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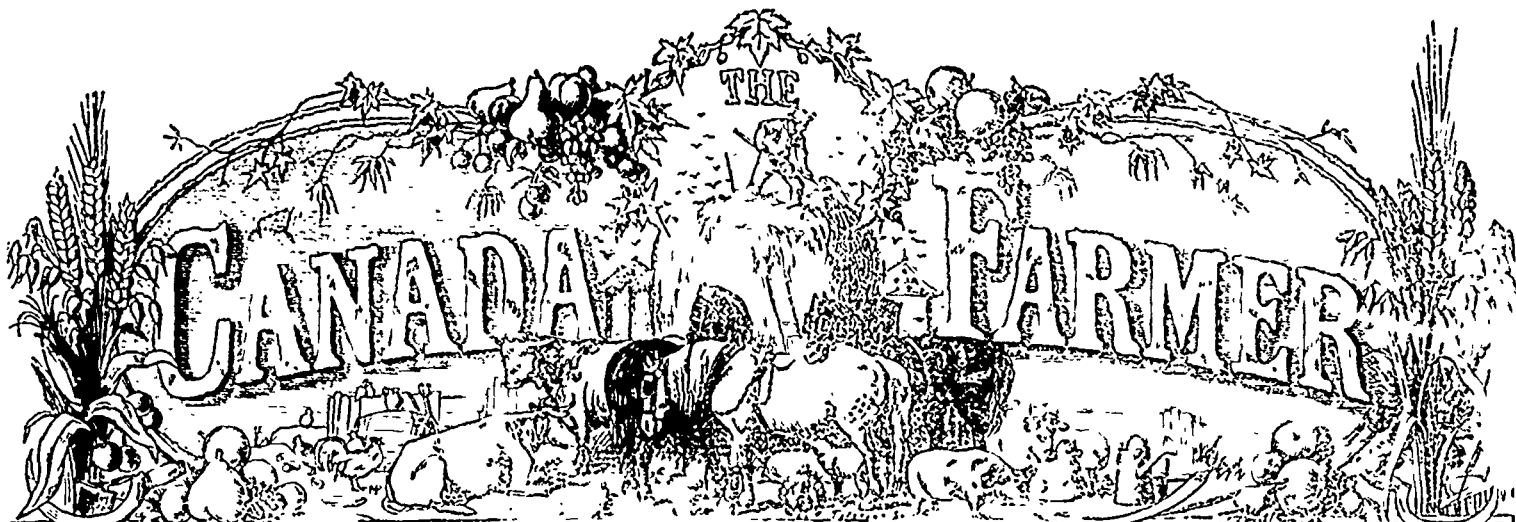
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VOL. III. No. 4.

TORONTO, UPPER CANADA, FEBRUARY 15, 1866.

POSTAGE FREE.

The Field.

Familiar Talks on Agricultural Principles.

WHERE PLANT MATERIAL COMES FROM.

HAVING spoken pretty fully of the organic and inorganic elements of which plants are composed, it may be well now to say something in reply to the very natural enquiry, where these things are obtained. From what source or sources do plants get the material of which they are formed? As a general answer to this question, it may be stated that plants draw their supplies from the air, from water, and from the soil. Air and water consist of certain gases,—the soil is composed of various chemical substances, and plants are so constituted as to be able to take up and make use of the material which is adapted to the support of their life, and the promotion of their growth. Almost without a figure of speech, a plant may be said to have a hand, a mouth, and a stomach, so that it can help itself to nourishment, and be fed by what it consumes.

Carbon is derived chiefly from the air, but not wholly from that source. A supply of it is also obtained from the "vegetable mould" of the soil. It is in the form of carbonic acid that this necessary to plant life and growth is used. Carbonic acid is formed of carbon and oxygen, and though a narcotic poison, is absolutely necessary to the forms of vegetable life. The sparkling bubbles which arise on the uncorking of a bottle of soda water, and those which escape during the fermentation of beer, are familiar forms in which carbonic acid is found. It is one of the products of animal respiration, the air we expel from our lungs being largely charged with it. It is present largely when charcoal is burnt, and hence the fatal effects which sometimes arise from burning charcoal in a confined room. In various ways carbonic acid is constantly being generated both in the air and the soil. "Vegetable mould" is so acted upon by the atmosphere, that in the process of its decay, carbonic acid is produced, and is taken up and absorbed by the fine roots of plants. One way in which loosening the soil acts favourably upon growing crops, is thus explained. By letting in air, decaying vegetable matter is changed into a form in which plants can use it for their life and growth. When it is borne in mind that plants derive fully one-half of their dry bulk from carbonic acid, it will be seen how important a part in the vegetable world, is performed by this material.

The oxygen of plants is obtained principally from water and carbonic acid. The water which plants imbibe consists in great part of oxygen, and the carbonic acid gas whence they derive their carbon, consists of seventy-two per cent. by weight of oxygen.

The atmospheric air also contains twenty-one per cent. by bulk of oxygen. It also enters more or less into the composition of all the substances in nature. Oxygen is thus supplied in very large quantities, and is always found in far greater abundance than the wants of plants require.

Hydrogen is mainly furnished by water, which consists of oxygen and hydrogen, in the proportion of eight parts of oxygen to one of hydrogen. To furnish hydrogen, water must be decomposed. This is usually done by the extraction of the hydrogen, in consequence of which part or all of the oxygen is exhaled. Plants by their leaves, tissues, and roots, extract hydrogen from water and convert it to use. In the form of vapour, water pervades the atmosphere, and in the form of moisture it pervades the soil. Most vegetable structures contain water, and hence the sources whence plants can obtain this element are very numerous.

The nitrogen of plants is only a small portion of their substance, but it is always present in some degree, and in an essential part of the material of their life and growth. The chief source whence nitrogen is obtained is from ammonia, which is formed by the combination of hydrogen and nitrogen. It exists in considerable quantities in dung, while it is undergoing the heating process, and it is this which gives forth the peculiar pungent smell of the manure-heap. Many farmers like to detect the strong smell of their dung-pile, regarding it as a proof of the strength and value of the manure, but the lively odour tells the melancholy tale that the most precious qualities of the dung-pile are escaping. Means ought to be adopted to retain this,—to "fix the ammonia,"—to make a prisoner of it, and compel it to do its part in enriching the land with plant-material.

So much for the chief sources whence the organic material of plants is derived. Inorganic material is obtained from the soil, which is made up of many different kinds of earth, the principal of which are silicious earth or sand, argillaceous earth, or clay, and calcareous or limey earth. It is by the mixture of these in various proportions that most of the different kinds of soil are formed. The soil upon the earth's surface rests on rocks which lie beneath, and from the crumbling of which the loose top earth has been formed. These rocks have been changed into soil by the action of heat, cold, water, and various gases. The sun's heat expands rocks and makes them somewhat porous. In this state, rain penetrates them, and tends to soften them. Frost converts the moisture into countless little wedges of ice, which split the outer crust into small fragments, and by such means the hardest rocks are crumbled to dust. Granite rocks contain silica, alumina, lime, potash, magnesia, and oxide of iron. Silicious rock or sandstone consists of small grains of siliceous matter, or sand stuck together, and varying in colour from white to red,

according to the amount of oxide of iron which it contains. It is nearly or quite barren, except as mixed with other ingredients such as clay, lime, &c. Argillaceous or clayey rocks consist largely of silicate of alumina, together with other silicates, as those of potash, soda, and lime. Calcareous rocks are formed principally of carbonate of lime. Each of the kinds of earth above-mentioned makes a poor soil by itself. A mixture of the three is needful, and soils vary as one or other prevails or is deficient. But clay, lime, and sand are the foundation of all. To these various earths must be also added, a proportion of humus, or mould, a dark-coloured earthy matter, formed from the remains of vegetable and animal substances. This acts both as a reservoir and supply of various substances which are necessary to the growth of plants. The richest natural soils are those which contain clay, sand, lime, and humus in due proportion. Low-lying valley lands are often found to be very rich in a state of nature, the overflow of streams washing down a supply of the varied materials of a fertile soil, and mixing them up together. What nature effects in this and other ways, art can also accomplish; and the formation and improvement of a good soil, is a main object of skilful farming.

Causes of Unproductiveness in Soils.

In new or recently settled countries, the virgin soil will, with anything like reasonable treatment, maintain generally its natural fertility for a considerable number of years. Experience shows, however, that in the long run the tendency of cultivation, as mostly practiced, leads inevitably to the gradual lowering of the productiveness of the land. This is strikingly obvious to persons of long and extended observation, over large areas of the American continent. In many parts of our own Province this progressive exhaustion continues to go on, and in some places the soil, originally fertile in a very high degree, has become, by constant cropping and careless treatment, comparatively unproductive. The only remedy in such cases consists, of course, in thorough cultivation, a suitable rotation of crops, and the proper application of manure.

Soils, however, in their natural state—that is, before they have become subjected to the care and treatment of the husbandman—vary exceedingly in both their chemical and mechanical condition, and consequently in their productive powers. The causes which have produced these differences, and the means of imparting fertility to the lower grades of soil, have occupied, of late years, the earnest attention in the Old World of the best practical and scientific men. We propose in this article to condense some recent investigations made by Dr. Augustus Voelcker, the accomplished chemist of the Royal Agricultural Society of England, believing that the results will be alike interesting and suggestive to many of our readers.

Soils appear to be barren, or more or less unproductive.

1. When they contain something inimical to vegetation.

2. When they are deficient in one or more constituents which enter into the organization of the living plant.

3. When they contain too large a preponderance even of a valuable ingredient, such as organic matter, sand, lime, and even clay.

4. When there is but a thin layer of soil resting on the bare rock.

5. When the land is thin, and rests on an impervious and very thick clay subsoil, or on subsoils containing something injurious to vegetation.

6. When they are badly drained.

7. When they are affected by a bad c^omate.

The subject in each of these several divisions is treated of in great fullness by the able experimenter. To follow our author into minute details would occupy too much space, and would not, after all, be suitable to the unscientific reader, for whose benefit chiefly this article is intended.

I. Soils are barren or unproductive when they contain something injurious to vegetation.

A ready way of ascertaining whether a soil contains an injurious substance is to put a strip of litmus paper in contact with wet earth, and if the blue paper turn rapidly red, it is a clear indication that the soil contains something injurious to plant-life. Good soils have no effect upon red or blue litmus paper, or if any, they produce a slight alkaline reaction, and change the blue colour to a red. The acid reaction is caused by an excess of organic acids (humic), or the presence of small quantities of sulphate of iron—green vitriol.

Bisulphide of Iron, or iron pyrites, is commonly found in unproductive soils in which green vitriol is present. "The simultaneous occurrence of these two compounds is explained by the fact that green vitriol is the result of the oxydation of iron pyrites in contact with air and moisture, the iron of the iron pyrites becomes converted into peroxide of iron, and the sulphur into sulphuric acid, which, combining together, produce sulphate of iron or green vitriol. Even as small a proportion as one-half per cent. of green vitriol renders a soil almost barren; and on land containing little more than one per cent, nothing whatever can grow."

Unproductive soils often contain considerable quantities of protoxide of iron, with scarcely any red peroxides, indicating poor cultivation, which may often be remedied by draining and deeper culture, thus opening up the soil to the admission of air. Protoxide of iron gives a bluish-grey or dark-green colour so common to many unproductive clays, but a change from blue to a reddish brown, which better cultivation induces, indicates the transformation of protoxide into peroxide of iron, a condition more favourable to vegetation. The existence of large quantities of protoxide of iron in the soil surely indicates the absence of deep and thorough culture, which would allow of free access to the air, with the oxygen of which the salt has a powerful affinity.

Chloride of Sodium, (common salt) and the nitrates of potash and soda, sometimes occur in proportions injurious to vegetation, although when used in proper quantities they are, (the two latter especially), powerful manures. Peaty soils when dried consist principally of organic matter, but in a state the most unfavourable to the growth of plants, and they are therefore without artificial treatment, proverbially unproductive. From a number of analysis of such soils made by one author, the following one from near Bridgewater, England, is suggestive.

ANALYSIS OF PEAT LANDS.

	Dried at 212°
*Organic matter (abounding in humic acids).....	97.760
Oxides of iron and alumina.....	.636
Carbonate of lime.....	.855
Magnesia.....	144
Potash.....	.131
Soda.....	.065
Phosphoric acid.....	.053
Sulphuric acid.....	.051
Silica.....	.405
	100.000
*Containing nitrogen.....	1.428

This soil, in its natural state, contained 88 per cent. of water. The trilling amount of mineral matter, especially phosphoric acid, with the great excess of organic acids, rendered it unproductive. Draining, marling, and the application of quick lime in large doses, neutralize the humic acids, decompose the peaty or vegetable matter, and bring it into a state adapted to the growth of crops.

AN ANALYSIS OF SOIL FROM THE HAARLEM LAKE, IN HOLLAND.

	Dried at 212°
*Organic matter and water of combination.....	14.71
Oxides of iron and alumina.....	0.27
Sulphate of protoxide of iron (green vitriol).....	.74
Bi sulphate of iron (iron pyrites).....	.71
Sulphuric acid united with oxide of iron as basic sulphate of iron.....	1.03
Sulphate of lime.....	1.72
Magnesia.....	.73
Phosphoric acid.....	.27
Potash.....	.63
Soda.....	.32
Chloride of sodium.....	.09
Insoluble silicious matter (clay).....	69.83
	100.00
*Containing nitrogen.....	.62
Equal to ammonia.....	.63

It will be seen from the above that this soil abounds in all the mineral elements which enter into the composition of the ashes of plants, and is rich in phosphoric acid, and contains a sufficient portion of organic matter, yielding on decomposition more than 1/2 per cent. of ammonia; but the amount of sulphate neutralizes all its useful properties, rendering it unproductive.

This land came into the hands of an enterprising Englishman; it had previously received only a very shallow cultivation, producing scanty crops. The first deep ploughing was followed by still more diminished crops, and a heavy dressing of farm-yard manure, instead of improving matters, made them rather worse; for even the deep rooted weeds ceased to grow, and only the surface varieties maintained themselves. In this dilemma the proprietor applied to Dr. Voelcker, who subjected the soil to a careful analysis.

"The preliminary examination showed at once that there was present some injurious substance, for the wetted soil strongly discolored the blue litmus paper. The acid reaction I found was caused by sulphate of iron, and I succeeded in detecting sulphide of iron, or iron pyrites. As long as the land was left unploughed, the latter constituent was not brought to the surface, and most of the iron existing there originally was no doubt gradually removed into the subsoil by the rain, which accounts for the better crops when the subsoil was unstirred. By deep cultivation, the sulphide of iron was turned up, and air admitted into the soil more freely, which had the effect of oxydizing the iron pyrites, and changing it into green vitriol. As the avoidable mineral elements and soluble salts in the land were already rather in excess of the amount which is beneficial, the dressing of farm-yard manure, containing a good deal of soluble matter, could only aggravate the evil."

In this case, a heavy dressing of lime was recommended, and its application attended with complete success. The lime decomposed the sulphate of iron, and uniting with the liberated sulphuric acid produced gypsum—a useful fertilizer—and to oxide of iron, which occurs in all fertile soils. Since green vitriol, as well as iron pyrites, sometimes occur in subsoils, care should be taken to test the subsoil, before the operation of subsoil ploughing is commenced, for such injurious matters, which it is better not to bring to the surface. Another soil reclaimed from the sea on the coast of Hampton, was analyzed, and found to contain nearly one and half per cent, of green vitriol, which rendered it perfectly sterile. Its composition was very similar to that reclaimed from the Haarlem Lake, and it was restored by similar means.

COMPOSITION OF A COMPLETELY BARREN SOIL FROM SANDY, IN BEDFORDSHIRE.

	Dried at 212°
Organic matter and water of combination.....	4.27
Oxides of iron and alumina.....	3.84
Phosphoric acid.....	.09
Sulphate of lime.....	.85
Magnesia.....	.96
Potash and soda.....	.47
Sulphate of iron (green vitriol).....	1.05
Sulphide of iron (iron pyrites).....	.68
Insoluble silicious matter (chiefly sand).....	87.91
	100.00

"Here, again, we find sulphate as well as sulphide of iron in appreciable quantities. A portion of the field was so completely sterile, that not a weed nor a single blade of grass could be seen on it. Tested with litmus paper, this soil showed a strong acid reaction, and when heated in a platinum capsule, gave off pungent fumes of sulphurous acid. Soils in a healthy condition, it may be remarked, when heated, do not give off pungent vapours, smelling like those of a lighted sulphur match. This is itself a tolerable sure sign of the presence of injurious iron compounds. The colour of this soil was almost black, yet it will be seen that it contained but a small proportion of organic matter. Its colour was therefore due principally to the finely divided sulphide of iron, a small portion of which under those conditions will impart a dark grey colour, and obnoxious qualities to a large mass of soil. Where such dark soils occur the air is sometimes charged with fetid vapours, smelling faintly like rotten eggs. This smell is produced by the action of carbonic acid of the air upon the black sulphide of iron in the soil, disengaging sulphuretted hydrogen gas, a substance alike injurious to vegetable as animal life.

