreeing in the main with our observations, thinks we misunderstand his allusion to farm implements provided with seats. The following are our correspondent's remarks on this point:

"You do him an injustice in your remarks on his words upon implements, 'furnished with a seat for a man to ride.' It could not be that he thought a man ought not to ride, for all the latest improvements made by the firm are furnished with a seat—haymaking machines, horse drags, double beamed ploughs, cultivators, horse hoes, &c., and it is not likely that he would condemn a practice which he himself is striving to introduce; and if even he did seem to condemn the practice, it must have been in connection with the passage where he speaks of American horses as light."

PLATT MIDGE-PROOF WHEAT.—In reply to a request for the address of our correspondent who sent us a notice of a new variety of spring wheat called "Platt Midge-proof wheat," we have received the following communication, which we subjoin as an answer to the numerous letters of inquiry we have received on the subject. Mr. Membery has our thanks for complying with our request, and we regret that he has not more of the wheat at his disposal. Another season will furnish an additional test of its merits, as well as increase the supply for distribution, should the results of the trial be such as to recommend it. We shall be glad to hear from Mr. Membery again when he has harvested his next wheat crop. The following is the letter referred to:

To the Editor of THE CANADA FARMER:

Sir,—I notice in the CANADA FARMER of the 1st inst.—"An address Wanted," by Mr. John A. Cull, of Toronto. My address is Adolphustown Post Office, County of Lennox, C. W. You request me to send

this information for the benefit of your correspondent and others who may wish to know more of the wheat in question. Perhaps I made a mistake in stating that the flour was superior to any made from winter wheat, but this I do assert—it makes the best flour I ever had from any spring wheat in my life. I am daily receiving letters from almost all parts of Canada West, asking a variety of questions about it. Some doubt whether I had the yield as quoted, and others whether it is weevil proof or not. I believe it to be perfectly weevil or midge proof. I have no more for sale. I may add that I got 120 lbs. ground and it produced 98 lbs. of flour, no toll taken out.

I am Sir, your obt. servant,

GILES MEMBERY.

P. S.—J. J. Watson, the Postmaster here has a number of bushels left.

SEVEN-EARED WHEAT.—We publish the following communication which gives an unfavourable report of the seven-eared wheat noticed in a former number of this journal, because we are always more anxious to elicit truth than to introduce a novelty, and would especially encourage our readers to furnish us with the results of actual experiment. Mr. Norman's experience may prove more fortunate than our correspondent's, or it is possible that the two specimens of wheat may not be identical.

To the Editor of THE CANADA FARMER.

Sir,—In THE FARMER of December 15, I see an account of a new variety of wheat brought into Canada by a Mr. Norman from near Salt Lake City, U. S., and there known as "seven-eared wheat." Now, Sir, I do not wish to discourage this enterprising gentleman in his experiment, but I am confident the wheat will not suit this climate.

A friend of mine gave me a sample of the same wheat some years ago, and I tried it for several seasons in succession with the very worst results, as it kept getting worse every year, till I abandoned it as not suitable to this climate. The results were repeatedly the same with me as with Mr. Norman, in his single experiment, the grain being very badly shrunk, and the straw very much rusted.

Hoping Mr. Norman will have better success than I had,

I remain yours, &c.

South Yarmouth.

J. H. P.

The Canada Farmer.

TORONTO, UPPER CANADA, JAN. 15, 1867.

A Cheap Light and a Good Manure.

THE January number of the *Journal of the Board of Arts and Manufactures for Upper Canada* gives an interesting account of a newly invented gas, extracted from wood (especially pine) and bones and other waste matter. This discovery promises to be of considerable value, not only to large towns, but to small villages, to schools and churches, or other public buildings. It is said to afford a good, clear light, at a cost very far below that of ordinary coal gas. The materials from which it is manufactured are abundant in this country, and some of them generally thrown away and wasted as mere refuse; while the cost of production, it is said, may be reduced to a cypher by the sale of the residuum, which forms a valuable fertilizer. The principal portion of this residuum is in the form of an ammoniacal liquid and bone black, the latter being the chief ingredient in Coe's superphosphate of lime. The promoters of this patent contend, and are prepared to prove by actual experiment, "that the residuum of the wood and bones taken from the retorts is sufficiently valuable to defray more than all the cost of material and other expenses of every kind in the manufacture of the gas, thereby leaving the receipts for the gas itself all clear profit." The discovery, or rather the application of the discovery in its present form, is due to Mr. Ensley; and the

present proprietors of the patent are Mr. John Moffatt, of London, and Mr. T. D. Ledyard, of Toronto. The former first introduced the gas into the Seminary at Komoka, where it is now in successful operation. Very recently also the citizens of Cobourg have taken the matter up. Their town is now lighted with this gas, and we are told that "there is probably no town in America so well lighted at the present time as Cobourg." Successful experiments in the new invention have been made in Detroit, and arrangements are on foot for introducing it in other localities, both in Canada and the United States. Among the places mentioned are Montreal, Ottawa, Belleville, Dundas, Ingersoll and Prescott. Besides these and other places, a contract has been entered into for the introduction of the gas into the extensive piano factory of the Messrs. Chickering Brothers, of Boston. From the satisfactory results which have already attended the manufacture of this new gas, there is reason to believe that before long it will come into general use. Such an important change would, in various ways, confer a boon on the rural population, as well as on the denizens of our towns; for next to cheap food, cheap light is an advantage in which the whole community is interested.

Veterinary Schools in Canada.

EVERY intelligent farmer will admit that on the subject of cattle disease, perhaps more than any other matter with which his calling should make him familiar, there is a vast amount of ignorance, prejudice and conceit abroad; and many a valuable animal has no doubt been lost for want of timely, skillful attention. A beast is sick, and if the owner is at a loss what to do in the case, or having tried all that his own wisdom suggested, finds matters growing worse, he forthwith asks the advice of the nearest neighbour, or of any one who happens to pass by that way. The most ignorant are generally the most confident in their opinion, and most ready with their counsel; and some one is sure to be found to pronounce on the nature of the ailment and prescribe the remedy. The suggestion is adopted, and this failing, others are recommended and tried, each with no better success than the preceding, till at last, the case being past relief, the veterinary surgeon, if there be one accessible, is sent for, but too late to be of service. In many instances, no qualified practitioner is at hand, and then no other course is open than the blind or hap-hazard treatment so commonly pursued. The case cannot be let alone, which would often in such circumstances be the wisest plan; something must be done, and either the poor beast is sacrificed to ignorant meddling on the part of its friends, or if it recovers, it is in spite of, and not in consequence of, the treatment adopted. A mode of proceeding not more rational is sometimes pursued in human maladies; but the interests at stake and the risks are here so much more serious, that alarm is sooner taken, and at any cost of trouble or money the assistance of the properly qualified medical man is sought. Now there is a wonderful similarity—identical we may almost say—in the healthy vital functions, as well as in the diseases of man and those of inferior animals, of those especially whom he rears and employs as his most useful servants—horses, cattle, and sheep. To understand and successfully treat the disorders of these animals, requires as much study, knowledge and skill, as are deemed necessary for the physician whom we employ in human maladies; and this fact has now become to a large extent so well recognized, that in the army, in valuable hunting studs, on many farms and other like establishments in England and elsewhere, properly qualified veterinary surgeons alone are entrusted with the care of sick or injured animals. It is a matter of congratulation to find that in Canada we are beginning to follow the sensible example of the old country in this respect. Four years ago, in 1862, a course of instruc-

tion in veterinary medicine was commenced in this city by Mr. Smith, a member of the Edinburgh Veterinary School, and in 1864, a school of Veterinary medicine was duly organized, and has since continued in successful operation under very encouraging auspices. We give elsewhere a brief notice of Mr. Smith's opening lecture for the present season in connection with the Toronto Veterinary School. We heartily wish success to this excellent institution. We understand that six students will shortly be prepared to pass their final examination, and that more than double this number are at present attending the course of instruction furnished in this city under the able superintendence of Dr. Bovell, Professor Buckland, Mr. Smith, Mr. Merrick of the Royal Artillery, and other well qualified teachers.

The good example thus set in Toronto has been followed in Montreal, where, about two years ago, a system of instruction of a similar character was inaugurated, and now bids fair, we believe, to become a flourishing school of Veterinary science. In both provinces, therefore, we have now the means of training for useful spheres throughout the country, a body of well educated, and thoroughly qualified surgeons to attend to the maladies of the increasingly valuable and better bred stock that is gradually taking the place of the old inferior breeds. This is a subject for congratulation, and we feel that we are giving sound advice when we counsel our farmers to avail themselves of the advantages within their reach, and to seek the best rather than the cheapest help, whenever the animals under their care stand in need of assistance on account of accidents or sickness.

The Wool Interest.