"All saline matters which are very soluble in water are injurious to vegetation, when they occur in the soil in too large a proportion. The practical question is, What is too large a proportion? An answer has been given lately to this question in the highly interesting scientific experiments on the nutrition of plants, by Professor Knop, of Leipsic, who found that solutions containing in all not more than 1 part of soluble mineral matter to 1000 parts of water are fully as strong as liquids should be from which plants are to derive food and grow luxuriantly. In solutions stronger than this, plants either grow languidly or die altogether, although the same mineral substances are employed which, in a highly diluted state, are most active promoters of vegetation. If such be the case with solutions, my own experience leads me to infer that the soil itself should not contain more than 1-10th per cent. of such soluble substances, and therefore that soils which contain several per cent. of common salt, nitrate of lime, or chloride of potassium, are unfit to maintain vegetable life in a healthy state."

The following analysis of a barren soil impregnated with salt and nitrates is highly instructive:

Moisture.....	10.86
*Organic matter.....	4.84
Oxides of iron and alumina.....	11.23
Phosphoric acid.....	2.35
Equal to bone earth.....	(5.08)
Carbonate of lime.....	5.21
Nitrate of lime.....	2.32
Containing nitric acid.....	(1.62)
Chloride of sodium.....	11.61
Chloride of potassium.....	2.51
Insoluble silicious matter.....	49.22
	100.00
*Containing nitrogen.....	.24
Equal to ammonia.....	.29

"We have here a large proportion of common salt, and also chloride of potassium and nitrate of lime, two salts still more soluble in water than chloride of sodium. The nitrate of lime is evidently a product of the oxydation of animal matter, the presence of which in this curious soil is distinctly evidenced by the simultaneous occurrence of phosphate of lime (bone earth) in considerable quantities. We have here presented to us a true nitro-earth, which, valuable as it is unquestionably when applied as a manure, is far too rich in saline constituents to be cultivated like an ordinary soil."

In concluding this section of the subject, the following brief summary of the various matters and conditions which render soil barren or unproductive, may be serviceable to the reader.

- (a) Superabundance of organic (humic) acids.
- (b) Sulphate of iron (green vitriol), even when present in the soil in small quantities.
- (c) Sulphide of iron (iron pyrites), and especially finely divided black sulphide of iron, which, in the smallest proportions, is most obnoxious to plants.
- (d) Abundance of protoxide of iron, and absence of peroxide, indicating a bad physical condition of the land.
- (e) Chloride of Sodium, (common salt) in proportions of one-tenth per cent. and upwards.
- (f) Nitrates and all soluble saline matter, in quantities exceeding small fractions of 1 per cent. of the whole mass of soil.

(To be Continued.)

Fine Sample of Nepaul Barley.

We are in receipt of a particularly fine sample of this hardy and useful grain from Mr. A. G. Fleming, Craigeath, C. W. The communication appended, which accompanied the sample, will be interesting to our readers.

To the Editor of THE CANADA FARMER:

SIR,—I send by this post, for your inspection, a sample of Naked or Wheat Barley, called "Nepaul Barley." I procured about half an ounce of seed from the office of the *American Agriculturist* a year or two ago, and by repeated sowings, the product is now 200 bushels. It is a most prolific and hardy grain; and as it is not subject to the attacks of insects and other diseases, it would be an excellent grain to cultivate in those parts of Canada where the wheat crop suffers from the ravages of the midge, &c. It weighs 61 pounds to the bushel.

Cuthbert W. Jonsson, F.R.S., says:—"The six-rowed naked barley is cultivated in various parts of Europe, and is greatly esteemed for its fertility. In some parts of Germany it is regarded as the most valuable kind of barley, and by the French, on account of its supposed productiveness, it has been termed "celestial barley," or "heavenly barley." M. Mazucco, in a French paper, earnestly recommends the more general cultivation of naked barley, as he states that it weighs as much as the best wheats, and its quality resembles them so much that it may be used for the purpose of making good bread, and also for pearl barley. In mountainous countries its produce is twenty four to one.

Mr. Warren Hastings says, after twelve years' experience in the cultivation of naked barley, that it is of the greatest importance to cultivate this sort of grain. It is, he adds, the corn that, next to rice, gives the greatest weight of flour per acre, and it may be eaten with no other preparation than that of boiling. It requires little or no dressing when sent to the mill, having no husk, and consequently produces no bran. It is gathered into the barn, and may even be consumed, when the seasons are favourable, in about eighty or ninety days after being sown, and there is no species of grain better calculated for countries where the summer is short, provided the vegetation be rapid." C. W. Johnson says also:—"Naked Barley, or Wheat Barley, is so termed in consequence of the grain separating readily from the chaff when threshed. It is a native of the North, and will bear sowing early in the season. It makes strong malt, and is excellent for fattening hogs and cattle."

I find it makes good mush and bread, and, when roasted, an excellent substitute for coffee. That this excellent barley may be more generally cultivated in Canada, I am willing to dispose of the greater part of what I have to Canadian farmers, at a moderate price, for seed. I am, &c.,

A. G. FLEMING.

Craigeath P. O., Feb. 1, 1866.

The Hawthorn as a Live Fence.

To the Editor of THE CANADA FARMER:

SIR,—In perusing your excellent journal, I notice that Professor Buckland calls the attention of farmers to the cultivation of live fences as a substitute for the rail and board ones in present use, and that he recommends the cultivation of the English hawthorn as the best plant for that purpose. I was surprised, in reading his communication, to find that he should take so bold a stand, since many farmers with whom I have conversed on the subject, have given it as their opinion that they could not be successfully cultivated in this country. They doubted if they would grow at all, or if they did, the mice would destroy the plants in winter. The expense of obtaining the plants was another drawback, the protection of them an additional outlay, and, last of all, it would take a lifetime, having escaped all these formidable obstacles, before it would become a perfect protection against their own and their neighbour's stock. It will, perhaps, be considered presumption in me to endeavour to convince the farmers that it would be to their interest to commence the cultivation of live fences in the face of so many objections; but, having ventured to try its cultivation, and found it a success, I can with pleasure add my testimony to the authority alluded to above, and urge an early trial by everyone residing in the older settlements of Canada. For their encouragement, I may state that I have four hundred rods growing freely, and have not found any of the above objections to apply with any force. One hundred rods is now a substantial protection, and greatly adds to the beauty of the farm. The remaining portion was planted in the spring of 1860,

'61, and '65, and promises in a few years to make what I intended it for, namely, a perfect and beautiful protection from my own and my neighbour's cattle, especially those which are inclined to be unruly.

I have had but little experience with other plants for fencing besides the hawthorn, but I am convinced that it is the best for the purpose known in this country. The expense of plants and planting is, in my opinion, no objection to its culture, and when grown to the height necessary, not near the labour is required to keep it in repair which is needed to maintain a common rail fence. Should any of your numerous readers wish any information upon the manner of setting the plants, or where they may be obtained, I would cheerfully give you any instructions that will lead them to try what I consider our best live fence.

C. YALE.

St. Catherines, 26th Jan., 1866.

NOTE BY ED. C. F.—We are glad to receive the foregoing testimony to the success of the English Hawthorn as a hedge plant in Canada. There are, however, those who cannot tell the same pleasing story as our St. Catherines' correspondent. Difference of climate may partly account for this. It is well known that what is practicable in the Niagara District cannot be done all over Canada. Perhaps, too, other experimentors may not have tried so good a method of planting and pruning as Mr. Yale. We hope he will send another communication detailing his plan of management, being quite sure it will be read with much interest by all who desire to see living fences take the place of dead ones.

Stock Department.

Working and Management of Farm Horses.

An interesting and suggestive paper on this subject, recently appeared in the columns of the *Mark Lane Express*. It is much too long to transfer to our pages in its entirety; but in order that our readers may have an opportunity of deriving a hint from the evident experience of the writer, we have epitomized the article.

After remarking that the rapid extension of steam cultivation will greatly diminish the number of horses required for agricultural purposes, the writer proceeds to remark, that there will still remain many operations, of daily occurrence on a farm, which will necessitate the keeping of a certain number. He then deduces from the following considerations that the horse requires to be fed in limited quantities at short intervals:

"No animal with which we are acquainted, in proportion to its bulk, has so small a stomach as the horse. The stomach of an ordinary-sized man is capable of containing upwards of three quarts of water, whilst that of an average-sized horse, whose weight in proportion to the man is as ten to one, will scarcely contain three gallons, or four times the quantity of that of the man. The bulk and demand to supply the natural waste of the animal require a large consumption of food to keep up and support the frame. The digestive organs of the horse are more powerful and quick than those of most of our domesticated animals, otherwise life could never be sustained. The limited capacity of the stomach explains the necessity for using food containing the necessary elements of nutrition in the most concentrated form; otherwise the organs of digestion are over-tasked, the animal suffers in health, and is unable satisfactorily to accomplish the labour required of it."

Horses that are regularly worked should be regularly fed. When their food is given in a properly prepared state, they do not require so long a time as many imagine to satisfy their wants. It is only when the food is unprepared and of inferior quality that it is necessary to bait them for two or three hours. Before being fed, all grain should be bruised, and hay and straw should be cut into chaff. The latter and the bruised grain should then be thoroughly mixed together, with a sufficient quantity of water to cause their adherence, prevent waste, and assist the organs of digestion and assimilation.

"Horses, if sufficiently and regularly fed, will undergo the usual routine of the labour of the farm, from nine to ten hours per day, without showing any symptoms of distress; yet they should not go longer than six hours without food, if, as is sometimes the case, some part of the occupation lies at a considerable distance from the farm-yard. At noon, if economy of time and the health of the animals are studied, nose-bags should be used, and the horses baited in the field. Four pounds of corn mixed with a small quantity of chaff will be quite sufficient, and will only require a short stoppage to enable them to consume that quantity. They will then be refreshed and fit to resume their labours, and when the day's work is finished will return to the stables in much better spirits than if they have been worked for eight or nine hours without either food or water: in the latter case they return jaded and faint, often refusing their food, or in some cases devouring it rapidly, to the injury of their health, or the digestive organs fail to assimilate the nutriment contained in the food."

The writer is opposed to the use of sloppy food for horses, because "the great quantity of water taken into the system is injurious to health, as it entails a greater amount of labour on some of the organs of the body." Still he does "not wish to condemn the use of turnips, potatoes, carrots, &c., for, when used in moderation, they all form a palatable and useful addition to the bill of fare of the horse."

After going somewhat minutely into the estimated cost of keeping a farm horse, the writer makes the following pertinent observations:

"The most expensive method of keeping farm-horses on the generality of farms during the summer months, is that of turning them out into the clover or pasture fields when the day's work is ended. Here we often see a greater injury done to the pasture by their feet than the quantity of grass they actually consume. There is no doubt that one-half the quantity of land would keep a horse if the produce were mown and given to him in the yard, to what he would require if he was turned out to graze upon it. Horses, when kept in the yard, are more able to perform a good day's work than when turned to graze, as in the one case they are frequently employed the greater part of the night in collecting their food, while in the other it is collected for them. Another argument in favour of yard-feeding is the extra quantity of manure produced; while there are fewer accidents, and the animals if hard worked, generally enjoy better health."

The shoeing of horses and the best form of shoe are then ably discussed. The horny substance of the sole should be well pared down, and the shoe should be fitted to the foot, and not, as is often the case, the foot to the shoe. The best form of shoe is one having the web of equal thickness from the toe to the heel, and as few nails as possible should be employed to fasten it. "The nails should all be clenched by the hammer. The use of the rasp should never be allowed on the outside of the crust or wall of the foot, as, by its employment, the enamel of the hoof is destroyed, rendering it more liable to injury and disease. The shoes of work-horses should be regularly removed at least once a month."

The health of the horse is greatly dependent on the way he is lodged and cared for. Stables should be lofty and well ventilated. Provision should be made for the free ingress of pure air; while proper egress should be furnished in the roof to allow the heated and vitiated air to escape. No method can be more imprudent and unhealthy than that of having over the stable a loft for storing the provender of horses. Not only is the animal deprived of the requisite supply of pure air, but his food is contaminated and rendered unwholesome by the effluvia from below. As to the propriety of allowing horses water, when in a heated state, the writer says: "Some have a great objection to water when heated, and cases of injury, and even the death of valuable animals are not unfrequent from this cause; yet it is only from their being deprived of the means of satisfying their wants that any injury arises. Where horses have a regular supply constantly within their reach, no ill effects ensue. In a stable of fifteen horses, where there was a water-trough in each manger, open at all times, we have seen horses enter in all the various stages of perspiration without suffering any inconvenience."

Wooden Horn Knobs—How Put on.

The ends of the horns of some cows and oxen are so pointed, that unless mounted with knobs, serious wounds are easily inflicted. We have seen the flesh of neat cattle laid open several inches in length by pugnacious bullocks, and horses and colts with dangerous and even fatal wounds given by the horn of some hooking beast. The small brass knobs which are screwed on the horns, are worth but little, as they are too small. In order effectually to prevent injury, the knobs should be as large as a man's fist. Moreover, when vicious cattle have such large knobs on their horns, they will soon get completely over their propensity to hook, and large and small will herd peacefully in a small yard, where it would be dangerous to keep them, were there no knobs on their horns. We once owned a hooking cow with long, sharp-pointed horns, that was a terror to every other animal in the yard, until large knobs were put on her horns, when she shortly became peaceable and harmless as a lamb, permitting small cattle, that once trembled with fear when a rod distant, to feed close by her side. We have been long accustomed to use large wooden knobs, for the horns of every animal more than one year old, if the horns had attained sufficient growth to admit of boring a gimlet hole near the small end, without entering the quick. In the horns of some cattle the quick extends to within half an



FIG. 2.—KNOB.

inch of the tips, until they are, perhaps, two years of age, and the horns of some cows and oxen may be bored, without touching the quick, three inches or more below the ends. To make these knobs, select a few well seasoned, sound sticks of some tough wood, which will not split easily, like yellow locust, iron wood (or hornbeam,) river beech, or pepperidge. A piece two feet and a half long and 4 inches thick in the clear, will make six knobs, 4 inches in diameter and 4½ inches long. They should be shaped like fig. 2, above, and an expert woodturner will get them out in a few minutes at a cost of about two cents a piece. Soon after they are turned, they should be sawed apart and bored through with a ½-inch bit, to prevent unequal drying and cracking. The pin-hole (seen in the cut) should be bored ¾ of an inch from the tip-end, using a sharp nail bit. Then the hole should be reamed out with a bung-hole borer, shown in fig. 3, making a tapering hole, as indicated by dotted lines in fig. 2, about an inch in diameter at the lower end of the knob. Soak the knobs thus made, several days in linseed oil or coal tar, to prevent shrinking and cracking when on the horns. If the animal to be adorned will not allow its horns to be bored, make it fast by the horns to a bar or pole fastened securely in a gate or doorway, which has strong posts. Ream out the holes to fit the horns well. Then crowd on the balls, mark



FIG. 3.—REAMER

each horn on both sides with a square-pointed awl, and, removing the balls, bore the horns half-way through from each side, using a small gimlet having a sharp screw. Use pins of No. 11 or 12 steel wire, 3 inches long, filed to round points. The holes in the horns should be bored "drawing" to keep

the knobs from working loose—that is, they should have the effect to spring the pin down in the middle, but not more than one-fourth of its diameter. When the holes are so bored, the pins must be driven in with some force. To do this, a heavy

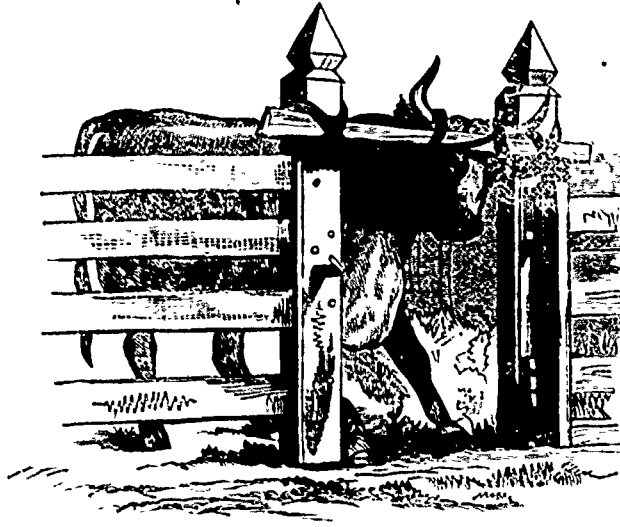


FIG. 1.—METHOD OF HOLDING AN ANIMAL.

sledge hammer, or stone weighing 20 or 30 pounds, should be held against the knob to prevent all jarring, as cattle are extremely sensitive to any blow upon their horns. Drive each pin about a quarter of an inch beneath the surface.—*American Agriculturist.*



FIG. 4.—WOODEN KNOBS ON CATTLE.