The wool-growers in the neighbouring States have of late been almost unanimously urgent for a continuance if not an increase of the high tariff on the importation of foreign wool into American markets, yet the report of Commissioner Wells, recently published, ought to convince them of the futility and even mischief of the policy they would advocate. This report shows most clearly that, as regards this one interest at least, the repeal of the Reciprocity Treaty between the United States and this country has inflicted a far more serious injury upon our neighbours than ourselves; that the system of protective duties has signally failed to encourage either the home produce or manufacture of the article, and has demonstrated most conclusively, we think, the injustice and impolicy of taxing the community at large for the protection of individual or class interests. Mr. Wells is not a free trader, on the contrary he is a warm advocate of protection; yet the logic of facts compels him to plead in the interests of the wool growers themselves, as well as of the community at large, for some relaxation of the protective duties in this particular instance. In his report he draws the following conclusions:—

1. That the present high duties on combing wools (formerly admitted free under the Reciprocity Treaty), have, during the past year, almost entirely prostrated and crushed out the worsted manufacture; and that like causes in former years have also nearly destroyed the broadcloth manufacture, which formerly constituted fifty per cent. and upwards of the entire woollen industry of the country. Both of these industries, although requiring wools not yet raised to any extent in the United States as their basis, would, if in active operation work up a very considerable proportion of American fleece, from twenty to thirty per cent., and their prostration, therefore, has not only deprived the American wool-grower of a very important and certain market for a portion of his surplus products, but has also diminished the inducement for the introduction of new varieties of wool.

2. During the period of war, cotton, formerly the taxable fabric of common consumption, attained and maintained so high a price that its use was greatly restricted, thus necessitating a most extraordinary demand for wool as a cheaper fibre, and leading to a great increase in the number of woollen manufacturers. At present this condition of affairs is reversed; and cotton, as the cheaper fibre, is rapidly resuming

its normal position, and supplanting the use of wools; thus introducing a disturbing element which no legislation can remedy or prevent.

3. Another curious and interesting fact brought up incidentally during the enquiries instituted by the Commissioner relative to prices, was the reception of testimony from almost every section of the country from dealers in, and manufacturers of, clothing, that rarely, in their experience, has so little of cloth and clothing been sold as during the past fall season; thus showing that the burden of taxation and the high prices of woollens have forced the people to a practice of the most unusual and rigid economy. It is now proposed to remedy these difficulties by making the prices of woollens still higher.

While these facts would seem to unprejudiced minds to point out an entire withdrawal of protective duties, as the only effectual remedy for the evil, Mr. Wells, whatever his private conclusions may be, is too well aware of the prejudices of Congress, and doubtless of a large proportion of the American people, to ask so much, and contents himself with advocating a reduction of the duty in favour of "worsted or combing wools." Wools of this character, which are not grown in any considerable quantity in the United States, are produced in Canada to the extent of six millions of pounds per annum, and under the Reciprocity Treaty were imported by the Americans free of duty. "Under these circumstances," says Mr. Wells, "the worsted manufacture, which scarcely existed in the United States prior to 1860, developed up to 1865 with a rapidity that has scarcely any precedent in the history of American manufactures; the amount of capital at that date being estimated at eight millions of dollars, with a yearly value of product of not less than ten millions of dollars.

"By the termination of the Reciprocity Treaty, these wools, before free, became subjected to a duty of about sixteen cents per pound, without any corresponding advance in the rates imposed on the importations of foreign worsteds. An internal revenue tax of five per cent. on the domestic manufacture, was also maintained in force. Under these circumstances the only result which could be expected occurred, viz.: the almost complete annihilation of the worsted manufacture—a business which with all its branches employs in France at the present time over three hundred thousand persons.

"The only remedy for this state of things is to reduce the present duty of sixteen cents per pound on the importations of combing wools—six cents being, in the opinion of the Commissioner, a fair revenue rate—or to place large additional duties on the importation of manufactures of worsted, sufficient to counterbalance the increased duties on the raw material. It is not believed that the reduction of duty on these wools, even to the extent of making them entirely free, can bring anything of detriment to the interests of the American wool grower, inasmuch as the demand for these wools tends, at the present time, to greatly exceed the supply. Indeed, in England, at the present time, the future adequate supply of these wools is already becoming with the manufacturers a source of no little anxiety, and meetings have been called looking to the adoption of measures calculated to still further stimulate their production. It is still further the opinion of the best authorities in the United States on this subject, that the country could readily and promptly consume twenty millions of pounds annually of this wool, provided it could be obtained. The present market price of Canada combing wools (November, 1866) ranges from seventy to eighty cents per pound, as compared with forty-five to sixty cents per pound for domestic fleeces. The Commissioner, therefore, submits to the judgment of Congress whether any further protection is needed for this branch of sheep husbandry in the United States, or can be offered greater than that which will result from the development of the worsted manufacture."

This confession by Mr. Wells is a fine commentary upon the wisdom of those narrow-minded statesmen who sought the repeal of the Reciprocity Treaty for the purpose of injuring and punishing Canada. It is no exaggeration to say that the ruin of the worsted manufactures of the United States is a tenfold more serious matter than all the loss and inconvenience which Canada has suffered from the repeal of the Treaty. But the injury to the worsted manufacturers is only an item on the American side of the account. There are many articles affected by the repeal of the

Reciprocity Treaty upon which the American consumer pays the duty, while in very few cases, if at all, does the burden fall entirely upon the Canadian producer. When Americans generally comprehend the mischief which the repeal of the Reciprocity Treaty has wrought for them as clearly as Mr. Wells comprehends the consequences of the duty upon Canadian wool, we may expect a more enlightened policy to prevail at Washington. By putting a prohibitory duty upon Canadian wool, the Americans crush out the worsted manufacture, destroy to that extent the demand for their own wool, and drive their people to buy worsted goods made in France and England! This is the way that protection encourages home production. The shutting out of a few million pounds of Canadian wool is accomplished at the cost of shutting up the worsted mills, reducing the consumption of American wool, and of increasing the importation of woollen goods from Europe. They could have part of the wool-growing and all the manufacturing done in their own country; but rather than allow some of the wool to come from Canada, they adopt a policy which results in having all the wool-growing and all the manufacturing done in Europe! That is "protection to home manufactures" with a vengeance.

If it were possible to protect the wool-growers of the United States without destroying their market, the argument in favour of doing so would, even from a protectionist point of view, be of the weakest character. The demand for wool tends, as Mr. Wells says, to exceed the supply. The great difficulty is not to make wool-growing profitable, but to make wool cheap enough to permit manufacturing to be profitable. At present prices, which are far in excess of prices a few years ago, the growing of wool is the most profitable thing which a farmer who understands the business can undertake. Given good sheep, suitable farming land, and good management, and a future may be realized in a few years from a moderate capital. Mr. Wells intimates that the American wool grower does not require further protection than that which would be afforded by the development of the worsted manufacture, and on that ground recommends that the duty upon combing wools be reduced to six cents per lb.—a suggestion which is, as we have said, much more moderate than his facts would warrant.

We have little faith, however, that Mr. Wells will succeed in getting his recommendations passed into law at present. Nevertheless he has done his country an eminent service by his masterly exposure of the evils of its commercial policy. His exposure is all the more crushing from the fact that it is the work of a man who sets out by admitting so much of the theory upon which that policy is based. It would be an easy thing for a free-trader to expose the evils of the American system, but when an American protectionist shows so conclusively how American protection defeats itself, there is no answering him even upon protectionist principles.

Royal Agricultural Society of England.

The general annual meeting of members of the above Society was held Dec. 12, at the Society's house, Hanover Square. We extract a portion of the annual report which is of general interest.

"During the last half-year six governors and 114 members have died, while one governor and 32 members have been elected, so that the list now comprises 76 life-governors, 83 annual governors, 1,380 life members, 3,974 annual members, and 15 honorary members, making a total of 5,525. The funded capital has been reduced by the sale of £1,000 Stock, and now stands at £18,027 in the New Three per Cent. This is owing partly to the appropriation of a considerable sum to a thorough investigation into the results of the cultivation of the soil by steam-driven machinery in various parts of the country. To this latter object the council determined to devote a sum not exceeding £1,000, and notwithstanding the wet autumn, considerable progress has been made

in the inquiry, the result of which will be fully made known in the first number of the *Journal* for next year. The implements for which prizes will be given in the ensuing year, consist of fixed and portable steam engines, fixed and portable threshing machines, finishing machines, hand pressing machines, barley hummellers, chaff cutters, mills, crushers, oil cake breakers, bone mills, turnip cutters, and field gates, and as a period of four years will have elapsed since the trial of some of those classes of implements, it is to be anticipated that many improvements will be exhibited. The country meeting next year will be held in the week commencing Monday, the 15th of July. Prizes to the amount of £2,925 are offered by the society for live stock, and £430 for implements, while £570 are added by the Suffolk Agricultural Society and the Local Committee. It is also proposed to offer £200 in prizes for poultry, the eastern counties having long been famous for their success in this department.

Mr H. S. Thompson, the President of the Society, in his address referred to the all engrossing subject of the cattle plague. He estimated that during little more than a year, the number of cattle that in Great Britain had fallen victims to this disease amounted to 209,332. The total pecuniary loss to the country could not, he thought, be less than three millions sterling. "It was mortifying to reflect," he observed, "that (humanly speaking) this vast loss might have been in a great measure prevented if we had not been too proud to profit by the experience of our own and other nations who had frequently to battle with this terrible scourge, and who had uniformly come to the conclusion, after repeated attempts at cure, that immediate isolation of the cattle exposed to contagion, and slaughter of all animals attacked by the rinderpest was the only mode of escaping heavy loss." He combated the notion that the disease had become less virulent in its character, considering it just as fatal as at the commencement. He counselled the authorities not to relax the stringent regulations which had been found necessary in dealing with the evil, till every trace of the disorder had disappeared from the land. Permanent regulations should further be made for the safe importation of foreign cattle, of which those intended for immediate consumption should be slaughtered at the ports of debarkation, if not at the place of export; and store cattle should be subject to efficient inspection and quarantine. Fresh meat had already become an article of daily importation, and a return from the Board of Trade showed that in the month of October, 3,428,000 lbs. of meat, the greater portion fresh mutton, had been imported into England. He next referred to the increasing scarcity of labour and the consequent rise in wages, and recommended certain measures that should give the labourer a greater interest in the land. The steady advances made in steam cultivation were noticed in glowing terms; and the yet undeveloped resources of the country and increasing foreign trade were pointed out. In regard to Ireland, it was aptly remarked "If our acute but misguided fellow-countrymen in Ireland would abandon their Penian follies, and devote themselves heartily to the cultivation of green crops and the improvement of their pasture lands, they might appropriate a large portion of the vast sums that are now expended in bringing live stock from the most distant parts of Europe. Even now there are more cattle in Ireland than in England—3,493,000 against 3,307,000, and this number might with ease be very largely increased. Dairy produce too, which has for some years been very remunerative, need fear no competition from distant countries." A very remarkable result of the cattle plague had been the largely increased supply of country milk to the metropolis and other large towns. "There are now more than 220 stations sending milk to London, by passenger or special milk trains, from distances varying from 7 to 190 miles, for a charge varying from a minimum of 1d. to a maximum of 2d. a gallon for the whole distance. The total quantity thus carried during 1866, might be estimated at 7,000,000 gallons." It is to be hoped for the sake of our trans-Atlantic city cousins,

that this enormous influx of country milk into the metropolis will alter the quality of the commodity usually known as "London milk." Mr Thompson concluded his very able address by observing that "under the good providence of God, who has promised the return of seed time and harvest so long as the world endures, the present prospects of English agriculture are highly encouraging. By means of the increased facilities of transport, both by sea and land, we are continually obtaining access to whole nations of new customers, and so long as our foreign trade continues to increase, so long will the consumption of our home grown commodities be such as to provide a remunerative demand for all the beef and the beer, the milk, butter, and cheese, which the combined practice with science of our farmers may enable them to supply." The address embraced topics of great and general interest, and furnished wise suggestions to which we in Canada may profitably give heed.

New Vegetable Fibre.

We have been favoured by Mr. Kirkwood, of Ottawa, with a specimen of a new fibre which he has been for some time engaged in investigating, and which he purposes sending among the contributions to the Paris Exhibition from this country. This vegetable fibre is quite a novelty, and, if it realizes the expectations of the discoverer, will be the basis of a new industry. It is a silky material of great beauty and fineness, obtained from the stems of the *asclepias Cornuti*, or common milk weed, or silk weed, as it is sometimes called, well known from its growth on our highways. Mr. Kirkwood believes the fibre to be well adapted to the manufacture of those articles in which silk is now employed. This plant is easily cultivated, and grows from three to four feet high. It is estimated that an average produce of 300 pounds per acre clear fibre could be easily obtained, which, it is believed, could be worth about 20 cents per pound, which would amount to sixty dollars an acre. This new fibre has not yet been tested by an application to manufactures, although it is Mr. Kirkwood's intention to have it done in England. Mr. Kirkwood has been placed under obligations to Professor Hincks, of University College, Toronto, who has aided him in his investigations regarding the quality of this interesting vegetable fibre. We shall be curious to hear the result of the experiment of its manufacture in England, and meanwhile we would recommend the enterprising discoverer to pursue his investigations.

Cattle Traffic Bill.

CONSIDERABLE attention is now being paid in England to the subject of the importation and transit of cattle, with a view to the prevention of the introduction and spread of rinder-pest, and other infectious disorders. An Act of Parliament, it is expected, will shortly be passed for the regulation of the cattle traffic, and in anticipation of such a measure, the Chamber of Agriculture have agreed to memorialize the Government on the subject—a step which has also been taken by many other agricultural associations in England. We in Canada shall do wisely to take a lesson from the history of the fearful scourge that has made such havoc among English herds, and be warned in time to make such regulations as may prevent the incursion of a similar plague into this country, or meet the exigencies of the case at the outset, if the evil should appear among us. We subjoin a report, which we extract from the *North British Agriculturist*, of the suggestions which the Chamber of Agriculture especially recommends. Some of these suggestions are well worthy the attention of our legislature, and all interested in the transit and traffic of cattle in this Province.—

"1. That the importation of foreign stock should be confined to certain ports specially licensed by

government, which ports should be provided with suitable markets, slaughter-houses, quarantine grounds, and officers. That all foreign fat stock should be forthwith slaughtered at such markets, and that all store stock should be subjected to twenty-eight days' quarantine before they are permitted to move inland.

"2. That should the rinderpest or sheep-pox be again imported or break out afresh, slaughtering and compensating powers similar to those of the Cattle Diseases Act of February last should at once be put in force, and the district proclaimed.

"3. That stringent regulations should be made with regard to the expeditious transit and watering of animals conveyed on railways, and that a thorough cleansing of all trucks, pens, and layers, and the proper space and ventilation of the holds of cattle-boats, should be enforced by Government inspection.

"6. That the wilful exposure of any animal suffering from such contagious diseases as rinderpest, pleuro-pneumonia, sheep from scab and glanders, upon any highway, boat, or railway, or in any market or fair, should be an offence punishable with fine or imprisonment.

"5th and 1st. That a more stringent inspection of all dead meat, especially that imported from countries known to be suffering from cattle plague, should be enforced by the Government."

CANADA POULTRY ASSOCIATION.—The usual meeting of the Canada Poultry Association will be held in Toronto during the coming week; due notice will be given of the time of meeting.

THE HONEY BEE.—We invite attention to a series of articles explaining the nature and habits of this insect, from the pen of Mr. J. H. Thomas of Brooklyn, the second of which appears in the Apiary department of our present issue.

Agricultural Intelligence.

Premium Farming in Knox County, Illinois.

THE following awards were made on field crops at the annual meeting of the Knox County Agricultural Society, as reported by the Secretary, Wm. Muir:

BEST 5 ACRES OF SPRING WHEAT.—A. N. Phelps, of Sparta. The amount raised on five acres and forty rods, as measured, was 142 bushels and 14 pounds. Premium, \$3.

BEST CROP OF OATS.—A. N. Phelps, Sparta. The amount of oats raised on five acres and forty rods was 441 bushels. Premium, \$3.

BEST CROP OF INDIAN CORN (1 ACRE).—A. N. Phelps, Sparta, 98 bushels, 27 pounds. John A. Wise, Orange, 96 bushels, 35 pounds. Mr. Phelps entitled to the premium, \$8.

BEST CROP OF INDIAN CORN (10 ACRES).—A. N. Phelps, average per acre 98 bushels, 27 pounds. Henry Seitz Knox, average per acre 97 2-3 bushels. James McKissick, Salem, average per acre 84 bushels, 30 lbs. D. B. Huggins, Knox, average per acre 75 1/2 bushels. Mr. Phelps is entitled to the premium, which is Messrs. Parlin & Orendorf's cast steel Clipper Plough, and \$15.

BEST CROP OF INDIAN CORN (40 ACRES).—John A. Wise, Orange, an average per acre of 96 bushels, 35 pounds. The premium is \$20.—*Prairie Farmer*.

Smithfield Club Cattle Show.

It is needless to state that this annual exhibition of fat cattle and other stock in England brought together as usual a notable assemblage of splendid animals. The entries in the cattle classes were somewhat fewer than in former years, on account of the novel condition imposed by the exigencies of the rinderpest, that all cattle exhibited should be slaughtered within four days after the exhibition closed. Notwithstanding this rule, we are told, that among 192 cattle present, scarcely an inferior beast could be seen. In addition to the show of pure bred animals, some interesting and instructive examples of cross or mixed breeds were exhibited—some between the Shorthorn and Scotch, also between the Shorthorn and Ayrshire were highly successful.

The cotton crop of Egypt this year is estimated at from 500,000 to 600,000 bales of 500 pounds, half of the crop of the United States.

It has been settled that the uniform price of admission to the Paris Exhibition shall be one franc, (about 10d. stg.)