A Bull on the Ice.

The *St. Louis Republican* is responsible for the following narration:—

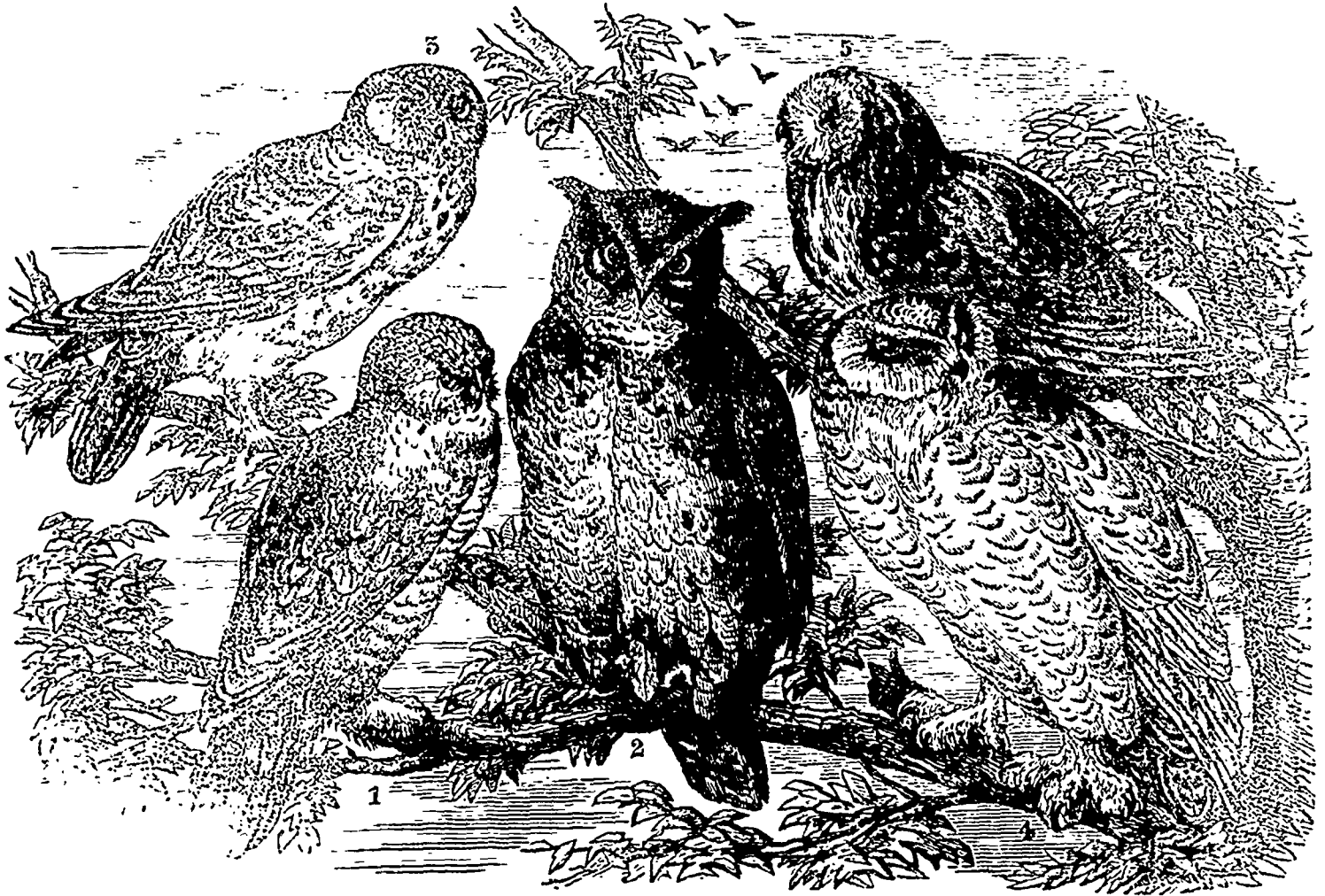
"About nine o'clock yesterday morning, a large bull, which had become separated from a herd on the other side of the river, stepped forth on the ice and made for the city of St. Louis, walking straightforward with a dignified mien, and a look very much like that of a Numidian lion. His neck was about a yard wide and a foot in thickness, and the firmness with which he trod the brittle highway on which he embarked, clearly indicated to the beholder that he was a bull with a will. At the same time that the bull set out for this side of the river, a serious looking, heavy-set gentleman from Illinois, set out from this side for the Illinois shore. He saw the bull approaching at a short distance, and liked his looks; thought he was a bull that behaved himself on the ice, molesting no one, and showing by the sober expression of his countenance that he had sense and pluck. He calculated that the animal would turn aside a little when they met; but on approaching very closely he found that the monster was lowering

his horrid head for an attack. Being thick-set and short-legged, he was not naturally a good runner, but the foaming wrath he saw in the bull's eye, the uplifting of his long, straight tail, and the shaking of his terrible neck, sickened his heart and he turned to flee. As the bull turned to give chase, the perilous situation of the fugitive produced a feeling of intense anxiety and excitement on the part of spectators at a safe distance. The wild beast was upon him in a second, and the manner in which he was lifted from his heels and hurled aloft some ten feet into the air, presented itself as a ludicrous and amusing spectacle to the crowd, though the unfortunate victim, no doubt, had his eyes closed, and was uttering a prayer for his own salvation, while undergoing the lofty tumbling. Taking the seat of the man's pantaloons squarely between his horns, the mad animal tossed him helplessly high overhead, to the distance, as stated by some, of three or four times the man's perpendicular height. Alighting in the same posture in which he went up, he sat for a while the picture of utter dismay. He soon recovered his wits, however, and strangely enough was found to be only slightly bruised. The bull rushed madly on, and presently encountered another man, whose name we are informed is J. E. Miller, who received serious injuries. Instead of running, he tried to take the bull by the horns, and give battle. One of the horns of the infuriated beast was thrust directly into his eye, tearing it from its socket. The animal finally reached the levee, and instead of being shot was driven out Elm street, and thence out Clark avenue, to some stock-yard. Miller was picked up in a partially insensible condition, and was taken to a room on the levee, where he was attended by Dr. Vanzader."

FATTENING CALVES.—A sensible practical farmer told us the other day that he had often noticed that calves would thrive better on milk that was not rich in butter, than on what was commonly called very rich milk. That is a fact in accordance with what we recently stated, that the nutritive elements of milk reside chiefly in the caseine. If you have a cow that gives particularly rich milk and one that gives a quality poorer in butter, it is better in every way, to feed the calf on the milk of the latter. The calf will thrive better and you'll get more butter, from the milk of the first cow.—*Mass. Ploughman.*

BEDDING AND VENTILATION FOR STOCK.—Every farmer should see to it himself; however trustworthy may be his boys or other assistants, that his cattle, sheep, horses and hogs are well bedded as well as well fed and watered; also, that his barn or barns, where his stock is kept and fed, is or are well ventilated. Domesticated animals, as well as man himself, need fresh air, and when compelled to breath a tainted and therefore irrespirable atmosphere, it is at the expense or risk of health and the highest purposes which one has in stock breeding and keeping. Any observing farmer can tell on opening his barn in the morning whether the ventilation thereof is ample.—*Boston Cultivator.*

BONAPARTE AS A SHEEP MAN.—Napoleon said, "Spain has twenty-five millions of Merinos; I wish France to have a hundred millions." To effect this, among other administrative aids, he established sixty additional sheepfolds to those of Rambouillet, where agriculturists could obtain the use of Spanish rams without expense. Visiting the establishment for printing calicoes of the celebrated Oberhampf, Napoleon said to him, as he saw the perfection of the fabrics,—"We are both of us carrying on a war with England, but I think that yours, after all, is the best." "These words," says M. Randoing, "so flattering and so just, were repeated from one end of France to the other; they so inflamed the imaginations of the people, that the meanest artisan, believing himself called upon to be auxiliary of the great man, had but one thought, the ruin of England.—*J. L. Hayes.*



Canadian Natural History.

Owls.

(Strigidae.)

THE "feathered cat," as the Owl has been aptly termed, is popularly regarded with superstitious fear. Its nocturnal habits, and dismal screeching cry, have rendered it a favourite with painters, poets, and story tellers; and it is accordingly associated in the youthful imagination with ghosts, witches, demons, and magicians.

"In the hollow tree, in the old grey tower,
The spectral owl doth dwell;
Hill, hated, despised in the sunshiny hour,
But at dusk he's abroad and well.
Not a bird of the forest e'er mates with him,
All mock him outright by day;
But at night, when the woods grow still and dim,
The boldest will shrink away.
So when the owl hoots, and dogs do howl,
Sing Hal for the reign of horned Owl!
We know not always
Who are kings by day,
But the king of the night is the bold brown Owl."

The large head and solemn thoughtful eyes of this bird, won the admiration of the ancient Greeks and Romans, who made it the emblem of wisdom, sacred to Minerva.

There are upwards of 150 species of the Owl family, more than 40 of which inhabit this continent. They are all great benefactors to man. During the gloom of night, they fill the same offices which the bolder hunting Falcons perform in the open day; and strive to keep in check the over-production of those small mammalia, to which nature has also appointed a nightly season. The various organs of the Owl are beautifully suited to this purpose. Though not adapted to the glare of noon-day, the vision of the bird is marvellously acute, in the dim evening or early morning. The peculiar formation and situation of

the eye, enable it to receive every ray of light which impinges on its surface. The ears possess a peculiarly delicate perception, and are contrived to catch sound in the broadest way. The plumage is of the softest texture, "falling gently on the air." The wings are constructed for a light, buoyant, and noiseless flight; while the colours of the plumage exhibit a union of tints best suited for concealment. There is a chaste and harmonious blending of the more sombre hues, mixing as a whole into a neutral tint; but which shows, on closer inspection, the most minute and delicate touches of "His unrivalled pencil." The tarsi and feet, though not shewing any great strength, are finely formed for grasping.

As we have already hinted, Owls are solitary birds. They generally retire during the day to holes in trees, caves, or old buildings, where they roost and breed. Much the larger proportion of them are nocturnal, but a few fly by day, as the Canada Owl, shortly to be noticed. The larger Owls feed on small quadrupeds and birds, while the smaller live on insects which fly abroad in the night, such as moths and beetles. "If the prey be small, it is swallowed whole, or is torn to pieces if necessary; and the indigestible portions, such as feathers, hair, and bones are disgorged from the stomach in small pellets." The female bird is larger than the male. The eggs are of a rounded form, and are always nearly pure white, in some assuming a slightly greenish tint. They vary in number from two to five. The young are covered with a fine down.

The five North American Owls, which form the subject of the spirited illustration at the head of this article, are as follows:—

1. CANADA OWL.—(*Surnia ulala*.)
2. VIRGINIAN EARED OWL.—(*Bubo Virginianus*.)
3. TENGMAHL'S NIGHT OWL.—(*Noctua Tengmalmi*, Selby.)
4. SNOWY OWL.—(*Surnia nyctea*, Selby.)
5. SHORT-EARED OWL.—(*Otus brachyotus*.)

1. THE CANADA OR HAWK OWL, as it is frequently termed, approximates to the Falcons in its bold and diurnal habits, as well as in the absence of facial disk and ear tufts. The eyes, too, are somewhat differently formed from those of the generality of Owls. The bird follows its prey by daylight as well in darkness, and therefore possesses a modification of the ordinary owl's eye, which enables it to see without inconvenience in the light of noon-day. This bird is from sixteen to seventeen inches in length. The colour of the upper parts of the wings and body, is sooty brown, with dark brown stripes. The throat is white, with similar stripes. "It is very common in the fur regions, where it is often seen hunting by day, approaching the camps with great boldness." In the summer, it feeds on squirrels, mice and insects; and in the winter, principally on the ptarmigan and the grouse.

2. THE VIRGINIAN, OR AMERICAN GREAT HORNED OWL is from twenty to twenty-five inches long, with an extent of wings of from four and a half to five feet. The colour varies from dark brown to nearly white. It is a magnificent bird, and its flight is elevated, rapid, and graceful. It is a bold and destructive hunter Grouse, partridges, hares, ducks, and even turkeys become a prey to this voracious bird. "Its voice is of a hollow and wierd-like character, and, when heard by night from some spot on which the Owl has silently settled, is apt to cause many a manly but superstitious cheek to pale." Wilson well observes:—"The loud and sudden cry of Waugh O! Waugh O! is sufficient to alarm a whole garrison of soldiers."

3. TENGMAHL'S OWL is also known as the DEATH BIRD, on account of a superstition which exists among several tribes of the Indians of North America. "When an Indian hears one of these birds uttering its melancholy cry, he whistles towards the spot from whence the sound proceeded, and if the bird does

not answer him, he looks for a speedy death." The colour of the upper parts of the body of this Owl is a rich chocolate-brown, dotted and splashed with many white markings. The under portions of the body are greyish-white, and the plumage of the legs and toes is also grey-white, sprinkled with brown spots.

4. The Snowy Owl is one of the handsomest birds in this family. It is arrayed in a beautifully soft, white mantle; while its bright orange eyeballs shine among the snowy plumage like a living topaz. It is a mighty hunter—when its size is considered. Its flight is rapid and powerful, and it strikes down ducks, grouse, pigeons, &c., on the wing, like a falcon. It hunts in the day time, and at morning and evening twilight. It is a terrible foe to the smaller mammalia. Mr. Yarroll, in his History of British Birds, states that a wounded bird disgorged a young rabbit whole; and another had in its stomach a small bird with plumage entire. "It is also a good fisherman, posting itself on some convenient spot overhauling the water, and securing its finny prey with a lightning-like grasp of the claw, as it passes beneath the white-clad fisher." The length of the male is about twenty-two inches, and that of the female twenty-six or twenty-seven inches.

The Short-eared Owl is remarkably formed, inasmuch as its head is smaller than its neck. It flies by day, and hunts in the open country in preference to the woods. It is somewhat weak in the wing, and does not often fly more than a hundred yards at a time, and at a very short distance from the ground. Its food consists of mice and birds, and even bats and half-grown rats. It is very widely distributed, and is found in many portions of the Old World as well as on this continent. The length of the bird is about fifteen inches, the female being longer than the male. The upper part of the bird is fawn-coloured, interspersed with dark-brown patches. A few spots of yellow are scattered over the wings, with some bars of dark brown across the tail. The legs and thighs are pale buff, the claws and beak and the eyes golden yellow.

The Rat.

No other animal is placed in circumstances which tend so continually to sharpen its wits as a rat; nor does any other appear to be of a more improved nature. He is of a most intelligent family, being related to the beaver. And in civilized countries he is not a wild creature; for he follows the progress of civilization, and adapts his own habits of life to it, so as to avail himself of its benefits. The "pampered goose," who, in Pope's Essay, retorts upon man, and says that man was made for the use of geese, must have been forgetful of plucking time, as ignorant of the rites that are celebrated in all old-fashioned families on St. Michael's day. But the rat might, with more apparent reason, support such an assertion.—He is not mistaken in thinking that corn-stacks are as much for his use as for the farmer's; that barns and granaries are his winter magazines; that the miller is his acting partner, the cheese-monger his purveyor, and the store-keeper his steward. He places himself in relation to man, not as his dependant, like the dog; nor like the cat as his ally, nor like the sheep, as his property, nor like the ox as servant, nor like the horse and ass, his slave, nor like the poultry who are to "come and be killed" when Mrs. Bond invites them; but as his enemy—a bold borderer, a Johnny Armstrong or Rob Roy, who acknowledges no right of property in others, who lives by spoil.