BRIGHTON AND CRANABE FARMERS' CLUB.—We have received from the Secretary of this Association, an interesting report of the past year's proceedings, which we shall be happy to publish in our next number.

ZINC FOR MILK VESSELS.—Experiments in England have recently been made regarding the effects of zinc upon milk: and it was found that milk kept in zinc vessels will continue sweet for four or five hours longer than it will in vessels of any other material.

PROFIT FROM HOPS.—Mr. J. L. Green, of Wisconsin, has a hop field of seven acres, which produced last year 17,139 pounds of hops, being an average yield per acre of 2,448 pounds, and yielding a profit of \$621.42 per acre.—*Prairie Farmer.*

RINDERPEST.—The cattle plague returns show that during the week ending 22nd December six attacks were reported to have occurred in Great Britain, being the same number as in the previous week. Thirty-two healthy cattle were slaughtered from having been in contact with infected animals. The number of animals attacked since the commencement is 233,787, and 52,528 healthy cattle have been slaughtered to prevent the spread of the disease.—*Farmer (Scottish.)*

HEAVY LOSS IN STOCK.—Mr. Cameron, a well-known Western stock dealer, recently lost thirty-four blood mares and horses on the passage from London to New York. He had purchased thirty-nine in all some by such well-known horses as Newminster, West Australian, Leamington, Lempton and Hobbie Nobbie, and shipped them on the steamship *Helvetia*; but the vessel had scarcely started ere a furious storm commenced and lasted until she had reached the American coast, with the result noted. Most of the animals were in foal, and Mr. Cameron's loss will not fall far short of \$70,000.

BROCKVILLE AND ELIZABETHTOWN AGRICULTURAL SOCIETY.—To the Editor of THE CANADA FARMER. Sir,—I forward for insertion in THE CANADA FARMER the names of the officers of the Brockville and Elizabethtown Agricultural Society, elected to serve for the year 1867: President, William Rhodes; 1st Vice-President, Samuel Keefer; 2nd Vice-President, L. de Carle; Secretary, C. Siballd; Treasurer, Christopher Fletcher. Directors—J. W. Hough, John Stagg, Jun., S. Manhard, Benj. Francis, Wm. Birnie, R. Arnold and C. Gardiner. Your obt. servant,
C. SIBALD.

Brockville, Jan. 22, 1867. Sec. B. & E. Ag. Society.

LANARK AGRICULTURAL SOCIETY.—At the Annual Meeting of the North Riding of Lanark Agricultural Society, held in the Town Hall, Ramsay, 19th Jan., 1867, the following gentlemen were elected office bearers for the current year:—Doctor Wostyn, President; Mr. Andrew Wilson, 1st Vice-President; Mr. Robert Young, 2nd Vice-President; David Campbell, Secretary and Treasurer. Directors, Messieurs John Bowland, Patrick O'Brien, Andrew Cockran, John Steel, Gilbert Forgie, Andrew Tosback, and James Wallace.

SALE OF THE LATE MR. BENJAMIN WARFIELD'S CATTLE AND SHEEP.—We learn from the *Country Gentleman* that the thorough-bred stock belonging to the estate of the late Mr. Benjamin Warfield, Lexington, Kentucky, were sold at auction, November 28th. From the reputation of the brothers Warfield as breeders of short horn cattle, it was to be expected that good prices would be realized, and such we find to have been the case. The bulls ranged from \$100 to \$310 each, and the cows from \$65 to \$400 each. Cotswold sheep brought from \$27 to \$60 each, and Southdowns from \$15 to \$18 each. Mr. William Warfield still maintains his own herd, and sold privately, at the time of the sale of his late brother's stock, Lady Grey 2nd for \$800, and Lucy 3rd for \$400, to General Singleton of Illinois.

INTERNATIONAL EXHIBITION.—We learned some time ago that a movement was in progress to hold the next Exhibition of the New England Agricultural Society at Stanstead, Canada East, in connection with the Agricultural Society of the Lower Province. Carlos Pierce, Esq., the large stock owner and breeder, near Stanstead, and a most enterprising and liberal man, would probably do all in his power to promote the undertaking, but whether the railroad and hotel facilities of the place are such as are required for a really successful Show, we are not advised. It would be a gratifying thing to have the project carried out, and we trust it may succeed if possible.—*Country Gentleman.*

LABOUR IN THE UNITED STATES.—Scarcely a day elapses but large numbers of men are discharged from employment in the Northern States, and factories closed. The last instance of this is the case of the Cohoes Mills, which recently employed from 2,000 to 2,500 hands, and furnished a livelihood to about 11,000 souls. The capital invested in them exceeds \$1,500,000, and unless a better demand sets in for cotton and woolen goods, will have to remain unemployed for a good many months. The proprietors can well afford to submit to the incidental loss, owing to the enormous profits they made during the last four years; but in the meantime it will be death on the men, whose skillful labour will be removed from the field, and in many instances forced to seek employment in this country.—*Ex.*

Poultry Yard.

Poultry Points.

There are certain technical terms employed by poultry fanciers in describing the "points" of a fowl, which may not be always understood by the uninitiated. For the benefit of such we give an illustration, with a lettered reference, which we think will supply the necessary information on this subject.



- A.....Neck hackle.
- B.....Saddle hackle.
- C.....Tail.
- D.....Breast.
- E.....Upper wing coverts.
- F.....Lower wing coverts.
- G.....Primary quills.
- H.....Thighs.
- I.....Legs.
- K.....Comb.
- L.....Wattles.
- M.....Ear lobe.

A writer in the *Country Gentleman* says it costs him \$1.75 each, a year to keep hens.

The Brahma Pootra Fowl.

A PAPER READ BEFORE THE CANADA POULTRY ASSOCIATION BY R. A. WOOD, ESQ.

The origin of the Brahma Pootra fowls has been a subject of much discussion; some writers aver that it is a cross between the Grey Chittagong and the Cochon, whilst its admirers on the other hand maintain it had its origin on the banks of the Brahmapootra river in India, from which it derives its name. The very best English authorities we have on the subject ascribe the origin to America. There are two distinct varieties, the light and dark. The first appearance of light Brahmas on this continent was in 1850, when a sailor arrived in New York with three pairs in his possession. He sold them to a mechanic, who again sold them and their progeny. In England, their appearance was first noted in 1852, when Mr Gwynne of Cheshire, exhibited a pair at a poultry show in the neighbourhood; he stated he received them as a present from his friend Mr. Bennett, of New Hampshire, United States. Next we have a notice which appears in the *London Times*, January 22, 1862, of the arrival of a cage of these beautiful birds, a present from Geo. P. Burnham, a citizen of Boston, United States, to her Majesty Queen Victoria. Perhaps I had better let Mr. Burnham tell his own story regarding these birds; it is found in his work entitled "The history of the Hen Fever," published in Boston in 1855. He says: an ambitious sea captain arrived in New York from Shanghai, bringing with him about 100 fowls all of colour, grades, and proportions. Out of his lot I selected a few grey birds that were very fine and large, I bred these with other grey stock I had, and soon had a splendid lot of birds to dispose of; I distributed them over the country and obtained fair prices for them; and finally the idea occurred to me, that a present of a few of the choicest of these birds to the Queen of England would not prove a bad advertisement—I had already reaped the benefits accruing from this sort of "disinterested generosity" on my part towards certain American notables, and I put my newly conceived plan into execution forthwith. I then had on hand a fine lot of fowls, bred from my imported stock, which had been so much admired, and I selected from my best chickens nine beautiful birds; they were placed in a very handsome black walnut framed case, and after having been duly lauded by several first-rate notices in the Boston and New York papers, they were duly shipped across the big pond with an address in purple and gold as follows:

"To Her Most Gracious Majesty Victoria, Queen of Great Britain. To be delivered at Zoological Gardens, London, England. From Geo. P. Burnham, Boston, Mass., U. S. A."

The *London News* described the fowls as birds of mammoth proportions and exquisite plumage, light silvery grey bodies, almost white, with delicately pencilled neck hackles and tips of the wings and tails. The receipt of these birds was graciously acknowledged by a letter and a case containing a likeness of Her Majesty. The portrait thus sent was reproduced by Geo. P. Burnham as the frontispiece of his book. When these birds first went over they were in great demand; their pure white or cream coloured bodies and elegantly pencilled hackles were in great favour; they were universally admired for their beauty and esteemed for their good qualities; when suddenly a new variety appeared. A pair of birds were shown at Birmingham, which were said to have been bought for 100 guineas; they were somewhat different from the light Brahmas in their general character. For their history I will have again turn to the "Hen Fever Book," in which we find it stated that in the summer of 1853, Mr. Burnham shipped to Messrs. Baker, Baily, and other noted English fowl fanciers, six cages of these extraordinary birds; there were forty-two in all. The sum paid me for this lot of greys was 870 dollars. Mr. Baily exhibited his pair

at Birmingham, and afterwards sold them to Mr. Taylor of Sheppards bush, for 100 guineas; this, as Mr. Burnham says, is the largest price ever paid for one pair of fowls. Mr. Burnham states that they were grey Chittogongs crossed with Cochins.