Wheresoever man goes the rat follows, or accompanies him. Town or country is equally agreeable to him. He enters your house as a tenant at will (his own, not yours), works out for himself a covered way in your walls, ascends by it from one story to another, and leaving you the larger apartments, takes possession of the space between floor and ceiling, as an entrepot for himself. There he has his party revels, gallopedes, (merry ones they are), when you would be asleep, if it were not for the spirit with which the youth and belles of ratland keep up the ball over your head, and you are more fortunate than most of your neighbours, if he does not prepare for himself a mausoleum behind your chimney-piece or under your hearthstone, retire into it when he is about to die, and very soon afford you full proof that though he

may have lived like a hermit, his relics are not in the odor of sanctity. You have an additional comfort of knowing that the spot appropriated will henceforth be used either as a common cemetery or a family vault. In this respect, as in many others, nearer approaches are made to us by inferior creatures than are dreamed of in our philosophy.

The adventurous merchant ships a cargo for some distant point; the rat goes with it. Great Britain plants a colony in Botany Bay, Van Dieman's Land, or at the Swan River; the rat takes the opportunity of colonizing also. Ships are sent upon a voyage of discovery; the rat embarks as a volunteer. He doubled the stormy cape with Diaz, arrived at Malabar in the first European vessel with Gama, discovered the new world with Columbus, and took possession of it at the same time, and circumnavigated the globe with Magellan and with Drake and with Cook.—*Southey.*

A seal weighing 128 lbs., one of the largest ever seen in the St. Lawrence, was caught a few days ago at Port St. Francis.

GREY EAGLE SHOT.—A grey eagle was shot near Pittsburgh last Friday, by Mr. L. C. Bruiton. It measured seven feet between the extreme tips of its wings.

BATS.—We extract the following from *Allen's Monograph of Bats*,—"The numerous parasites infesting bats is perhaps the most revolting feature in these creatures. The enormous population of *Aeari* found upon their bodies is due to the great generation of animal heat in their close haunts—a condition conducive to a rapid increase of all kinds of vermin. In North America the common bed bug (*Cimex lectularis*) is frequently found upon their fur. The entrance of a bat, with its precious burden, into the open window of a farm-house is the solution of that frequently propounded question of the despairing housewife—"Where can the bugs come from?"

PIGEONS ROITED BY SWALLOWS.—A pair of pigeons have for the last two years made their nest in a box attached to the wall of an outbuilding, the door of which is regularly closed at night. Two swallows attached their nest to a beam of this building, and so persecuted the unfortunate pigeons that they were suddenly compelled to retreat, and establish a home elsewhere. The circumstance did not come under my notice until the swallows had hatched their eggs, when the swallows' nest was removed and placed outside the building, under a spouting which protected it from the wet, and the pigeons reinstated. The old ones continued to feed the young, and the swallows soon were on the wing. The pigeons, however, did not long enjoy their quiet, for, having laid more eggs, they were again attacked by the swallows, who made great efforts to build a second time on the beam, but were prevented by my servant. It was very curious to witness the attacks made on these unwieldy pigeons. The persecution was not confined to the building, but wherever these unfortunates were met, down the swallows were upon them, skimming the air, and with the rapidity of lightning, pouncing upon them, and removing a lot of feathers with their beaks. Whilst the larger birds were turning round to make their attacks, the smaller ones were far out of reach.—*Charles Wotton, M. D., in Harwich's Science Gossip.*

The Dairy.

Rules for Management of Cows.

NEVER buy a cow of a dairyman, for if he is a good manager he will sell only his poor animals.

To determine which cows are best for keeping, try their milk separately, and weigh their butter—for sometimes a cow may give much milk and little butter, and vice versa.

Cows should run dry six weeks before calving—if milked closely toward calving, the calves will be poorer.

A cow newly come in should not drink cold water in cold weather, but moderately warm slop. Calves intended for raising should be taken from the cow within a few days, and they will be less liable to suck when old. Feed them first with new milk for a time, then skim milk, then sour milk, taking care that all the changes are gradual, by adding only a portion first; add gradually a little meal.

Calves well fed and taken care of, with a quart or two of meal daily in winter, will be double the size at two years they would have attained by common treatment.

Heifers thus treated may come in, at two years old, and will be better than neglected animals at three, and one year of feeding saved.

Hearty eaters are desirable for cows, and they may usually be selected white calves. A dainty calf will be a dainty cow.

Heifers should become accustomed to be freely handled before calving, and drawing the teats.

They will then not be difficult to milk. Begin gradually, and never startle them.

In milking cows, divide the time as nearly as practicable between morning and evening, especially at time of early grass, that the udder may not suffer.

Persons who milk should keep the nails cut short—animals are sometimes hurt with sharp nails, and are unjustly charged with restlessness.

Old cows should be fatted at fifteen years. The dairyman, therefore, who has fifteen cows, should raise a heifer calf every year to supply the vacancy—if the herd is thirty cows, he should raise two calves, and so forth.

Heifers dried up too early after calving, will always run dry about the same time in after years—therefore be careful to milk closely the first year, until about six weeks before calving.

Spring cows should come in while they are yet fed on hay, and before they are turned to grass, which will be more likely to prevent caked bag and milk fever.—*Annual Register.*

COWS LOSING THEIR CUD.—A friend writes us that he has seen two cases where it was said the cows had "lost their cud." In both instances the animals were nearly doctored to death before the character of the disease was ascertained. The remedy then applied was to administer a "cud," composed as follows:—Salt pork chopped fine, mixed with dough, a little chimney soot, and an egg. A ball as large as a goose egg was given for a dose. The cattle recovered. We do not believe "loss of cud" to be a disease of itself, but the result of disease or debility. The medicine administered in this case proved an alternative; and that, together with cessation of "dosing," recovered the animals.—*Rural New Yorker.*

THE BEST COW IN VERMONT.—We have, from Amasa Scott, of Craftsbury, the following statement of the product of one cow in golden butter. We have no doubt it is the best cow in the best of dairy States, and suggest to Mr. Scott that he ought at once to name her "Gold-Flop":

Butter from Dec. 25th, 1864, to April 20th, 1865	200 lbs.
April 20th to Aug. 20th	180
Aug. 20th to Sept. 20th	40
Sept. 20th to Oct. 20th	34

Total in ten months	454 lbs.
Sales—200 pounds at 60 cents	\$120
180 " " 30 do.	54
40 " " 40 do.	16
34 " " 50 do.	17
454 pounds in ten months	\$207

Oct. 20, 1865, she was producing one pound per day, and if she continues at that rate two months, to Dec. 20, the product for the year would be 514 lbs.—*Vermont Watchman.*

BETTER MAKING.—The *Revue d'Economie Rurale* states that, from recent experiments made by a French farmer, it appears that the last milk drawn from the cow contains ten times more cream and butter than the first milk. Hence it follows that if, after drawing eight or ten litres of milk from a cow, the operation is stopped, and about a litre left in the dugs, nearly one-half of the cream and butter is lost. The best way of making butter, according to the same authority, is to pour cream into a linen bag, then to tie it up and put it into a hole dug in the ground, which is afterwards covered with earth. There it must remain for twenty-five hours; after which, on being taken out, the cream is found to have become quite hard. It is then crushed in a mortar with a wooden pestle, half a glass of water being added to separate the butter, an operation which does not last two minutes. No other system of making butter is now employed either in Normandy or the Berry; for there not only is a saving of time and labour, but a larger quantity of butter is got out of the cream, and its quality is excellent. Some people put the first bag into a second one, in order to avoid bringing the earth too closely into contact with the butter.

Poultry Yard.

How to Distinguish Barren Hens.

BARREN hens are those that never lay, or that will sometimes produce a few eggs in the spring, and at other times a small number during the latter part of summer. Such hens are to be found in almost every poultry yard. As none of the treatises on poultry now extant allude to this subject, we herewith record certain infallible signs by which barren hens may be distinguished from those that lay.

Hens that lay are off the roost at the first dawn of the morning; while barren ones often remain there until the sun is high in the sky, or until the laying hens have ample time to fill their crops. Laying hens have a voracious appetite, which appears almost insatiable when they are being fed; while barren hens are often very indifferent about eating. Hens that are about to commence laying, or that do lay every day, or every alternate day, are as active in obtaining feed for themselves as one having a brood of hungry chickens is diligent in scratching up and searching out necessary feed for her young ones; and such hens are always ready to run into the barn, stables, or other places where they are not permitted to go, while a barren hen moves about with as much indifference as if she were a piece of animated stupidity. A hen that lays an egg to-day, and will lay another to-morrow has a comb and gills red and glowing like the ruby lips of a beautiful damsel in the last stages of her gigglehood, while the comb and gills of a barren hen will be as colorless, pallid, and sometimes wrinkled and dried up as the once fair face of some of our maiden aunts of forty-five and upward. When a hen that lays has eaten till her crop appears distended to its utmost capacity, she will force down a little more, while a barren one will often appear as indifferent about eating good feed as a weaned baby after it has been stuffed with sweet cake and candy. A hen that has laid an egg to-day and will lay another to-morrow will go singing around the yard and uttering soft and complacent notes, as if the vast universe were an Eden of love, and producing eggs were a source of exquisite pleasure; while the hen that never lays has no more music in her soul than the wife of Socrates. Those hens that lay will companionize with their betrothed chanticleers, while those having no eggs in their ovary will avoid the flock and resent the attentions of the rooster as if he were some insulting and abusive renegade. That part of the body of a laying hen around the ovary will appear plump, and sometimes an egg can be felt, while one that does not lay will seem as destitute of eggs as if it were her twenty-eighth day of incubation on turkeys' eggs.

When all fruitful hens are on their nests, either laying or setting, we frequently see a fatherly rooster strutting round and making amorous advances, calling some hen that does not lay to partake of every little tit-bit he may find, and leading her to some secret place in the evergreen hedge, or to the tall grass, or through the waving rye, enticing her beneath the manger, where a hen could enjoy all the secretiveness that her highest aspirations ever desired, or coaxing her on the mow, where the voluptuousness of such a secluded retreat and the fragrance of the new-mown hay, or the ripe sheaves of golden grain, would lend their inspiration to the production of eggs. A rooster will often appear so impressed with the duty of a pullet to lay, that he himself will make a nest in some cosy corner, and get on it, and call, and chatter, and make use of every means in his power to induce her majesty's henship to come and sit on the nest and try to lay; while she will take it as coolly and indifferently, as if it were really the duty of the rooster to go through with all that rooster twattle. Then, when he has given up in despair and left the nest, a barren hen will run and peep in to see if he has not after all produced a rooster's egg.

Did you ever see a rooster attempt to call a laying hen on the hay-mow and make a nest for her? Never. That is a prerogative which a good layer never resigns to the other sex. When a hen is going to lay, she gives her mate to understand that he can keep at a respectful distance; for she knows how to make a better nest than he. When hens wait for the rooster to make their nests, and have to be coaxed and wooed to induce them to lay, and then they don't do it, as good old Jonah said of himself, "it is better for them to die than to live;" because, if they are ever so well

fed, they never will lay; and those hens that will produce eggs will be more prolific with the room of these barren ones, than their company.

You may smile, gentle reader, at these insignia of barren hens; but be assured they are as infallible as a heavy beard on a boy's face is the sign that he has passed from his boyhood to manhood. There is one more sign that never fails. When we know a hen has not produced an egg, or but a few at the most, from May to October, it is safe to conclude that she will subserve the purpose of her existence on the dinner table eminently better than in the henery.—*The Independent*.

HENS WITH THE DEMS.—"They are taken with a weakness in their legs; they hobble around for a week or two until they have not strength to stand; appetite fails; they linger three or four weeks and die." That's what's the matter with H. Mansfield's fowls, (New Haven Co., Conn.) They probably do not have range and wild foraging enough, and perhaps they lack regular feeding with grass or vegetables. Give them these, and put some Tincture of Chloride of Iron, enough to be distinctly tasted, into their water; also feed them well twice a day with bread soaked in ale.—*Am. Ag.*

BREEDING FOWLS.—A writer in *Wilkes' Spirit* says: "I am a great advocate for choosing young birds for this purpose and recommend that early pullets be selected every year for stock the following season, and put with two-year-old cocks for instance. Pullets hatched in May attain their growth and become perfect in shape, size, and health, before the chills of winter. They should be put with cocks of two years old, when they will lay on the first appearance of mild weather, and their produce has the same advantage as these have had before them. I do not advocate having young stock fowls so much on account of their laying early, as I do for the superiority of their breeding. Neither is it desirable to breed from fowls of all the same age. Where it can be done, it is better to put a two-year-old cock with pullets, and *vice versa*. It is well to introduce fresh cocks of pure breed into the yard every second year; this prevents degeneracy, and for the same reason no cock should be kept more than three seasons, nor a hen more than four, if it is intended to keep them in the highest possible perfection and efficiency.

Entomology.

Endurance of Cold by Insects.

It is often a subject of wonder among Agriculturists that the insects which prove so injurious to their crops, are not destroyed by the intense frosts of winter, especially when there is little or no protection afforded by nature's mantle of snow. It is, indeed, one of the most wonderful phenomena in their natural history, that they are enabled to endure with impunity an intense degree of frost. Many insects, which pass the winter in their pupa state, are of course secured from the effects of cold by their cocoons of silk or other non-conducting materials, or by their penetrating for some little distance into the earth. But there are a vast number of others which, in all their states, are exposed to the air without any covering; while many are sheltered too slightly to be secure from frost. Still they are able to endure the exposure, remaining unfrozen in the severest cold, or, that is still more marvellous, recovering their vitality even after having been frozen into lumps of ice. Many instances of the possession of this wonderful faculty have been recorded, and numerous experiments have been tried with a view to the discovery of its limits.

Kirby and Spence relate that Spallanzani exposed eggs of silk-worms and other insects for five hours to a freezing mixture of 33 degrees below zero, and found that they were not frozen, nor was their fertility in the slightest degree impaired! Others were exposed even to 56° below zero, without being injured! Dr. Wyman stated, at a meeting of the Boston Society of Natural History in 1856, that he had examined chrysalids of the common mud-wasp, and found that they were not frozen during the coldest weather. When the thermometer had been 18° below zero, and had risen to about 8° below, they were still unfrozen, and when removed from their pupa

cases, made obviously muscular actions. The pupae preserved their usual transparency; but when they were crushed upon the surface on which they rested, the fluids of the body instantly became opaque and were congealed. He had also examined the eggs of the moth of the canker-worm, and found their contents unfrozen.

Mr. Lister (according to Kirby and Spence,) relates that he had found caterpillars so frozen that when dropped into a glass they chinked like stones, which nevertheless revived. Mr. Stickney, in order to ascertain the effect of cold in destroying a noxious grub, exposed some of them to a severe frost, which congealed them into perfect masses of ice. When broken their whole interior was found to be frozen; yet several of them resumed their active powers. Brunet exposed the pupa of the Cabbage-butterfly to a frost of zero, until they became lumps of ice, and yet they afterwards produced butterflies. Again, in an experiment made on the caterpillars of a moth, during Sir John Ross' voyage, two of them revived, and assumed the imago state, after being four times in succession exposed to a cold of 40° below zero, and four times revived by being brought into the warm atmosphere of the cabin! These, and numerous other instances which might be quoted, do not, however, appear so incredible when we remember that animals of a much higher organization have been known to revive after being frozen. The well-known little fish called the Tommy-cod, which is captured through the ice at this season of the year in the river St. Lawrence, frequently freezes immediately upon being drawn out the water, and becomes as hard and brittle as a dried stick; yet when it is thawed in water, even after some hours have elapsed, it comes as it were, to life again, and regains its former activity.

In the present state of our knowledge of animal physiology, it is impossible to determine what is the source of heat which enables these organisms to preserve their temperature when exposed to so low a degree of cold. The question is still involved in mystery, but we may hope that as science advances, it may eventually be cleared up. In the mean time we may perhaps be permitted to conjecture, that this faculty arises from some principle of vitality which enables the living creature to bear up and fight against conditions which would ordinarily be destructive to its life; and that it is Divinely ordered for the preservation of species in apparently uncongenial climates, and for the working out of the mysterious ends of Providence.

THE BLACK KNOT.—Dr. Fitch, the State entomologist of New York, thus accounts for the black knot: The black knot excrescence is a disease peculiar to the plum and cherry trees in this country. It begins on the small limbs, but a year old, recognized at first by a slight swelling of the bark at a particular point. This spongy substance is of a pale yellow when growing, changing to coal black when mature, and then a minute fungus plant grows upon its surface. Their whole surface is covered with black granules, which are the fungus plant alluded to, a species of the genus *Sphaeria*. It is a curious fact that the surface of these excrescences, when mature, are covered with this plant never found elsewhere. Most persons suppose them (excrescences) to be of insect origin. The larva of the curculio are always almost found in them, and consume near all the spongy matter of the warts, but do not touch the fungus growing on their surface, forming a kind of shell after the inside is devoured. It has been supposed that these excrescences are a species of fungus, growing on the limb. But what is a fungus? To express it in familiar language—it is a body which grows, and forms its own substance, distinct from, and independent of the body in which it takes root, and from which it draws its sustenance. Now these black knots are no such growth. They are merely a change in the texture of the natural parts of the limb. And thus we arrive at the conclusion, that these excrescences are not of insect origin, and not a vegetable fungus, but are properly a disease of these trees (plum and cherry), whereby the natural tissues, the bark and wood become softened and swollen at the place affected.

The Apiary.

Parthenogenesis in the Honey Bee.

THE wonderful doctrine of parthenogenesis was first promulgated by Herr Dzierzon, a German bee-master and naturalist, about twelve years since, when he called attention to the extraordinary fact of the production of males by the queen, without any intercourse with the male or drone bee, and raised a swarm of opponents in nearly all the naturalists in Europe, who scouted the idea, and produced such a host of objections, that Dzierzon himself began to doubt the correctness of what he had seen with his own eyes. A number of the objectors set to work to prove the fallacy of Dzierzon's statement, but every experiment that was properly conducted only confirmed the correctness of his theory, and Professor Theodor von Siebold (one of the most distinguished German naturalists) fully confirmed this doctrine; and after a laborious investigation he discovered a set of voluntary muscles for impugning some of the male element, which is stored up in the spermatheca of the impregnated queen, to every worker egg, during its passage through the "common oviduct." He also discovered spermatozooids in the drones, as well as in an impregnated spermatheca, and detected the same spermatozooids in worker eggs, whilst they were waiting in those eggs that would produce drones. Thus this long and acrimonious dispute was at last conclusively settled; and it has explained many of the mysteries of the hive, respecting which the great king of bee-masters, the illustrious Huber, after discussing the effects of retarded impregnation, exclaimed, "It is an abyss wherein I am lost."

All other bee-masters have been equally lost in this abyss, until Dzierzon discovered the doctrine of true parthenogenesis, and it is now a confirmed fact that the queen has the power, at will, to lay either unfertilized drone eggs, or fertilized worker eggs. It has been stated by a number of writers on bees, that the queen has to lay worker eggs a certain length of time, and then a quantity of drone eggs. But I have seen queens, in glass observatory hives, lay worker eggs, then a few drone eggs, and immediately worker eggs again, all in a few minutes, and I saw these worker and drone eggs hatched out into perfect bees, which conclusively proves that the queen has power to fructify the eggs or not at will.

I always like to fully confirm or not all these theories about bees, by my own experiments. So, having received some Ligurian queens direct from Switzerland, on the 22nd Sept. last year, I thought, a few days after, that it would be a very conclusive confirmation of this wonderful doctrine if I could raise a queen so very late in the season, as every drone had disappeared several weeks before; so, on the 7th of October, I examined the combs in one of the stocks to which I had joined one of the imported Ligurian queens on the 23rd Sept. previous, and found a large quantity of eggs laid in the combs. I removed one of these combs and put it into another stock from which I removed the queen.

Oct. 18.—Examined the combs, and found five royal cells sealed (eleventh day).

Oct. 22.—Examined the combs about three o'clock, and found one of the queens just ready to leave its cradle (fifteenth day), and the next day the other young queens were thrown out.

Oct. 26.—Examined the combs and saw the newly hatched queen.

Nov. 11.—Again examined all the combs, and could not find a single egg laid. I saw the virgin queen (twenty-three days old).

Feb. 21, 1865.—I found a drone pupa on the alighting board.

Feb. 27.—Examined all the combs and found drones hatched, and drone brood in all stages of development in two combs, containing only worker cells. I saw young drones emerge from these cells. Removed these combs as specimens, also a few of the drones that were hatched. I put in the hive bar-frames containing drone combs.

March 6.—Examined the combs and found eggs and brood in two combs.

March 31.—A number of drones flying out.

April 7.—Examined the combs and found about one-quarter of the bees were drones. I supplied the stock with several worker brood combs, and saw the virgin queen frequently from April to June, and she laid eggs that only produced drones, not in the regular order that a fertile queen lays eggs, but here and there one, so that the combs with the sealed drone brood had a very singular appearance; she also sometimes laid two or more eggs in one cell, which,

in some cases, came to maturity, the bees enlarging the entrance to the cell to the size of two cells, and then covering the two larvae with one large conical cover.

In June I removed this virgin drone-brood queen, and placed her in my entomological collection, and gave the stock a young queen.

There never was a clearer confirmation of this wonderful doctrine, as I never read or heard of a queen being hatched so late in the season as the twenty-second day of October, and afterwards kept until the June following, producing only drones.—WILLIAM CARR, in *The Poll*.

Over Stocking Bees.

To the Editor of THE CANADA FARMER.

SIR, I find that it is the received opinion of many, that a neighbourhood or district may be overstocked with bees. From several persons I have received enquiries something like the following:—"I would like to keep bees, but as there are already quite a number of stocks in the vicinity which do not seem to do very well, I fear it is overstocked. What is your opinion?" For the benefit of such, and all others who may be interested, I would say that I consider the opinion an erroneous one, and calculated to keep many from engaging in bee-keeping, as well as to deprive themselves of a great and wholesome luxury, if not of a source of profit. It is thought by many that bee-pasturage may be exhausted as easily as pasture for cattle; but such is not the case. Cattle pasture thoroughly cropped to-day, will require several days or even weeks to grow again. It is not so with bee-pasturage. An acre of white clover may be drained of every drop of its delicious nectar to-day, yet it will again yield the same supply to-morrow. The honey cups of every honey yielding flower, that are emptied during the day, are filled again at night. This process will continue until the flowers begin to wither, and no longer. It will hence be seen that if every flower is not visited daily by the "busy bee," a certain amount of honey is lost. If parties will take the trouble to examine fruit trees, or white clover in blossom, they will find while some orchards or clover fields are apparently alive with the "busy bee," that in others, in the same district, only now and then a straggling bee can be found. The principal reason for this is that there are not enough stocks kept to occupy the pasturage open for them. The truth is that owing to the scarcity of bees, thousands of pounds of pure honey annually perish in the cups of the many flowers that adorn this earth. Says Mr. L. Langstroth:—"It is difficult to repress a smile when the owner of a few hives, in a district where as many hundreds might be made to prosper, gravely imputes his ill-success to the fact that too many bees are kept in his vicinity."

Says Mr. Wagner, in a letter to Mr. Langstroth,—"In Russia and Hungary, apiaries numbering from 2,000 to 5,000 colonies are said not to be unfrequent, and we know that as many as 4,000 hives are oftentimes congregated in autumn, at one point, on the meads of Germany." According to Oettl, Bohemia contained 10,000 in 1853, from a careful estimate, and he thinks the country could readily support four times that number. The kingdom contains 10,000 square miles.

"In the Province of Attica, in Greece, containing forty-five square miles, and 20,000 inhabitants, 20,000 hives are kept, each yielding, on an average, thirty pounds of honey and two pounds of wax."

From a report made to the Austrian Government, on the state of bee-culture in twenty-one States of that Empire, furnished in an article on "Bee-culture," by Mr. Bruckasch, of Texas, in the U. S. Patent Office Report for 1860, p. 282, we quote as follows:

Average number of bee-hives to one square mile.
Transylvania..... 400
Croatia..... 320
Gorz..... 310
Galicia..... 250
Lombardy..... 200
Sardinia..... 400
Canada..... 500
Siberia..... 610
Cambrils..... 900

I might give other statistics equally as convincing, but perhaps more are uncalled for. From the above it would appear, that it is not an easy matter to overstock a district with bees, where it will pay to keep them at all. Of this I am certain, there is no danger of overstocking Canada, at least during the present century.

Let all who desire to keep bees commence at once, without fear of failing on this account.

Brooklin, C. W. J. H. THOMAS.



INFORMATION WANTED.—"Thomas Belford," of Caladonia, makes the following enquiry:—"Is it necessary to put grafting composition on when budding, the same as when grafting?"

ANS.—No; it is only necessary to wrap some bass matting round the incision, after the bud has been inserted.

A CORRECTION.—Chas. Jas. Blomfield, Esq., of this city, calls our attention to an error in our issue of January 15th, of the current year, which we gladly correct. He writes:—"A small farmer on Lake Kahnagawigamog is made to say—probably by an error of the press—'a letter addressed by me to the Secretary of the Canada Company, upon whose lands I have settled.' The Company which owns the Township of Dysart is the Canadian Land and Emigration Company."

SEEDS TO IDENTIFY.—"John A. Lough" of Onslow, makes the following enquiry:—"Can you tell me what kind of seeds these are that I send you enclosed? A man brought some of it to my mill to be made into flour. It made pretty good looking flour. He told me it made light bread but very dry."

ANS.—The seeds submitted are those of the Common Millet (*Panicum Miliaceum*). Millet is frequently sown for cutting and feeding green, for soiling purposes. It yields largely, and produces an abundance of luxuriant juicy leaves. The seed is rich in nutritive qualities, but is seldom ground. Millet requires good soil, and is an exhaustive crop.

GRAVEL HOUSES.—"W. F. S." writes from Woodstock, New Brunswick:—"Would you be kind enough, through your columns, to make an enquiry if any of your many readers have had any experience of what is called Gravel Houses, made by a mixture of gravel and lime; also the manner they are constructed? In this country, there is but one, and it not very good. A friend is about constructing a house upon a farm. Seeing notices of this kind of a building, he thinks favourably of it, but wishes further information."

HEAVY SPRING PIGS.—"Peter Nisbet," of Pickering, writes:—"Please to give space in your valuable journal to an item regarding the weight of three spring pigs, which I slaughtered on Tuesday, 23rd January, and which weighed respectively 374, 352, and 326 lbs, their age being nine months. The sow that suckled the same pigs I killed in the latter end of December; weight 480; age about 18 months. They were fed on the farm of Lake View, Township of Pickering. Let any of my brother farmers heat this if they can."

PLANTING TREES BY THE WAY-SIDE.—"W. Grant Silcox, of Tona observes:—"This is a matter that should receive encouragement, not only in this country, but in all countries. What can be more grand and beautiful than stately avenues of shade trees, through which all our highways extend in their various ramifications throughout the Province! How much would be added to the value of property in rural districts so improved. The planting of trees is a matter of so much importance to all classes of the community, that Township and County Councils should take it into their serious consideration, inasmuch as it is their duty to take any steps that have for their end the increase of wealth, comfort, and prosperity among the people. For instance, let us suppose the local pathmasters to be empowered to make certain concessions to farmers planting trees in front of their lots, in lieu of their statute labour, there would soon be such an impetus given to tree planting, that the aspect of our country would, in ten years time, be quite renovated. No inducement, perhaps, could be offered for such works in newly settled parts, as the labour is all needed there in improving the condition of the roads,—but in the older parts of the country, much might be done in the way suggested. In dry localities it is almost impossible to plant too many trees, but in localities where the highway is inclined to be somewhat wet, care should be observed not to shade too much."

POTATO PIE.—A correspondent sends us the following useful recipe, taken from Cassell's (London) *Illustrated Family Newspaper*:—Make a thin pie crust in the usual way, and line with it a basin or deep pie dish. Fill to the top with finely-shred potatoes, among which mix an onion or two sliced very thin, pepper and salt, and a little butter, dipping, or lard. Pour over all as much good milk or cream as the dish or basin will hold. Either cover with a crust or not, according to option, and bake in a slow oven.

COST OF WIRE FENCING.—"R. McLennan," of Lancaster, C. W., makes the following enquiry:—"Being desirous of ascertaining the cost of a wire fence, if you can, through THE CANADA FARMER, give me the desired information, it would be received with interest by your subscribers here, for two reasons. First, because cedar, or suitable timber for fencing, is becoming scarce. Secondly, because a wire fence would ensure almost a total immunity from snow drifts on public roads."

ANS.—We are unable to furnish the required information. Probably some of our readers who have experimented with wire fence will kindly supply it.

EARLY MERINO LAMBS.—"Andrew Black," of Warkworth, Percy, writes:—"You are greatly against Merino sheep, but as ten of my ewes of that breed have had lambs, I thought I would mention it. The lambs are all alive and doing well. The first came 11th December; the tenth, 15th January. Three of them came during the cold snap, about the 8th of this month. I am not much acquainted with Merinos, this being only my second winter with them; but I think it remarkable for ewes suckling lambs to have a second lamb the same year. They were not pampered in any way, but ran with the rest of the flock, which numbers over 150."

EFFECT OF CLIMATE.—"G." writes us as follows:—"In a seed catalogue, published in Rochester, N. Y., among other articles from customers' letters is the following: 'The Dwarf Hollyhock, or seed so marked, are the most showy flower in any garden, and have attracted much attention. They grow very high, twelve feet or more, resembling the engraving, except in height.' To which the publisher (an Englishman, by the way) remarks:—'The English dwarf hollyhock seed, like the men and women, seem to grow larger and finer in our free land, and can no longer be called dwarf, so we have discarded the word "dwarf" in our present catalogue.' Who would have imagined that the blessings of Republicanism descended even to the vegetable kingdom?"

LAMPAS IN COLTS.—"A. B. Scott," of London, makes the following enquiry:—"Would you, through the medium of your paper, inform me of the best way to cure Lampas in colts? Burning being the most convenient way of treating them, and a good many having objections to it, any information on the subject will be thankfully received."

ANS.—Lampas is known as an enlargement of the bars or ridges behind the incisor teeth of the upper jaw. It occurs most commonly in young horses, and arises from a natural congestion of the gums consequent on the shedding of the teeth, and is best treated by scarifying the enlargement with a lancet or common penknife. The parts are sometimes burned with a hot iron, which is called burning out the lampas. Such a barbarous operation is quite unnecessary, and is highly injurious.

RINGBONE.—"Newsham Leeson" writes as follows:—"One of my horses, I am afraid, has got the ringbone coming on his fore foot. I should be obliged if you could give me a hint through THE FARMER that would help me to cure it."

ANS.—Ringbone is a very common disease among horses in Canada, and certain breeds are found to be more liable to this disease than others. It consists in a bony enlargement situated upon the lower part of the large pastern bone, and the upper part of the small pastern bone, and in many instances involving the pastern joint in disease. It arises from the inflammatory process being set up in the periosteum or fibrous membrane covering the bone; exudation takes place, lymph is thrown out

around the joint, and this becomes ossified and receives the name of ringbone. The affection is easily seen as a bony enlargement around the lower pastern joint, an inch above the hoof, and may either occur on the fore or hind limb, but oftener on the latter. The exciting cause of ringbone is hard work; but in very many cases it can be traced to hereditary origin.

The treatment of ringbone is not generally attended with much success. When causing lameness, the horse should have rest, and the parts should be fomented with hot water, or cold applications. Afterwards blistering, should be repeated at intervals of ten days, or, in place of blistering, the firing iron may be used.

Subscribers will please notice that owing to a new regulation in the P. O. Department it is necessary to pay postage on numbers of The Canada Farmer returned to this Office for binding,—and 30 cents must be remitted to the Publisher, to defray binding expenses.

Bound Volumes.

The Second Volume of "The Canada Farmer" is now ready, consisting of 24 numbers, and comprising 384 pages of reading matter in a bound form. The binding will be charged 30 cents in addition to the subscription price, making \$1 30 in all for the volume. Parties desirous of having their Nos. for the past year bound, will please send them to us, securely packed, with their name and address, together with 30 cents in stamps or otherwise, and we shall return them bound, free by post. Vol. 1, containing the numbers for the year 1864, may also be had at the same price.

The Canada Farmer.

TORONTO, UPPER CANADA, FEB. 15, 1866.

Rinderpest.

It is no easy matter adequately to appreciate the gravity of the crisis, and the magnitude of the calamity that has fallen upon British stock-owners in particular, and the British nation in general, by the present fearful visitation. The deplorably serious aspects of the plague, its national character, and the imperative necessity for its prompt extermination by some or any means, are questions that John Bull seemingly regards with calm unruffled philosophy. Instead of decisive energetic action in some direction, the British public are treated to innumerable highly scientific discussions upon the theory of the plague. The respective advocates of the pole-axe, and the tendor dose politely brandy arguments, and even wax sardonically jocular over the matter. Medical practitioners of lesser magnitude, and fussy busy-bodies fill the columns of the daily and weekly press, with suggestions of endless nostrums, recommendations of precautionary arrangements, and shadowy expectations of some wonderful discovery, that shall annihilate the disease almost instantaneously.

Neither is there any unanimity of opinion among those that are in authority. The several Orders of Council, regarding cattle traffic, as they have appeared, may fairly be regarded as a fair reflex of the mind of the nation's rulers on the subject. The dawdling, ineffective course of action that has been pursued admits of easy inference, from the fact that the Eighth of those Orders has appeared. From reading those, and scores of other documents called forth, one is almost persuaded that rinderpest was never heard of before, that Britain is now dealing with the disease *de novo*, and that there is a likely expectation of the plague being quelled by some specific, which has eluded all the learning and practice of Continental Europe.