Dr. Bennett contends they came from India. During the Cochin mania, many thousands of birds were imported from China; might not Brahmans have come with them? Saunders in his popular work on poultry, notices the fact of a gentleman having several, both light and dark in his possession; his brother who had been in India having been shown the birds, at once pronounced them to be the same as he had seen there.

Mr. Bennett, author of the American Poulterer's Companion, makes the following statement:—That no Brahma Pootra fowls have ever been imported into the United States or England since the alleged importation of the three pairs into the city of New York in 1850, from which all the Brahma fowls on this continent and in England have originated. However true this statement of Mr. Bennett's may be, it is certain they never appeared in England until sent there from the United States. The question will naturally arise, what are the Brahma Pootra? They are large heavy birds, living where the Cochin would starve, and thriving in frost and snow when hatched in the winter months. They lay a larger egg than the Shanghai, and I think will lay a greater weight of eggs in the year than any fowl I have bred, unless it is the black Spanish. They make good mothers, the chickens mature very early, in fact, I may safely say they are the easiest to bring up of any chickens hatched. Unlike the Cochin, the Brahma is an excellent forager, wandering far from home for its food; now this is not the case with the Cochin, which must have its food provided for it. There is no variety of fowls that breed more true to colours than the two kinds of Brahmans; and like all domesticated fowls with light plumage and yellow legs, their flesh is of excellent quality. Poultry fanciers generally divide poultry in two classes, viz: sitters and non-sitters. The Spanish and all the different varieties of Hamburgs rank high amongst the non-sitters, whilst I place the Brahmans at the head of the list of sitters. I have no doubt my friend Col. Hassard, will change this position when we are favoured with his valuable paper on Cochins.

The following are the peculiar marks of the light Brahma, as I have been trying to breed them from year to year:

In the cock, comb pair or single, (I prefer the pair) if single it must be perfectly upright and nicely serrated, the neck well hackled—that is, a distinct black mark down each feather—the plumage creamy white, the flight nearly black, two feathers of the flight only are visible, as the others are doubled up under the wing; the tail black and carried upwards, sickle feathers drooping over, the thighs broad and fluffy, legs yellow and set pretty well apart and feathered down to the tip of the toe; carriage bold and upright. The hen generally is whiter than the cock, comb the same but not so high, darker hackle on the neck, shorter legs but same colour, and carriage not near so bold in comparison to the cock. The under feathers of these birds should be dark. The dark or pencilled Brahmans are very distinct in colour from the light variety. In the cock the comb is the same as in the light. The plumage of the upper part of the body, including the neck hackle, back and saddle, is silvery white striped with black; the breast, under part of the body, and thighs black, slightly mottled with white. The legs yellow, sometimes of a dusky shade, well covered with mottled feathers down to the toe. In the hen, the head is grey, the neck hackle silvery white striped with black, the remainder of the plumage should be a dull white, distinctly pencilled with black throughout. In conclusion, I would say, that to form a just opinion of them you must breed them, and if you breed from good stock, you will have no trouble in raising just as good breeds as I present to you this evening for inspection.

Veterinary Department.

Injuries incident to Frosty Weather.

MUSCULAR SPRAINS IN HORSES.

In a former number we mentioned some of the injuries occurring to the muscles of the hind leg, and produced by horses slipping and falling. The muscles of the thigh are frequently injured, and especially that muscle known as the "flexor metatarsi." The tendinous attachment of this muscle is generally the part which gives way, and it produces very peculiar symptoms. The horse moves the leg with great difficulty, and when lifted off the ground, the leg hangs dangling in such a manner that one might suppose the bone was fractured. When the leg is placed on the ground, the horse can stand upon it firmly, and to external appearance nothing seems wrong with the limb; and it is only when he is made to move, that this peculiar symptom is exhibited. Except in the very worst cases the animal will recover. He should be kept quiet and allowed to stand in his stable; the limb should be diligently fomented with hot water, several times a day; afterwards well rubbed with a mild stimulating liniment, and the parts kept warm. In about three weeks or so after the injury, it is generally found advisable to use a mild sweating or liquid blister. The horse should not be moved for some considerable time, and not until signs of recovery are observed; he may then be placed in a loose box, or led out for ten or fifteen minutes once or twice a day; and usually in the course of from five to eight weeks perfect recovery takes place. At present we have a case under treatment; the injury occurred about Christmas, and the horse is now rapidly improving.

SPRAIN OF THE BACK TENDONS.

Is another common occurrence during the winter months. These tendons are the chief agents in producing the motions of the limb, and are the terminations of two large muscles which arise at the back of the stifle joint; and above the hock joint become tendinous and are continued down the back of the leg and are known as tendons, or sinews. One of them, the inner one, passes down the foot and becomes inserted into the solar surface of the coffin bone, the outer forms a sheath for the passage of the former and becomes attached to the sides of the lower or small pastern bone. Owing to their disposition, they are very liable to be sprained, and the symptoms are generally well marked. The horse is lame and knuckles at the fetlock joint, the course of the tendons is hot, painful and swollen, the swelling varying according to the extent of the injury. If this is severe there is constitutional disturbance, the horse is fevered, and refuses his food. With regard to treatment, the horse should in all cases have perfect rest, and fomentation and hot bandages should be applied; he should be fed on a laxative diet, such as scalded bran, &c., and in most cases great benefit will follow the administration of a brisk cathartic, as six to nine drachms of aloes, according to the size and condition of the patient. When the more acute symptoms are somewhat abated, stimulant and blistering applications may be used; but in no case should severe counter irritants be had recourse to in the early stage when active inflammation is going on in the part. In slight cases, ten days or a fortnight's rest may suffice; but in severe cases it may be weeks, or even months, before the horse is able to go to work. If too soon used, the joint is liable to become greatly diseased and the animal may be rendered permanently lame.

A tablespoonful of saltpetre given to a cow once a day, for three or four days, is an effectual remedy for the garget.

Toronto Veterinary School.

THE OPENING LECTURE.

THE first lecture of the present season, in connection with the Toronto Veterinary School, was delivered by Mr. Smith, in the Agricultural Hall, on Thursday, 10th January, before a highly respectable audience, including a good muster of students. The chair was occupied by Col. Dennison. The lecturer commenced by pointing out the importance of providing a thoroughly educated and qualified class of practitioners to treat, amongst our increasingly valuable horses and cattle, those diseases which were almost inseparable from domestication. He next briefly sketched the history of Veterinary Medicine, from early classic times up to the present day, and paid a deserved tribute to the excellence of the Edinburgh Veterinary College, and its late distinguished ornament, Professor Dick. He then passed on to the subject of Rinderpest, and detailed its symptoms, pathology, causes and treatment. Mr. Smith considered it eminently a contagious disorder, and attributed its origin in England purely to contagion—the malady having been brought over into that country from Russia, where, in certain localities, it at all times more or less prevails. He admitted that all attempts at successful treatment had hitherto failed, alluded to the various empirical nostrums, the vaccination scheme, and the homoeopathic treatment—all of which had in succession been unduly vaunted, and proved utterly ineffectual, if not in some cases positively injurious. He believed that in the present state of veterinary knowledge, the only method of dealing with this scourge was the plan of "stamping it out" by at once isolating all cattle exposed to the contagion, and slaughtering the animals attacked. This plan had at once arrested the spread of the disease when it made its appearance in Ireland, and limited the loss to fifty head of cattle. Similar results had attended the stamping out method in France, and he entertained no doubt that if this decisive plan had been earlier adopted in England, according to the advice of Professor Simonds and others, the loss would not have been one-tenth what it has been—an opinion now generally entertained in Europe, and emphatically expressed at the annual meeting of the Royal Agricultural Society in England by the President, Mr. Thompson, who estimated the pecuniary loss to the country from this fearful pest at not less than three millions sterling. Mr. Smith concluded by expressing the hope that in consequence of the wise precautionary measures adopted by our Government, these Provinces would not be visited with this intractable disorder. But if it should make its appearance, he trusted its ravages would at once be checked by the adoption without hesitation of the stamping out method. The lecture was, throughout, highly interesting and instructive, and listened to with much attention. At the close, Professor Buckland moved a vote of thanks to Mr. Smith, for his able lecture, and alluded, for the encouragement of the Toronto students, to the history of the Edinburgh school, which, although it has now sent out over the world hundreds of accomplished surgeons, did not number, when Professor Dick commenced his class, more than three students. A vote of thanks was then given to Col. Denison, who expressed his concurrence in the disinterested advice given by Mr. Smith in reference to the method of dealing with this scourge, should it ever make its appearance in this country.

CONTAGIOUSNESS OF GLANDERS.—Regarding the contagiousness of glanders, Mr. Percival submits the following deductions as the result of facts gleaned from his own experience:

"1. That farcy and glanders, which constitute the same disease, are propagated through the medium of stabling, and this we believe to be the more usual way in which the disease is communicated from horse to horse.