With the origin of the disease it is not now our purpose to deal. As to its nature, Dr. Murchison—a high authority—and a fair proportion of the medical profession, declare the plague to be so assimilated to

variola, or small pox in the human subject, that simple vaccination will give comparative immunity from its attack, or, at least, considerably mitigate its severity. On the other hand Professors Gamgee and Simonds, backed by a very large proportion of the Veterinary practitioners, hold an entirely opposite view. In a letter to the *London Field*, the former says:—

"Dr. Murchison may claim the honour of having stirred the country throughout its length and breadth, and to have encouraged trials as to the preservative influence of vaccination wherever the rinderpest appears. May he be successful in stemming that torrent which has swept away cow after cow, bullocks, bulls, calves, herds large and small, and threatens to involve the whole agricultural community in disastrous ruin! I fear, and have indeed too much reason to believe, that he has only paved the way for another great disappointment. Drug after drug, order after order, system after system, have all left us where I ventured to predict as far back as last August, they would leave us. It may be insane on my part to raise my voice freely and firmly against every suggestion, medical or non-medical; but unfortunately I am again in the unpleasant position of a destroyer of hopes, and staunch in my belief that until we kill out the rinderpest it must continue to destroy our stock."

And again:—"Cattle that have been vaccinated are dying. It is said that they have not been vaccinated successfully, but we are tracing reports of outbreaks where there is every reason to believe, from undoubted medical evidence, that herds which have had cow-pox in past years have been destroyed as rapidly as other herds supposed never to have been affected with variola vaccina."

Professor Gamgee concludes his letter in the following terms:—"Admitting, for argument's sake, that cattle, successfully vaccinated, resist rinderpest, it is a well-known fact that many successful vaccinations pass unobserved, and that in attempting the communication of cow-pox from cow to cow, failure is the rule rather than the exception. My own opinion is, that rinderpest is not variola; and I go further, and say that the present outbreak cannot and will not be controlled by the universal practice of the present time, which has been attended with one great evil—viz., drawing the attention of the people from the great system whereby the Russian plague may be returned to its native haunts in Tartary, or in other broad plains beyond the Don and the Volga. I need not tell you, sir, that to men in my position the present state of matters is most painful and vexatious. We know, as we have known all along, how to exterminate the plague; but the 'glorious' institutions of our country are in this instance only calculated to frustrate our efforts. We wait for the bursting of many bubbles, and amongst them the vaccination one; and the time may come when we may be listened to and asked to act. This is not said in any other spirit but that of wishing to vindicate a humble profession, whose members on the subject of the cattle plague, have seen right from the very first."

We shall not, at the present time, express an opinion as to whether Dr. Murchison or Professor Gamgee is correct. We will calmly, though not indifferently, await the results of further enquiry, and the lessons of multiplied experience. Whatever may have been the origin of the fatal disease, and whatever may be the best mode of treating it, one point is sufficiently clear—the supreme necessity of the Government to lend its sanction to the enforcement of precautionary measures, which should take absolute effect throughout the length and breadth of the kingdom.

A slight agitation among the agricultural community, for the purpose of inducing the Government to form a kind of national insurance to indemnify farmers for the losses occasioned by the plague, has called forth a characteristic letter from the Right Hon. W. E. Gladstone, Chancellor of the British Exchequer. It is a remarkable production, but altogether too lengthy for transference to our columns. It exhibits that excessive caution which, whether natural or acquired, must ever be considered as a fault on the right side, in the keeper of the public purse. The grounds of argument taken for refusing to sanction an application to the Government for relief are something like the following:—"That any guarantee on the part of the Government to pay for the losses which have been suffered would, probably, lead to carelessness, waste and fraud, by shifting the

responsibility from the shoulders of the farmers, and resting it upon the Government; that such an arrangement would neutralize the good example of those who have already insured themselves against loss, and would charge upon the same persons, as taxpayers, the additional expense and duty of assisting to meet the losses of those who have neglected to take the precautions of insurance; that it would tend to remove the anxiety which is now generally felt to analyse the subject fully by sounding it to its very bottom, and thus lessen the hope of our obtaining information upon it, and of providing a prevention against it; that if the disease should not extend itself upon a large scale, and thus the very severe losses be confined to a small fraction of the farming class, it would be obviously improper to remove from landlords, neighbours, and rateable property, the duty of voluntarily assisting, so far as assistance is needed, those on whom the blow has fallen, and that, finally, if on the other hand, the disease should extend its ravages, it would inevitably result in a higher price of meat, and, in consequence, those who were not smitten in their cattle would profit largely, by the disease as producers, while as consumers they would only suffer in common with the community at large; and "how then," asks Mr. Gladstone, "could the community be asked to pay twice—first for their meat in extra price, and, secondly, for the cattle lost, while landlords and cultivators of the soil would, probably, as a class, have their loss (as in a bad corn year) counterbalanced by a corresponding or greater benefit?"

Mr. Gladstone's letter has already called forth some severe strictures from the more prominent agricultural journals. We will bring this article to a close by two quotations from the British press. Says *Hill's Messenger*—

"Mr. Gladstone dexterously lets the principle alone, and lights only upon details. It is not, says he, prudent to let our farmers and our graziers know that their losses by this calamity will eventually be made good to them out of the national pocket, or they will sink into supine indifference and neglect to devise or adopt measures calculated to arrest the infection. Such an argument will surely not hold water a moment when we reflect that it might equally be directed against all reliable insurance whatever, and of course against the particular form of it which Mr. Gladstone in the same breath proceeds to recommend. Does he suppose, for example, that fever-ships would be wrecked, and fever houses would be burnt, if Insurance Companies did not exist? Or is he of opinion that the mass should be deprived of the power of insuring, because certain evil disposed persons abuse its advantages? But, continues Mr. Gladstone, the plague may not extend itself, and then the nation would indeed be foolish to promise to pay the piper, when landlords and tenants can make up the sum between them. Such advice now, with all due deference to so great an authority, is to speak plainly, simple impertinence. No one knows, or ought to know, better than the Chancellor of the Exchequer himself that the Cattle Plague has already attained the full dimensions of a national calamity; and to talk, therefore, about it at this time of day, as if it were an isolated outbreak—a mere district epidemic, a village pest, a hole-and-corner business, had enough indeed in its form and consequences, but nevertheless confined to a few remote homesteads—is to trifle with the deepest interest not merely of the Agricultural community, but of the public at large.

Mr. Gladstone says with perverse ingenuity, 'the public cannot afford to pay twice, first, in the increased price of meat, &c., and secondly, in compensation to the losers of cattle.' Very ingeniously, but very incorrectly, put. "The weakest," as Mr. Gladstone knows, "will," unfortunately, "always go to the wall;" and as, in this case, the Agriculturists are the weakest, the public will—if they consent to the evil counsels of the Minister—get their meat at a somewhat higher price and of a somewhat inferior quality from abroad, and will allow a large and most important section of the community to incur alone the perils of a Providential visitation! In other words, because it will cost Englishmen too much to do their duty, they will endeavour to shirk it altogether! Be the opinion of the Chancellor of the Exchequer what it may, we will not for ourselves, and we see it universally exemplified, think so meanly of the generosity, nay, of the conscientiousness, of our fellow-countrymen? We can never believe, till we see it ruled by Parliament, that this

nation, whose peculiar boast it is to be guided by the highest principles of honour and honesty, and to hold in the utmost veneration the sacred rights of person and property; that this nation, which has ever determined to make any sacrifice rather than that one of its members should lose an iota of his individual rights; or be the victim of fraud or oppression; that this nation, which sent a fleet to recover the crockery of a Don Pacifico, just as it voted millions to mitigate the pressure of an Irish famine; that this nation, which has ever reverently recognized the hand of an all-ruling Providence, in the chastisements inflicted upon mortals—we can never, we say, believe, that, in violation of its dearest pledges, in contradiction to its entire career, in de-spair of its manifest destiny, this nation, as a people and as a Parliament, will solemnly endorse the advice which this Cabinet Minister—whom we hitherto mistook for a Christian Statesman—has so cruelly and heartlessly given."

Our concluding extract is from *The Farmer* (Scottish). The editor says—

"Mr. Gladstone has stated his belief that British farmers are a set of unmitigated rascals, whose chief end and aim would be to cheat the Government, if funds were advanced with a view to compensation, or in order to support a national system of insurance. This the *Times* considers 'conclusive,' and quite sufficient to justify the Government refusing to treat the insurance of cattle as a public concern, or to support it by a guarantee from the Exchequer. The *Times* asserts that the principle, that whenever a particular occupation suffers, the community at large ought to step in to assist it, is neither just in itself nor safe in its application. If the *Times* is correct, why did the Government step in to assist the manufacturing districts, a measure which was strongly supported by the *Times*? If the principle be wrong now, it was equally so then; nay, the assistance granted was more uncalled for, because the manufacturers of Lancashire were much better able to help their workpeople than the landlords of Great Britain are to help their tenants, or than the tenantry to help one another. Fortunes were made by the master manufacturers out of the artificially-produced cotton famine, but even Mr. Gladstone's assurance does not carry him the length of saying that agriculturists are likely to realize similar advantages from the cattle plague. We are wrong—Mr. Gladstone does say so. He tells us that an extensive destruction of the cattle of this country will be the means of heaping wealth on the farmers, by the much augmented price of meat, which will be the inevitable result, that is to say, those who have already lost their cattle, or who may afterwards do so, will have their losses reimbursed—'counterbalanced,' says the Chancellor of the Exchequer—by the extra prices which will be obtained by those whose cattle are not smitten. Did Mr. Gladstone imagine that he had a pack of fools as well as knaves to deal with, when he asked the landlords and cultivators of the soil, to believe this arrant nonsense? It would be interesting to know how the ruined dargumens of London, York, Cheshire, or Edinburgh, are to have their losses 'counterbalanced' by any extra prices which the farmers of Caithness, Morayshire, or Ireland may obtain for their cattle; and it is to be hoped that the Chancellor will explain how this novel system of 'reciprocity' is to be carried into effect."

The number of cattle attacked by rinderpest in Britain per week, at the date of last advices, was somewhat over ten thousand. Unless the disease is arrested, and judging from the present rate of increase, it is probable that before May 1st, some three hundred thousand head of cattle will have succumbed to its fatal attack.

We shall probably return to the subject in our next issue.

Trichinous Pork in Germany.

We have more than once copied paragraphs from our British exchanges, showing the fatal prevalence of parasitic disease in Germany, arising from the consumption of pork infested with the newly observed *trichina spiralis*. We condense the following particulars from a communication addressed to the *Lancet* by Dr. Thudichum, respecting the outbreak at Hedersleben. The epidemic of trichiniasis at this place appears to have been the most extensive and the most fatal of all outbreaks hitherto recorded. The Hettstadt outbreak occasioned severe sickness to upwards of 150 persons, and the death of 28 out of that number. Unfortunately, however, the epidemic

at Hedersleben had up to the 21st day of December last, produced upwards of 90 deaths. These figures fairly warrant us in concluding that the number of persons attacked had amounted to several hundreds. "All this havoc," says Dr. Thudichum, "has been caused by one trichinous pig. The butcher having recognized the abnormal appearance of the meat of this pig, had carefully disguised it by mixing it with the meat of two healthy pigs, or added it in small pieces to larger joints of pork to make up weight. He made this confession shortly before his death, which was caused by trichiniasis contracted from his own meat. His wife also died of the disease."

A peculiarly unfortunate circumstance in connection with this fatal outbreak, is to be found in the fact that the medical practitioner at Hedersleben failed to diagnose the disease in the early stages of the first cases. The larger portion of the fatal carcass was then exhibited in the butcher's shop; and, had its dangerous character been promptly discovered, it might at once have been seized and destroyed, and further damage effectually prevented. The disease was regarded as cholera, and opium was used to arrest the symptoms. When the nature of the outbreak was discovered, the time for mitigation and palliation had passed away.

Physicians from all parts of Germany have gone to Hedersleben to study the disease. The public mind has become morbidly alarmed, and a general panic prevails. A public meeting was held at Berlin, the proceedings of which are reported as follows:—

Professor Virchow addressed the meeting, and urged the necessity of instituting a microscopical examination of all pork. At the conclusion of his speech, he handed to the president a piece of smoked sausage and a piece of meat from a pig, which had been recognized as trichinous. Thereupon a veterinary practitioner named Urban rose and combated all that science has acquired during the last five years as an unaided illusion. "Trichina," he said, "are the most harmless animals in the world. It is only doctors without practice who make a noise about them, in order to create some occupation for themselves, &c. (Great interruption.) The president is obliged to stop the veterinarian. Drs. Virchow and Mason demand an apology from M. Urban. Dr. Mason challenges Urban to eat some of the sausage on the president's table. (Great applause.) Urban wishes to explain. The meeting calls upon him to eat. He had not spoken of Berlin doctors ('Eat, eat!') but of those at Hedersleben. ('Eat!') He would first see whether the sausage contained trichinae. (Great laughter and continued shouts of 'Eat, eat, eat!') Whereupon M. Urban suddenly seizes the sausage on the president's table, bites off a piece, eats it, and leaves the hall forthwith, amid the applause and laughter of the assembly."

A German newspaper reports that five days later the veterinarian Urban was confined to his bed, and his arm and legs were paralyzed. His illness was caused by trichinae contained in the sausage he had been badged to swallow, and, as might be expected, the result was fatal.

The Berlin butchers have now determined to submit all pork to microscopical examination; and they have accordingly petitioned for the co-operation of the municipality for the purpose of making the examination compulsory upon all. This is a step in the right direction. Still, all pork should be most thoroughly and carefully cooked before use. Trichinae in man are prevented with certainty only by being perfectly cooked.

The *Lancet*, supplements the communication with the following pertinent remarks:—"Some say, 'We in England do not eat raw meat, and therefore the danger of trichiniasis does not affect us.' This is an error. The strongest proof of the possibility of trichiniasis breaking out among us at any time is the circumstance that the common tapeworm from pork, *Tenia solium*, is always infesting a number of persons throughout the kingdom. Now, if measles survive salting, smoking, and cooking (so-called), and after ingestion, become tapeworms, a fortiori it is clear that trichinae will survive these processes, because they are much better protected against their influence than measles. The trichina has been discovered in this country; cases of trichiniasis have unquestionably been observed, and instances of encapsuled trichinae are constantly being discovered in our anatomical theatres. Only last year a subject with millions of trichinae in its flesh was dissected in the Middlesex Hospital. Why, therefore, disguise or deny the danger? Let us prevent it. Let us be ready to meet it at all stages. Let us search for the source whence the pig receives the trichina, and endeavour to close it up."

Smithfield Fat Cattle Show.

The late Exhibition of this now world-renowned institution, proved far more successful than was generally expected. Notwithstanding the devastations of the cattle disease, and the alarm consequent thereon, the show in point of number of animals brought out for competition and their average quality, was not only better than could have been reasonably anticipated, under the circumstances, but was little, if anything, behind previous years. The entries of cattle were 223; of sheep 173; and of pigs 57.

The animals in all the departments were, with few exceptions, remarkable for that absence of excessive fatness, which has been so long a standing complaint against this Society in particular. Every British breed of importance was well represented; but the Shorthorns, although comprising several first rate characteristic animals, were not of so uniformly good quality, as the other principal breeds. It is worthy of remark that while the Shorthorns as breeding animals usually take the precedence at cattle exhibitions, it now and then happens that at Smithfield and other fat stock shows, they do not maintain their wonted position. The medal for the best ox of any breed was awarded, after much deliberation, to an uncommonly beautiful Highland steer belonging to the Duke of Sutherland. The next animal in competition was a younger ox of the Devon breed, owned by Her Majesty the Queen, which is described as superb. The sheep were of excellent quality, and the pigs, some of them perhaps too fat, were particularly distinguished for early maturity; clearly proving what breeding and careful feeding will effect within the circle of a year.

Corn for Fuel.

The *Whiteside Sentinel*, an Illinois journal, states that persons in some of the market towns in that State, and even the farmers themselves are using corn for fuel. A ton of corn is worth six dollars. A ton of coal at the R. R. stations costs ten dollars. If the farmer takes his corn in and draws out the coal, the cost of the latter will, on an average, be enhanced two dollars. Then a ton of coal will cost twice what a ton of corn will fetch, and it is estimated that two tons of corn will burn longer, and make as good a fire, as one ton of coal.