"2. That infected stabling may harbor and retain the infection for months, or even years; and although by thoroughly cleansing and making use of disinfecting means, the contagion might be destroyed, yet it would not be wise to occupy such stables immediately after such supposed or alleged disinfection.

"3. That the virus, or poison of glanders, may lie for months in a state of incubation in the horse's constitution before the disease breaks out. Of this we have had the most positive evidences.

"4. That when a stable of horses becomes contaminated, the disease often makes fearful ravages among them before it quits; and it is only after a period of several months' exemption from all diseases of the kind that a clean bill of health can be rendered.



Upper Canada Fruit Growers' Association.

Fruit-growing is attracting increased attention amongst us; and, thanks in no small measure to the Upper Canada Fruit Growers' Association, whose headquarters are located in perhaps the best fruit growing section of the Province, this branch of industry has made rapid progress. The products of our orchards are beginning to be appreciated, and find a remunerative market in England; and the culture of the grape on an extensive scale which has lately been introduced into the country, promises to become a profitable enterprise. The magnificent display of fruit at the last Provincial Exhibition, still fresh in the memory of us all, was well calculated to produce a favourable impression of the resources of the country in this department of science and skill, and would convince us, did we need conviction, that we occupy no inhospitable portion of the globe; that, on the contrary, this favoured land is peculiarly adapted for a British Province. We believe the climate is fitted for the race, its very rigour only serving to nurse the courage and develop the energies of a hardy and enterprising people.

Among the many useful institutions to which the national spirit has given birth, we accord high rank to the Fruit Growers' Association of Upper Canada, the annual meeting of which was held on Wednesday, January 16th, in the Council Chamber of the County Buildings, Hamilton, and was well attended. Among those present, besides the President, Judge Logie, and the Secretary, Mr. Beadle, of St. Catharines, were Messrs. Leslie and Grey, of Toronto, Mr. DeCourtenay, of Cooksville; Mr. Morse, of Hamilton; Mr. Arnold, of Paris; Messrs. Wolverton and Smith, Grimsby; Mr. Bruce, Mr. Goldsmith, Mr. Ellis of the CANADA FARMER, and others. The chair was occupied by the President. The proceedings were opened by the Secretary reading the minutes of the last meeting, held in the Fall, at Grimsby. The Treasurer's report showed a balance to the credit of the Society, this being the first time since its commencement that such a satisfactory statement could be presented. The President, Judge Logie, then delivered his address, in which he adverted to the gratifying progress of the institution, especially within the last two years, to the advance made in fruit-growing in all its branches and particularly to the recent development of grape culture. In only one species of fruit did he think there was not encouraging progress. With regard to the peach he feared that, in the neighbourhood of Hamilton at least, the quality of the produce was deteriorating, and he submitted it as a fit subject of investigation, whether by the process of hybridizing, which has been found so successful in grape culture, some hardy variety of peach might not be produced which would be better adapted to this climate than existing varieties. Mr. Arnold, of Paris, next read a paper on New Hybrid Grapes, commenting principally on seven varieties which had proved highly successful. The first had been described and illustrated in the CANADA FARMER of 1866. The remaining six were all seedlings from the Clinton stock, and had been by competent judges pronounced superior to any grapes introduced since the Concord. He remarked that it required many years to develop the qualities of a new grape. He had observed an irregularity in the time of ripening, for which he could not altogether account, but thought it might be attri-

buted to over-bearing in part, and in part to the varying temperature of the seasons. After the reading of this paper a vote, of thanks to Mr. Arnold, for his report on New Hybrid Grapes, was moved by Mr. Goldsmith and seconded by Mr. Gregg. A few specimens of apples were exhibited, amongst others, a new variety of crab apple sent by Mr. Vidal of Sarnia, and raised by himself.

The meeting next proceeded to the election of officers for the ensuing year. The result was the choice of W. H. Mill, Esq., President, Messrs. John Gray and A. Morse, Vice Presidents, D. W. Beadle, Secretary and Treasurer.

Fruit Committee Messrs. Geo. Leslie, A. M. Smith, Charles Arnold, John Bruce and W. T. Goldsmith.

Publication Committee—Judge Logie, G. W. Beadle and W. T. Goldsmith.

When the business of election was completed, Judge Logie retired from the chair, and in the absence of the President for the coming year, Mr. Gray, first Vice President, occupied his place.

It was then moved by Mr. Morse, and seconded by Mr. Wolverton, "That the hearty thanks of this meeting be given to his Honour, Judge Logie, for the able and efficient manner in which he has discharged the duties of President of this Association during his incumbency, and that he is hereby requested to favour the Association with a copy of his address read this day, for publication."

Judge Logie, in reply, said it was now six years since he had first become connected with the Society as their President; that he had watched its progress with increasing satisfaction, and should still continue to take the warmest interest in the prosperity of the institution.

The meeting then proceeded to fix the place and time for the next summer and autumn meetings, and it was decided that the summer meeting be held at the County Council Chambers, Hamilton, during the strawberry season, the day to be named in the Secretary's notice, (also), that the autumn meeting be held at the Clair House, Cooksville, at the time of the vintage, the day to be named in the Secretary's notice. The Secretary then suggested for the decision of the meeting, the question of appropriating the surplus funds of the Society towards a prize for the best new variety of fruit introduced. After some discussion, it was thought that the objects of the Society would be better advanced by setting aside the funds for the purpose embodied in the following resolution:—

Moved by Judge Logie, seconded by Mr. Morse, "That the minutes of discussion during the year 1867 be carefully preserved, with a view to publishing them, together with the Society's list of fruits, and such other proceedings as may be deemed advisable, in pamphlet form, for distribution among the members."

The meeting next proceeded to revise the Provincial Prize list in the fruit, vegetable, flower, and wine classes, and to make suggestions in relation thereto to the Board of Agriculture.

The proceedings of the meeting then terminated by passing a resolution moved by Mr. A. M. Smith, seconded by Mr. Leslie—"That the thanks of the Association be given to the County Council of the County of Wentworth for the free use of their comfortable and commodious Council Chambers"

Canadian Apples in the English Market.

Our apples are beginning to find considerable favour in England, and there can be little question that it is only necessary that the products of our orchards should be known in the old country to procure for them a greatly increased demand. The heat of our summers is well adapted to mature some of the finest flavored fruit, which in the temperate climate of England would never attain either their appropriate size or quality. We are glad to find that attention is being directed to this promising branch of export.

Last October, two extensive fruit growers in North Norwich, County of Oxford (Messrs. B. Holmes and J. Sutton), resolved to try the experiment of shipping a quantity of apples to the English market. They accordingly packed 210 barrels of the most suitable kinds to be found in their orchards, and shipped them to Liverpool via Montreal. As yet no sale has

been effected; but the exporters are advised that offers have been made by which Messrs. Holmes & Sutton can realize a profit of seven shillings and six pence over cost of package, freight, insurance, &c.; but even this tender has been declined, in expectation of a higher offer, which their agent is sanguine of obtaining. The kind of apples shipped consisted principally of Greenings and Spitzbergens. The gentlemen named intend to repeat the experiment on a larger scale.

A Monster Sunflower.

E. T. Crane of San Leandro, Alameda county, has exhibited to us a monster sunflower, which measures four and a half feet in circumference and eighteen inches in diameter, and which grew on a stalk fifteen feet high. The ripened seeds are as large as the largest grains of corn. This wonderful plant and flower grew from the seed since the 20th of May last. Mr. Crane planted several acres of sunflowers both for the purpose of obtaining the seed for his poultry and to shield an adjoining orchard from the dust. The latter purpose, by their thickness and height, they serve admirably, while the quantity of seed they yield is so enormous as to suggest the probability that they could be profitably grown for the rich and useful oil they produce, and which could be easily extracted at the Luiseed Oil Mill recently established in San Francisco. Mr. Crane informs us that his sunflower crop grew with astonishing rapidity. After the young plants got well rooted and under way, they ran up at the rate of two feet a week, or nearly four inches a day. The flowers generally are of huge proportions. Looking at the one before us, we are inclined to think it would twist its head off trying the feat so poetically alluded to by Thomas Moore in the following well known stanza:

"The heart that has truly loved never forgets,
But as fondly loves on to the close,
As the sunflower turns on her god, when he sets,
The same look which she gave when he rose."

When the sunflower attains a circumference of four and a half feet, it looks fixedly east or west. We will only add that if the State Agricultural Society desires to send this floral Brodbygag to the World's Fair, at Paris, they can procure it at this office. It might look well alongside a section of the big tree *San Francisco Bulletin*.

Remarkable Growth of the Cabbage.

Among the peculiarities of the climate of California, is the fact that it permits the cabbage plant to grow from year to year, until it becomes an ever green tree. The consequence of this is the hardening of the wood of the stem or trunk. Mr. J. H. Benton, of Gold Run, Placer County recently had a cane manufactured from such a cabbage stock, which he took to New York, where it attracted considerable attention. It is finished with a coat of varnish, and is easily mistaken for some rare specimen of real wood. The same preternatural growth of the cabbage occurs in the island of Jersey, and other islands of the British Channel. The practice of manufacturing walking sticks from the stalks is there so common, that unlike the New York phenomenon, it attracts no special attention, except from the visitor and stranger. The writer had lately one of these curious canes in his own possession. During a winters residence in the island of Jersey, he has often walked through a farmer's cabbage garden, between rows of these plants towering above his head. They are grown for the use of the small breed of cattle peculiar to the Island, and known as the Alderney breed. The lower leaves are plucked for this purpose from time to time, and the stem, continuing to shoot up, carries with it as a sort of crown, a tolerably compact looking cabbage. They continue green and slowly growing throughout the mild winter of that climate.

EVERGREENS FOR THE WEST.—The *Prairie Farmer* states that Robert Douglas, of Wankegan, Ill., has commenced the raising of evergreens from seed on a vast scale, with the intention of supplying the demand for timber plantations and screens for the wide West. He has now some 5,000,000 plants or more growing—planted last spring over a thousand pounds of seed, besides 100 pounds of European larch seed, and has transplanted, since the 1st of July, over 200,000 plants. The lath frames used for starting the seed, occupy we are informed, 44,000 square feet of ground, which is about one acre in extent. The kinds of evergreens most largely planted are the Norway Spruce and the American and Scotch Pines.

Entomology.

Ants and their Cows.

AMONG the many wonderful habits and instincts of ant-horn perhaps is more curious than their practice of looking after and waiting upon the aphides or plant-lice, and deriving from them a sugary fluid, much in the same manner as we obtain milk from our cattle. Kirby and Spence, in their entertaining introduction to Entomology, give the following account of this procedure:—

The loves of the ants and the aphides have long been celebrated, and that there is connexion between them you may at any time, in the proper season, convince yourself; for you will always find the former very busy on those trees and plants on which the latter abound; and if you examine more closely you will discover that their object in thus attending upon them is to obtain the saccharine fluid, which may well be denominated their milk, that they secrete. This fluid, which is scarcely inferior to honey in sweetness, issues in limpid drops from the abdomen of these insects, not only by the ordinary passage, but also by two bristle-like tubes placed, one on each side, just above it. Their sucker being inserted in the tender bark, is without intermission employed in absorbing the sap, which, after it has passed through the system, they keep continually discharging by these organs. When no ants attend them, by a certain jerk of the body, which takes place at regular intervals, they ejaculate it to a distance: but when the ants are at hand, watching the moment when the aphides emit the fluid, they seize and suck it down immediately. Thus, however, is the least of their talents; for they absolutely possess the art of making them yield it at their pleasure; or, in other words, of milking them. On this occasion their antennæ are their fingers; with these they pat the abdomen of the aphid on each side alternately, moving them very briskly; a little drop of fluid immediately appears which the ant takes into its mouth, one species conducting it with the antennæ, which are somewhat swelled at the end. When it has thus milked one, it proceeds to another, and so on, till being satiated it returns to the nest.

But this is not the most singular part of this history; for the ants make a *property* of these cows, for the possession of which they contend with great earnestness, and use every means to keep them to themselves. Sometimes they seem to claim a right to the aphides that inhabit the branches of a tree or the stalks of a plant; and if stranger ants attempt to share their treasure with them they endeavour to drive them away, and may be seen running about in a great bustle, and exhibiting every symptom of inquietude and anger. Sometimes to rescue them from their rivals, they take their aphides in their mouth: they generally keep guard round them, and when the branch is conveniently situated, they have recourse to an expedient still more effectual to keep off interloper—they inclose it in a tube of earth or other material, and thus confine them in a kind of paddock near their nest, and often communicating with it.

The greatest cow-keeper of all the ants is a yellow species, which not being fond of roaming from home, and liking to have all its conveniences within reach, usually collects in its nest a large herd of a kind of aphid that derives its nutriment from the roots of grass and other plants; these it transports from the neighbouring roots, probably by subterranean galleries, excavated for the purpose, leading from the nest in all directions; and thus, without going out, it has always at hand a copious supply of food. These creatures share its care and solicitude equally with its own offspring. To the eggs it pays particular attention, moistening them with its tongue, carrying them in its mouth with the utmost tenderness, and

giving them the advantage of the sun. It is of great consequence to them to forward the hatching of these eggs as much as possible, in order to ensure an early source of food for their colony; and they doubtless bring them up to the warmest part of their dwelling with this view.

They are also equally careful of their aphides after they are hatched; when their nest is disturbed conveying them into the interior; fighting freely for them if the inhabitants of neighbouring nests, as is sometimes the case, attempt to make them their prey; and carrying them about in their mouths to change their pasture, or for some other purpose. When we consider that from them they derive almost the whole nutriment both of themselves and larvae, we cannot wonder at their anxiety about them, since the wealth and prosperity of the community is in proportion to the number of their cattle.

Distribution and Habitat of Insects.

THE distribution of insects is in exact proportion to the diffusion of plants; the richer any country is in plants, the richer it is also in insects. The polar regions, which produce but few plants, have also but few insects; whereas the luxuriant vegetation of the tropical countries feeds a numerous host of insects.

With respect to their habitation, insects are divided into those which live upon land and water.

Those which live in the water, either never leave that element, or are able to live at will, either in the water or on the earth, at least for a short time; for example, many water-beetles. Many live at certain periods of their development in water; at others, on land; such as many sorts of flies, and all the dragon-flies, which as larvae and pupæ live in water, but as perfect insects on land, or in the air.

Land insects live either in the earth, under stones, in decayed wood, or in putrid animal substances. Of these some pass their whole lives in these places, others only during a particular period of their development. The larvae of the dung-beetle live deep under the ground, while the perfect insect inhabits the excrement of animals; many of the larvae of flies live in carrion or excrement, while the perfect insect flies about in the open air. A very great number choose the different parts of plants for their abode, as the roots, bark, inner bark, albumen, wood, pith, buds, flowers, leaves and fruit. They change their abode in every new stage of their development. Thus the bark-beetle, which in the larva state lived under the bark, swarms in its perfect state upon the trees, the curculio of the apple-tree, the larva of which infests the bottom of the apple blossom, crawls on the trees, or on the surrounding ground; the mining-moth, which as a larva lives under the cuticle of the leaves, flutters in its winged state about the flowers and leaves.

A small number live upon other animals, on the skin, such as lice, or in the inside of the body, as the ox and horse breech-flies (*Estridae*). The two latter leave their first abode before entering the pupa state, which they effect in the earth, and hover as flies round the animals to deposit their eggs upon them.

Most insects live solitarily, either without any definite dwelling, or they construct for themselves a house composed of various kinds of vegetables or animal matter; for example, many caterpillars. A few species live in society, such as bees, ants, wasps, &c.

By obtaining a general knowledge of the abode of insects, it is evident that the observer of the economy of insects will be able more satisfactorily to combat many that are injurious to him; and thus he can, with little trouble, greatly diminish or entirely annihilate those that he has ascertained to live in society, or in places of easy access.—Kollar.

VALUE OF INSECTS.—Great Britain pays annually \$1,000,000 for dried carcasses of that tiny insect known as the cochineal; while another—also peculiar to India—gumshellac, or rather its production, is scarcely less valuable. More than 1,500,000 human beings derive their sole support from the culture and manufacture of the fibres spun by the silkworm, of which the annual estimated value is said to be \$200,000,000. In England alone—to say nothing of the other parts of Europe—\$500,000 are spent every year in the purchase of foreign honey, while the value of that which is native is not mentioned, and all that is the work of the bee; but this makes no mention of 10,000 lbs. of wax imported every year. Besides all this there are the gall-ants, used for dyeing and making ink; the cantharides, or Spanish-fly, used in medicine. In fact, a large proportion of the insect tribe contributes in some way—directly or indirectly—to swell the amount of our commercial profits.—*Er*

Miscellaneous.

The late Mr. Rarey.

WE find the following appreciative notice of the celebrated American Horse-tamer, lately deceased, in *The Farmer*, (Scottish.)