The low price of corn at the West is the result of the close of navigation, and the impossibility of sending it East by railroad. Should the Reciprocity Treaty be abrogated, the Western farmer will have to make fuel of the greater part of his surplus corn, because of the insufficiency of transportation facilities. It is after all an inconvenience to be 1000 miles from the seaboard, though your farm be of rich prairie-land.

MICHIGAN AGRICULTURAL COLLEGE.—We gave some little account of this institution in our issue of Feb. 15, 1865. The following particulars respecting it are taken from a recent number of the *Country Gentleman*:—"The catalogue of this institution for 1865 shows 88 students to have been in attendance during the last college year. Of these there were 45 in the preparatory class, and 22 in select studies, leaving 21 in various stages of progress in the complete course of study. As many readers are already aware, there is no charge for tuition to the young men of Michigan, and those from other States only pay \$20 per year. The price of board is put as nearly as possible at the actual cost, and, toward this, credit is given for labour performed—all the students joining in one part or another of the farm work for three hours a day. The first term begins Feb. 28th, and the second closes Nov. 28th, leaving a winter vacation of three months. The Institution is well endowed, and has a working faculty, while its facilities for instruction are fair, and in some branches, as in botany, unusually good. The size of the farm is 676 acres, near Lansing, Mich., where the Secretary, Mr. Sanford Howard, may be addressed for farther information.

Agricultural Intelligence.

Officers of Agricultural Societies for 1866.

ADDINGTON COUNTY SOCIETY.—John Percy, Esq., of Ernesttown, President; Robert Madden, Esq., of Camden, First Vice-President; John Sharp, Esq., of Ernesttown, Second Vice-President; J. Bell Aylesworth, of Newburgh, Secretary and Treasurer. Directors—Col. Hitchins, of Amherst Island; Peter McPherson, C. W. Miller, and Nelson R. Lapum, of Ernesttown; Geo. Lake and Thomas Price, of Camden; and R. F. Hope, of Newburgh.

ERNESTTOWN BRANCH SOCIETY.—Donald Fraser, Esq., President; Isaac F. Asseltine, Esq., Vice-President; S. J. Walker, Esq., Secretary and Treasurer. Directors—P. M. Clark, P. R. Davy, P. McPherson, N. A. Brisco, Franklin Fraile, Ira S. Daly, Anson Stormes, Sheldon Stormes, and C. W. Miller, Esqs.

CAMDEN BRANCH SOCIETY.—J. N. Lapum, Esq., President; Andrew V. Price, Esq., Vice-President; John B. Aylsworth, Secretary and Treasurer. Directors—Thomas Price, Samuel Nugent, Geo. Lake, Thomas Scott, Peter Johnstone, Joseph Walker, Archibald McNielle, Joseph Connelly, and Robert Graham, Esquires.

LENNOX.—Andrew D. Draver, Esq., Hamburg, President; Wm. Caton Richmond, First Vice-President; Geo. J. Smith, North Frederickburgh, Second Vice-President; Charles James, Secretary and Treasurer. Directors—Messrs. Tueman, Robert Dennison, Wm. N. Doller, Henry Huffman, Beeman, Amos Schermehorne, Jacob Scheyver, and J. E. Gansolus.

LOUTH.—President, J. W. O. Clark; Vice-President, M. Y. Keating; Secretary, J. J. Gregory; Treasurer, David Crow; Directors—N. H. Pawling, Robert Creamer, Abraham Martin, Henry Wismer, D. Davis, Simon Beamer, J. Martlock, and Eli Gregory.

BROOKVILLE AND ELIZABETHTOWN ELECTORAL DIVISION SOCIETY.—Wm. Rhodes, President; John Lawrence, 1st Vice-President; David Wylie, 2nd Vice-President; Charles Sibbald, Secretary; Christopher Fletcher, Treasurer.

Extracts from Reports of Agricultural Societies.

SOME of the reports of Agricultural Societies give particulars as to the crops in their several localities. It would be well if all did this, as they would form, collated, a valuable contribution to our knowledge of the state of the country. We give some of these crop notices which have come under our eye:—

ERAMOSA.—"The wheat crop in the township, although the sample was good, may be considered far below an average, if not a failure, caused by the ravages of the midge, accompanied in many instances by rust. Oats and peas have been an average crop; barley, although short in the straw, has done well. Hay, fully up to the average, especially on new meadow. The turnips have been good in some localities in the township, while in others they suffered severely from a species of caterpillar, and an unusually foggy summer. Potatoes, below an average, especially early planted, while late planted did exceedingly well. Mangolds and carrots, although not extensively grown in the township, have done well."

PELSINCH.—The yield of fall wheat after threshing has been very irregular, varying from four to twenty-seven bushels per acre. This result is mainly owing to the destructive effects of the midge. Spring grain has proved much better, chiefly in peas and oats, which have been good in quality and yield. Potatoes and turnips were considerably affected by the dryness of the season, and the latter were considerably damaged by caterpillars."

Ice Manufactory in New Orleans.

A NEW ORLEANS paper gives a description of a new process of making ice adopted in that city at the Louisiana Ice Works.

In a strong iron cooler a given quantity of liquid ammonia is introduced; and by the means of a slow fire the ammonia gas is held in solution in the water. This gas is separated from the water, and is conveyed with a series of iron worms, which are surrounded by a constant current of water. The gas, running through the worms, becomes liquified by the action of the running water and the pressure of the boiler, and flows into a receiver.

From the receiver, the liquified gas flows into a series of worms, which constitute the refrigerator or

freezing bath, where, by a rapid evaporation, extreme cold is produced. To utilize this cold, the iron worms are surrounded by a strong solution of common salt, which absorbs all the cold produced in the worms. Placed in the spaces between the worms, are suspended forms or moulds of any size desired, filled with pure water. This water immediately absorbs the cold from the salt bath, and the result is the formation of ice. From the refrigerator the same gas which has produced the cold is pumped into a vase, when it is recondensed with liquid ammonia. This again goes through the same process as before, with but little loss.

Such being the case, it will at once be seen that the some ammonia can be used for an indefinite period, with only the loss of gas that may occur in breaking a pump, or by leakage. The temperature at which the ice is made is from 12 to 15 degrees below zero; but 40 degrees of cold can be easily produced by the apparatus. The apparatus now in operation consists of three separate machines, each producing 4,800 pounds of ice in twenty-four hours, and consuming two and one-half barrels of coke. The labour of twenty men is required for each apparatus, whatever may be its size. The only extra cost is fuel. So that the larger the machine the less the ice.

Australian Wool.

In the last number of the Journal of the New York State Agricultural Society, we find the following interesting particulars relative to Australian Sheep Husbandry:

"Australian sheep are never housed or protected, they are entirely dependent upon natural pastures for their subsistence. To illustrate pecuniary results of Australian sheep husbandry, I shall furnish you with the returns of the Messrs. Learmonth's flocks for the year 1861:

	pounds.	lbs. oz.
12,155 old sheep sheared.....	29,594	or per head, 2 3/4
6,924 six months' lambs.....	12,306	do 1 1/2 1/2
163 inf'r rams (in grease).....	1,144	do 7 0
Wool, including tags and ends, sold in the London market		
for about 74 cents per pound, or.....		\$71,659 60
Seven hundred rams sold for breeding purposes, for.....		20,000 00

Yield of flock for the year 1861.....\$61,659 60

In Australia, lambs are dropped in Autumn (March or April, and shorn the next (Spring) October or November. The sheep on the Dredlow estate are washed in warm water at a temperature of 110 degrees, and afterwards thoroughly spouted. The Messrs. Learmonth annually sell for breeding purposes nearly all their best rams; and, as a consequence, the yield per head is diminished. Taking the difference in value of currency at time of sale, the Learmonth wool brought over one dollar per pound for the whole clip."

THE hop crop of Wisconsin last season is estimated to be worth \$2,000,000.

ON Christmas morning, every gable, gateway or barn-door in Norway is decorated with a sheaf of corn fixed on the top of a tall pole, from which it is intended the birds shall make their Christmas dinner.

A SLIGHT DIFFERENCE.—A St. Louis paper informs its readers that the anthracite coal found lately in Missouri looks like coal, feels like coal, and smells like coal—all the difference is that coal burns, and that will not.

SINGULAR DEATH.—A man named Moore lately died near Indianapolis, Ind., from nervous exhaustion caused by fear of hydrophobia, he having been bitten by a cow supposed to be mad, but in reality suffering from the complaint known among farmers as the mad itch.

CALIFORNIA WINES.—The extent of the California wine interest is comparatively little known in the Atlantic States. Every year increases the product immensely. The estimate for the present year is 350,000 gallons in Los Angeles County, 350,000 gallons in Sonoma county, and 307,000 in the remainder of the State, or 1,000,000 gallons in all—more than four times the product of the United States in 1860.

A NEW WASH FOR WOOL.—The French Minister of Commerce has addressed a circular to the principal cloth manufacturers, which demonstrates the advantages to be derived from the employment of bark of quillai in washing wool. This bark is known in France by the name of "Panama." The minister adds, that a trial of this bark has been made in the agricultural institution of Preskamen, in Prussian Silesia, with great success.

UNION OF AGRICULTURAL SOCIETIES.—We are glad to see that the Puslinch Agricultural Society has made a move, with a view to an amalgamation with all the Societies in the South Riding, for the purpose of having a Union Show; when the funds of the County and Township Societies would be thrown together. Puslinch hitherto has been looked upon as the staunchest advocate for upholding Township Shows. Now that her society has voluntarily come forward and offered to amalgamate, we hope the other Township Societies will follow her example, and that in due time we may have a first-class show in our new hall, at which prizes worth competing for will be offered. *Guelph Herald.*

SOUTH WATERLOO ON RECIPROCITY.—Your directors, representing as they do one of the wealthiest and most important county societies in Canada, wish to enter a strong expression of opinion as to the unwarranted want of integrity displayed by the American Government in the carrying out of the Treaty, by the absolute prohibition of the importation into that country of Canadian stock. And although the American market is of immense importance to the prosperity of Western Canada, yet they will never submit to be forced into anything which may compromise their dignity or self-respect.

Unanimously adopted at one of the largest agricultural meetings ever held in the county.

HOW TO MAKE CORN WORTH \$1 PER BUSHEL.—I have known at least one farmer that always made his corn bring a dollar a bushel when he received six dollars per acre for his pork. He did not, however, feed the corn in the ear, nor starve his animals at one time and surfeit them at another, nor keep them in a dirty, comfortless pen, nor half starve and freeze them in winter, when in the condition of "store pigs," nor select a large-boned long-nosed breed. On the contrary, he was careful to procure animals which had a large infusion of the best blood (as Berkshire or Suffolk), to keep them growing right along without check from the commencement of their existence until handed over to the butcher, and to feed them with great regularity, without overfeeding, on ground meal, scalded in barrels a day or two previous. Strict cleanliness and comfort were attended to in every particular.—*Country Gentleman.*

DIGGING WELLS.—HOW TO DETERMINE WHERE WATER IS.—At a recent meeting of the American Institute Farmers' Club, a member related his experience in this matter as follows:—"An Irishman in his employment in order to ascertain where he ought to dig to obtain water soonest, got a stone and buried it over night in the ground, next to the hardpan. In the morning he found it quite moist, but not sufficiently so to suit his fancy. Next night he tried it in another spot, and it was found very wet on the following morning. "There," said Patrick, "you will find water not many feet deep, and plenty of it." So, enough in a few days' digging, Patrick could make his prediction, notwithstanding the jeers of the workmen, finding a vein which filled the well to overflowing, and rendered it exceedingly difficult to bail out the water so as to stone it. The philosophy of the operation seems to be that as great evaporation takes place from the surface of the earth during the night, the water rises up from the depths below to supply the loss, and accumulates in the vicinity of the stone, often making quite a puddle."

FARMER'S SCRAP-BOOK.—The *Agriculturist* has the following: "On the study table of a very studious farmer of Westchester Co., N. Y., we examined a system of keeping and classifying all kinds of information gathered from his reading, which is worth copying. He has numerous sheets of stiff brown paper folded once, for use as port-folios, and considerably larger than large letter paper. In these are numerous other half-sheets. The port-folios or paper covers have written upon them the various subjects which most demand his interest and attention. For instance, one is probably labeled "Sheep," and in this he places all valuable items about sheep, cut out of newspapers which he does not keep whole for binding, even advertisements, hand-bills, circulars, etc. These are pasted neatly upon the half-sheets, and at the same time classified still further if possible. Then, also, upon writing paper he makes memorials of facts, or where to find important articles which he meets with in his reading in books, or in journals, which he preserves. In the same way he has a cover devoted to each class of stock, to the prominent classes of fruits, vegetables, and other crops, as "Stone Fruits," "Small Fruits," "Apples and Pears," "Roots," "Indian Corn," "Small Grains," "Grass and Hay," &c., and so has always ready for immediate reference a vast amount of valuable information, which would otherwise not be found when most needed."

British Cleanings.

WIND.—The *Farmer and Gardener's Almanack* gives the pressure of wind per square foot in lbs. at different velocities in miles per hour. Velocity 83 miles per hour (a hurricane) pressure 31.12 lb.; vel. 60 m. (great storm) 17.71 lb.; vel. 53 m. (storm) 12.30 lb.; vel. 40 m. (very high wind) press. 7.87 lb.; vel. 30 m. (high wind) 4.42 lb.; vel. 20 m. (very brisk gale) 1.96 lb.; vel. 10 m. (brisk gale) 0.19 lb.; vel. 5 m. (gentle breeze) 0.12 lb.

SKELETON LEAVES.—The leaves are boiled for two minutes, then transferred to a strong solution of permanganate of potash and gently heated. In an hour or two the laxer tissues may be easily removed by means of a brush. Sulphurous acid or a solution of chloride of lime may be used for bleaching them. The stains of permanganate of potash upon the fingers are easily washed off by sulphuric acid.—*H. F. Gilbert in Chemical News.*

WILD BEASTS KILLED IN CENTRAL INDIA.—The *Central India Times*, of the 25th October, says:—"We have before us a list of animals killed in these provinces during the first half of this year, with amount paid for rewards. Total number of animals killed: Tigers, 350; leopards, 516; bears, 133; wolves, 92; hyenas, 286; making in all 1553, for which 23,561 rs. Rs. have been expended. The number of animals killed is larger than the number killed during the preceding year, the rainy season of 1864, but it is somewhat less than the result attained in the corresponding half-year of 1861. Mr. Campbell hopes the decrease may be due to an actual decrease in the number of wild animals."

BWARE OF NEW POTATOES.—This favourite esculent contains a vegetable base of deleterious quality, called solanine, which is especially developed in the plant when it is shooting. Dr. Haaf has ascertained that solanine not only exists in a considerable proportion in the shoots, but in the tuber itself, and at two extreme periods of its existence, viz. when scarcely formed, and when very old, the skin containing more of it than the pulp. Hence people that chiefly live upon potatoes should beware of new ones, which are generally so highly prized as delicacies; they ought at least to be peeled, and rather boiled than fried, because water carries off a good deal of the solanine.—*Gardener's Chronicle.*

SOILS. The *Farmer and Gardener's Almanack* states that "100 lb. of pure clay absorbs 70 lb. of water, while the same weight of pure sand absorbs 25 lb.; clay loam absorbs 50 lb.; chalk, 45; loamy sand 40; and calcareous sand 25. Schubler's experiments show that 1000 tons of pulverized soils will absorb moisture when exposed to the atmosphere as follows:—Sandy clay, 26 tons; loamy clay, 30 tons; stiff clay, 36 tons; and garden mould, 45 tons. If the cohesive power of pure clay is taken as the standard, and stated at 100, pure sand being placed at zero, the cohesive power of fine lime is 5, loamy clay 65, sandy clay 57, humus 8, and arable soil 33. Clay soil can be raised and burned at a cost of 6d. per cubic yard. Cubic yards of soil required to cover an acre 4 inches deep, 538; 6 inches, 807. Labour of excavating, filling, and spreading, 24d. to 3d. per cubic yard."

SALE OF PRIZE POULTRY.—We learn from the *Farmer* (Scottish) that recently "a fine selection of prize poultry, from the yards of Sir John Don Wauchope and others, was sold by auction by Messrs. Lyon & Turnbull, in the Riding School, Lothian Road, Edinburgh. There was a large and highly respectable attendance of purchasers. The prices were generally high, and among the sales were the following: A dorking cock, which gained the first prize at Stafford and Dalkeith (24 years old), at £1 4s.; a dorking cockerel, which gained the first prize at Dalkeith (ten months), at £2 17s.; a dorking cockerel, highly commended at Birmingham (ten months), £3 6s.; a dorking hen, which gained the second prize at Darlington (24 years), at £1 3s.; a dorking cockerel, (10 months), at £2, and another of the same age at £2 2s.; two black Spanish pullets, winners of the second prize at Haddington (seven months), sold at £2 3s.; and two Spanish pullets (seven months), at £1 15s."