"Rarey, the American horse-tamer, was fortunate enough to make a fortune by teaching all those capable of learning, besides hundreds who were neither capable of understanding or of learning, how to apply Xenophon's maxim, that 'horses are to be ruled by patience and gentleness, not by harshness.' When the secret became known, many superficial people who could not understand the principle involved, sneered at his process as a mere trick. They could not see the principle on which the process was based—viz, never to fight with a horse at all if you can help it, but if you are obliged, then always to place him in such conditions that the man must prevail over the brute. It was a significant fact that the very great horsemen, experienced in all the traditions of the school and the field, most highly appreciated Rarey's method and manner. Sir Tatton Sykes said 'it was worth all the fee to see the way in which he approached and conciliated a wild thorough-bred colt.' The late Earl of Jersey pronounced a horse-taming spectacle 'the finest thing I ever saw'—and only a season ago Mr. Anstruther Thomson, the master of the Pytchley hounds, and one of the finest horsemen of our time, who is always ready to purchase any well-bred horse however restive and violent, if up to his weight, observed, in reference to his extraordinary success in subduing such horses, 'Rarey taught us a great deal.' Rarey's courage was of a most perfect character. He was courageous without an effort—in the most dangerous circumstances, when a hair's breadth saved him from having his brains dashed out, he never flinched or winked, not the slightest change took place in his particularly fair complexion. He was utterly unlike the popular notion of an American and a showman, modest, quiet, self-possessed, and singularly subdued in his tone and language when led to speak of his marvellous exploits.

Although he could do almost anything with a horse, and ride anything bare-backed; he made no figure in riding across country with hounds. It was an art he had not acquired, and he did not stay long enough to learn. His success in England made him the lion of the season, and he was admitted into the best 'horsey' society, but he remained unspoiled, as simple and unaffected as on the first day that he was introduced to a select party of noblemen, headed by Lord Palmerston, who was one of his first pupils."

Giles Tunt, being ill, was asked whether he had taken any remedy. "Not as I know of," he replied; "but I've taken lots of physic."

A New Haven company has commenced manufacturing compressed stone for building purposes. It is made of sand, pulverized quartz and silicate of soda, and hardens from the consistency of putty, in twenty-four hours, to the solidity of stone.

COAL OILS AS LUBRICATORS.—It is stated that American manufacturers, especially those employing fine machinery, have found, by a thorough system of tests, that coal oils as lubricators are superior to sperm oils in the ratio of 100 to 84, a discovery extremely satisfactory from the great difficulty heretofore of obtaining regularly a grade of sperm or whale oil of uniform density free of gum and foreign mixture.—*American Artizan*.

Advertisements.

To Agricultural Societies & Others.

CAPTAIN BUFORD (by Glencoe).

THE undersigned offers for sale or to rent for the season 1867, the above thorough-bred stallion.

CAPTAIN BUFORD

is a rich chestnut, stands 16 hands 3 inches, very powerful, a sure foot gaiter, his collars are of fine size, and he has the advantage of most thorough-bred horses in size, style, bone and speed.

For particulars apply to

JOSEPH GRAND,

Royal Horse Bazaar, Toronto



WE would respectfully intimate to the public that our facilities for manufacturing all kinds of Dairy Implements are unequalled by any other establishment in the country, and are now prepared to execute orders for Cheese Vats, Cheese Hoops and Press Screws of a superior style and quality. Presses, Curd Knives and Agitators, Curd Grinders, Crane Gearing, and every description of Castings for Cheese Factories. We also keep in stock Tactometers, Patent Tactometer Jars, Cream Gauges, Test Glasses, Floating Glass Thermometers, "Kendall's" Ruby and White Tube Thermometers, Legal Instruments, to detect adulterated or skimmed milk, and every article in the Dairy line. Parties about to engage in the Factory system of cheese making would consult their interest by ordering from us a complete outfit of what they require, as from our large experience in the business we can be relied on to furnish the very best style of implement, such as are approved and used by the best Factories in the County of Oxford. All our articles are warranted to be of superior quality. Any information relative to the Factory System of cheese-making cheerfully given on application. Orders promptly filled.

J. & S. NOXON, Ingersoll, County of Oxford.

Ingersoll, January 17.

v4-3-1t.

STALLION FOR SALE.

I offer for Sale the much admired Young Horse, "SUFFOLK SOVEREIGN," 4 years old in May; noticed by the Reporter for the *Globe*, and the Editor of the *Farmer*, as one of the finest young horses exhibited at our last Provincial Exhibition; his colour is DARK DAPPLE CHESTNUT; height, 16 1/2 hands; weight, 1400 lbs.; grandson to imported "Suffolk Punch" by the Sire, and imported "Old Sovereign" by the Dam, which was granddaughter to "Tom Kemble," thorough bred.

Also.—The young thorough-bred Ayrshire Bull "WATERLOO," calved 18th June, 1864, winner of nine prizes at Provincial and Local Shows; color very dark red, marked with white, slightly. Price, \$6 per 100 lbs., as he stands, quiet and gentle, with full pedigree. Several young Ayrshire Cows in Calf, and yearling Heifers, pr ze takers at last Exhibition.

PATRICK ROSE WRIGHT,

v4-3-1t.

Cobourg P.O.

NEW SEEDS.

FLOWER SEEDS, 25 packets by mail for one dollar. VEGETABLE SEEDS, 20 packets by mail for one dollar. Larger quantities can be sent by mail for 1 cent per oz. All warranted fresh and true to name.

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Seeds Direct from the Growers.

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SEED GROWERS AND SEED MERCHANTS,

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Will be glad to send, on application, special quotations of FARM AND GARDEN SEEDS, of their own growth, from choice transplanted Stocks.

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FEATHERS, FEATHERS, FEATHERS.

THE subscribers will pay 45 cents per pound for good

LIVE GEESE FEATHERS

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JACQUES & HAY.

CATALOGUES, PEDIGREES, HORSE BILLS, &c.,

EXECUTED ON THE

SHORTEST NOTICE,

AT THE

CANADA FARMER OFFICE.

Markets.

Toronto Markets.

"CANADA FARMER" Office, Jan. 30, 1867.

THERE has been another fall of snow since our last report, and excellent sleighing continues. So much snow has not been seen here for several years.

The offerings on the street market are light and prices have remained steady.

Flour.—The market has been dull. No. 1 superfine is held at from \$6 70 to \$6 75, several large lots changing hands at these figures. Extra is held at from \$8 25 to \$8 50, with few transactions. There is at present no superior offering.

Wheat.—Receipts continue very large by cars. Very little offering on the street market. Sales of spring were made at from \$1 39 to \$1 43, according to quality. Fall Wheat has been offering more fully at from \$1 77 to \$1 82, and several sales have taken place within these quotations.

Oats.—Unchanged from 30c to 31c.

Barley.—Receipts on the street market very light. Very few round lots offering, prices range from 50c to 55c.

Peas.—On the street market as high as 73c was paid for choice samples, round lots offering at from 70c to 72c.

Dressed Hogs.—Receipts have increased. For several days the market was quite glutted, and hogs were almost unsaleable. The prices now current range from \$4 75 to \$5 for good samples, very choice bringing from \$5 00 to \$5 10.

Hamilton Markets, Jan. 18.—Flour, retail, (fall wheat) \$4 50 per 100 lbs; spring wheat flour \$3 87 1/2 per 100 lbs; buck-wheat flour, \$2 25 per 100 lbs; Corn Meal, \$2 00 per 100 lbs; Bran 62 1/2c per 100 lbs; Shorts (coarse) 70c per 100 lbs; fine do \$1 00; Chop Feed \$1 25 per 100 lbs; Lard, in fair supply, at 11c to 12c per lb. Hay—the amount offering was smaller than for a few weeks past, and the demand improving considerably. Good hay brought from \$6 to \$8 per ton.

London Markets, Jan. 27, 1867.—Fall Wheat, per bush superior \$1 60 to \$1 78; inferior, \$1 30 to \$1 50; Spring Wheat, good \$1 35 to \$1 43; Barley, 45c to 48c; Oats, 27c to 28c; Peas, 65c to 68c; Corn, 55c to 56c; Flour, per 100 lbs \$3 50 to \$4 50; Dressed Hogs, per 100 lbs, \$4 25 to \$4 75; do light, \$4 to \$4 50; Butter, fresh, per lb. 16c to 18c; Butter, keg, per lb, 12c to 13c; Eggs, per dozen, 20c to 25c.

Montreal Markets, Jan. 29.—Flour, Super extra nominal; extra nominal; fancy nominal; Super No. 1 Canada wheat at \$7 30 to \$7 41; bag flour \$3 50 to \$3 55. Wheat—Canada, \$1 50 to \$1 55; none offering. Oats—Per 32 lbs, 32c to 33c. Barley—Per 48 lbs, 52c to 57 1/2c. Butter—Dairy and store-packed nominal.

New York Produce Market, Jan. 29.—Flour—Receipts, 4,979 barrels; market dull and 10c to 20c lower; sales, 6,000 bbls. Wheat—Dull, at 1c and 2c lower; sales, 7,000 bushels prime white Canada at \$3. Rye—Dull; receipts 652 bushets. Barley—Steady; sales 18,000 bushels Canada West free, Part at \$1 18 and \$1 19. Corn—Dull; receipts, 6,840 bushels; at 1c to 2c lower; closing with sellers of western mixed at \$1 14 in store and \$1 18 adfost. Oats—Receipts, 1,760 bushels; market dull and heavy. Pork Market steady and quiet; sales, 3,100 bbls at \$19 75 and \$20 62 for new mess; closing at \$20 50 for western and \$19 25 to \$19 50 for old mess.

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