HOW TO KEEP EGGS.—Mr. G. Kennedy Geyelin, in his work entitled "Poultry Breeding in a Commercial Point of View," gives the following directions for the preservation of eggs:—"Now the most effective, simple, and economical plan for truly preserving eggs, and without imparting to them any foreign flavour, or rendering them unfit for hatching purposes, is to use the patent stoppered glass jars with vulcanized india-rubber joints, and proceed thus:—Immediately after collecting the eggs, put the jar in hot

water, and when thoroughly warm, so as to rarify the air, place the eggs in the jar the pointed end uppermost, and pack and line with paper shavings or cocoa fibres to prevent them from breaking; then close the jar before taking it out of the water, and it will be found that eggs preserved by this method will be fit for hatching twelve months after, and that those intended for the breakfast table will be as fresh as on the day when laid." The work from which this passage is extracted, details the plan of breeding and management carried out by the National Poultry Company, at Bromley, Kent.

LESLIE'S FARM CULTIVATOR.—We learn from a correspondent of the *Banffshire Journal*, who professes to have a fair knowledge of machinery, that, "a few weeks ago, there was a steam grubber at work on the farm of Burnside, occupied by Mr. A. Leslie, bank-agent, Turriff. The invention of this grubber by Mr. Leslie will form a new era in the history of agriculture. It were vain to attempt a full description, as the inventor is only experimenting, and several of the appliances are only temporarily got up, but enough has been done to show that the new grubber is a complete success. With either a six-horse-power engine or water-wheel of that power, with ropes, anchors, and pulleys attached, a farm could be grubbed to the depth of 10 inches to 15 inches. The grubber is on the locomotive principle, and the rope required to draw it is only five-eighths of an inch thick, little more than the strength of an ordinary plough-rein. To those who have not seen the grubber in operation, this would seem incredible. As a searer of lea, this grubber will be very valuable, and we venture to predict that (once it were matured), three men, with a six or eight-horse power engine, will either searify lea, or grub stubble land, at a rate of from five to eight acres per day. In the meantime, farmers should be getting out the fast stones in preparation, for we believe that, upon a number of farms, this grubber will supplant four-fifths of the horse labour at present required."

BELGIAN WINES.—A Correspondent of the *Standard* writes from Brussels, Dec. 22, 1865:—"One of your correspondents, the other day, inquired why the British public do not drink the cheap wines of the Continent. Now, it is possible that he never heard of the Belgian wine manufacture. I have discovered a trade which, until this day, I have not known to exist. It is one in Belgian wine. What wine? you ask. Any that can be labelled upon a tavern placard. The grape is a mere delusion—white or black, its juice can be excelled by any clever chemistry, only at the bottom of all the magic must be brandy. You want acidulation, resort to cream of tartar; you want oil, you have a hundred varieties; you must exhilarate, and what more potent than ether? It is light, scentless, and combines agreeably with every fluid known. So at this point you are getting, you fancy, very near the fulfilment of your artificial manufacture. I tell you no, you have not yet comprehended the importance of tartaric acid. It can do everything; it can ferment, it can sour, it can sweeten, it can mingle itself with all the deceptions of the dyer's vat; you may put any strengthening, thickening, or colouring matter with it—eggs or cavaire—and so long as the cork is sound the wine is safe, so I hear. Next, I may as well confess, on the part of this country, how they keep their citizens sober. Not a tenth of their wine, is wine at all. They use apricots, which yield a sickly sherry; myrtle leaves, rather oily and nauseous; brandy of course, and bad; almonds only in limited quantities, because they are poisonous; amber, for the sake of its aroma; panish pine cones, cherries, oranges, peaches, and even cheese. Cheese, I say, is distilled into a liquor, and helps to adulterate an infinite plenitude of manufactured wine. Then you drink in this overflowing land wine made of celery, of carrots, of burnt sugar, of chestnuts, of dates, of figs, of strawberries, and you are not so monstrously cheated, because the dealers do not conceal their transactions. You would like a barrel of beer. So much new bread, so much fresh water, and mix. So much strong wine, a quart of syrup, a quart of brandy, and two quarts of water. A false wine, I have been assured by the initiated, is often not so injurious to the stomach as a good one; but let your readers not be infatuated by commercial treaties read and learn. Cheap Madeira is cider sweetened with honey, and kept six months in a cask; cheap Malaga is made of bad champagne, raw grape juice, and again cider; you convert it into Greek by adding soda. *Vin de Champagne Anglais* is gooseberry, sugar, and Cognac. Boiling water weakens, without entirely spoiling the compound, which comes to perfection in about eight days. All this, and more, I have extracted from the manufacturers, who need not much persuasion, for they carry on an enormous trade, and exult in English money. They are wise; the French charge too much for their wines, and imitations moderate the markets."

The Household.

Homedale Farm.

THE REMOVAL.

MANY questions were asked Charles by the rest of the children on his return from the farm, and much eager curiosity was shown to know what sort of a place it was, how he liked it, and so forth. The hotbed formed a topic for animated conversation, and Charles felt not a little proud of the knowledge he had already gained about gardening matters, for it made him quite an oracle in the family circle. What seeds were to be purchased, became an interesting subject of discussion, and when they were bought, and sent away to the farm, there were fanciful imaginings such as children only can have, about their growth, and the flowers, vegetables, and fruits, that would come from them in due season. The weary weeks wore slowly on, and the time for removing to the farm, so eagerly anticipated by the little Perleys, at length arrived. Too young to have formed any

plain, and without any ornament, unless a square-built porch over the front door, could be so regarded, but which perhaps, correct architectural taste would have pronounced a disfigurement. There was no lawn or front garden, no shrubbery, and no flower-bed. One or two of the original oaks which flourished on the Burford plains before they were settled and cultivated, were still standing, and, notwithstanding some rough usage, they looked very pretty. These and a piece of green sward, with two or three scrubby plum and cherry trees, formed the surroundings of the house. A little on one side, and somewhat to the rear of the dwelling was an old orchard, in which were a few choice trees of grafted fruit, but the greater part were natural seedlings, and bore apples almost too sour for the hogs to devour with any relish. Other crops had been grown among the fruit trees, and what with neglect of manuring and pruning, insects, and bark diseases, the orchard wore anything but a thrifty appearance. It looked weak, sickly, and struggling. Mr. Turnberry had told Mr. Perley, as they once walked over the farm together, that the orchard hardly ever bore, and expressed the opinion that it did not pay to grow apples—and that

didn't pay, and couldn't be made to?' Thus Mr. Turnberry reasoned to himself as do thousands more like him, never dreaming that the "natural heart" can be kept in the soil,—nay that it can be strengthened and enriched by proper tillage, so as to be even more productive than when in a virgin state.

To the picture of Homedale already drawn, may be added, that the barns were at a little distance from the house and consisted of a large and small one; the former used as a hay and grain barn, with a threshing-floor in the middle of it, and the other used as a stable and driving house. Some open sheds for cattle adjoined these buildings, and a lean-to pig-stye was on one side of the smaller barn. There was no root-house, for Mr. Turnberry knew nothing about turnip growing. Rat-proof granary, smoke-house, poultry-house, ash-house, wood-shed and other conveniences, were all a-wanting. The grain after threshing was put into bins in one corner of the big barn; smoked hams were luxuries unknown; the fowls were left to roost in the open cattle-shed, or wherever they could find room; the ashes were, part of them, stored in barrels for soap making, and part thrown into corners of the yard.



particular attachments to places or to persons, and keenly relishing anything novel and fresh, they felt no pang at leaving their city abode, and quite enjoyed the bustle and turmoil of breaking up house-keeping and packing for the journey. The removal being but a short one, the furniture and fittings were nearly all kept, so that their new house would look, indoors at least, very much like the old one. There would be the same carpets, the same window blinds, the same tables and chairs, and the same pictures on the walls. An easy railroad jaunt to Paris, and a few miles pleasant carriage drive, brought them to the spot where their hopes, wishes, and plans were centred. Charles pointed out the house, as soon as they came in sight of it, and when they were near enough, took care to call attention to his hotbed, which looked in the distance, like a quiet living creature, covering and brooding over its nest of young plants.

The farm as a whole, wore a rather neglected look. It had no better enclosure as yet than the old-fashioned worm fence, and although there was a two-horse gate leading into the door-yard and farm-yard, it was a good deal worse for wear. The house was a rather substantial two-story building, but quite

Canada was not much of a fruit country. Mr. Perley thereupon asked what sort of treatment the orchard had received, and finding, as he suspected from the look of things, that the land had been both starved and over-cropped, he quietly told Mr. Turnberry, that if the orchard had a fair chance he believed it would be the most profitable part of the farm, that it ought to be well manured, the ground kept mellow, and no other crop grown in it but the fruit crop: that under the shade of the trees grain could not be expected to do very well, while it was unreasonable to ask poor ground to bear both a crop of wheat or oats, and a crop of fruit. He said that he should trim up the orchard, put grafts into the natural trees, enrich the ground, neither plant nor sow it, and he felt sure it would soon yield a bountiful return for generous treatment. All which and much more, Mr. Turnberry regarded as moonshine. 'What did city merchants know about farming? Wait a little and Mr. Perley would find that his dreams about big crops, and fine fruit, and choicest stock, would vanish into thin air. Farming didn't pay except for a few years, just after clearing new land. While the natural heart was in the soil, it would produce, but when that was gone, farming

the wood lay scattered near the kitchen door,—in short an air of easy-going, slipshod negligence prevailed all over the premises.

In-doors there was but little trace of comfort. The family had for the most part lived in the rear of the house, which consisted of a spacious kitchen, bedroom and pantry. A large hall running through the centre of the main building contained a stairway, and this hall and stairway were the only parts of the lower story that were in use. These, as means of access to some upstairs bed-rooms, were daily traversed, but the down-stairs rooms off the hall were kept shut up, and only opened on very rare occasions when there was company, a wedding, or a funeral.

Mr. Perley had in view the making of many outdoor and in-door improvements upon the premises, but postponed them until after the removal, that he might have the advantage of Mrs. Perley's judgment and good taste, and also that he might be able to superintend them while they were in progress. Our engraving shows Homedale as Mr. Perley found it. A future chapter, accompanied by an illustration, will describe its altered and improved appearance in the hands of its new proprietors and occupants.

(To be Continued.)



List of Fruits

RECOMMENDED BY THE UPPER CANADA FRUIT GROWERS' ASSOCIATION.

Those varieties marked with an asterisk (*) are very hardy, and succeed well in the colder parts of the Province.

APPLES
FOR GENERAL CULTIVATION.

- Baldwin, south of the G. W. R. and Lake Ontario.
- Duchess of Oldenburg.
- Early Joe—as a dwarf for gardens.
- Early Harvest.
- Esopus Spitzenburg
- *Famouse, or Snow-apple
- Fall Pippin.
- Golden Sweet.
- Gravenstein.
- *Golden Russet, as the best Russet.
- Hawthornden.
- Keswick Coulin, for cooking.
- *Northern Spy
- *Pomme Grise.
- *Red Astracan.
- Rhode Island Greening, in the vicinity of the Lakes
- *Robston Pippin.
- Sweet Bough.
- Wagner.
- Roxbury Russet, for its long keeping qualities.
- Rambo.
- *St. Lawrence.
- *Tadman Sweet.

FOR TRIAL.

- Benoni.
- Belmont.
- Beauty of Kent.
- Colvert.
- Dominie.
- Fall Janetting.
- Jersey Sweet.
- Porter.
- Primate.
- Summer Rose.
- Swaar.
- Twenty Ounce Apple.
- Westfield Seek-no-further
- King of Tomplin's Co.
- Early Strawberry.
- Lowell.

PEARS.

FOR GENERAL CULTIVATION.

- Bartlett, south of Lake Ontario and G. W. R.
- Belle Lucrative.
- *Flemish Beauty.
- Louise Boane de Jersey.
- Madame
- Seckel.
- Tyson.
- White Doyane

FOR TRIAL.

- Duchess d'Angouleme
- Bestre Clairgeau.
- Osband's Summer.
- Geary Giffard
- Grey Doyenne.
- Bonne Duch.
- Rosenger
- Doyenne de L'ee
- Kirtland.
- Buffam.
- Winter Nelic.

PLUMS.
FOR GENERAL CULTIVATION.

- Lawrence.
- Beurre d'Anjou.
- Sheldon.
- Green Gage.
- Washington.
- Smith's Orleans.
- Imperial Gage.
- Beine Claude de Bayay.
- Prince's Yellow Gage.
- *Lombard.
- *oe's Golden Drop.
- Lawrence's Favorite.
- Yellow Egg.

FOR TRIAL.

- Jefferson.
- Pond's Seedling.
- Columbia.

CHERRIES.

FOR GENERAL CULTIVATION.

- May Duke.
- *Early Richmond.

FOR TRIAL.

- Queen Hortense.
- Late Duke.
- Elton.

FOR GENERAL CULTIVATION SOUTH OF LAKE ONTARIO AND THE G. W. R.

- Black Tartarian.
- Elkhorn.
- Black Eagle.
- Elton.
- Napoleon Bigarreau.
- Early Purple.
- Yellow Spanish.
- Governor Wood.

FOR TRIAL SOUTH OF LAKE ONTARIO AND THE G. W. R.

- Knight's Early Black.
- American Heart.
- Monstreuse de Mezel.

GOOSEBERRIES

FOR GENERAL CULTIVATION.

- Houghton's Seedling, as not being subject to mildew

FOR LOCALITIES WHERE THEY DO NOT SUFFER FROM MILDREW

- White Smith
- Warrington.
- Crown Bob.
- Sulphur Yellow.
- Heart of Oaks.
- Ploughboy.
- Phoenix.
- Langley's Green
- Irish Red.

THAT PROMISE WELL.
Downing's Seedling

CURRENTS

FOR GENERAL CULTIVATION.

- Black English.
- Black Naples.
- Cherry.
- Red Dutch.
- Victoria.
- White Dutch.
- White Grape.

FOR TRIAL.

- Ogden's Black Grape.
- Prince Albert.
- Red Russian.

RASPBERRIES

FOR GENERAL CULTIVATION.

- Brinckle's Orange.
- Fastoff.
- Belle de Fontenay.
- Franconia.

FOR TRIAL.

- Knevet's Grant.
- White Marvel, of four seasons.
- Doolittle's Black Cap.

STRAWBERRIES
FOR GENERAL CULTIVATION.

- Wilson, for market.
- Triomphe de Gand.
- Large Early Scarlet.

FOR TRIAL.

- Macavoy's Superior.
- Trollope's Victoria.
- La Constante.
- Russell's Prolific.
- Vicomtesse Hericart de Thury.

GRAPES

FOR GENERAL CULTIVATION.

- *Clinton.
- Concord.
- Delaware.
- Hartford Prolific.

VARIETIES THAT PROMISE WELL.

- Rogers' Hybrids, Nos. 3, 4, 15, and 19.
- Maxatawny.
- Arnold's Hybrid, No. 1.

FOR TRIAL.

- Dianna.
- Rebecca.
- Allen's Hybrid.

Vineyard Planting.

To the Editor of THE CANADA FARMER :

SIR.—I have long hoped in vain that some one well qualified for the undertaking would give through your excellent publication, practical information on vineyard cultivation as suitable to the climate of Canada West. To aid in developing the resources of his country should be every patriot's aim. I am glad to see the idea becoming more appreciated, that the grape vine can be profitably cultivated here. Not to occupy your valuable space by proving what has been so well stated elsewhere by M. DeCourtenay, that our amount of heat during the season of vegetation is far superior to that of Burgundy, and that our climate is in the centre of a wine region, it is sufficient to remind your readers that a bountiful Providence has made the vine indigenous to our soil, which, with the knowledge of its value in other countries, should surely be a broad hint to those who have the taste and opportunity to study its habits, and improve its quality as far as practicable. I regret that leisure is denied me for so interesting a pursuit, but am glad to know that a few persons have devoted their energies to it, and trust that the result will be profitable, both to themselves and the community. The interesting letter of Mr. Beadle, in your number of Dec. 1, was well calculated to draw attention to this subject; but while it shows some of the advantages to be derived from the enterprise, it leaves untouched the difficulties which encompass the beginner. I have, of course, my own ideas on these subjects, but as they are chiefly theoretical, I would be thankful for an opportunity of digesting them with the practical knowledge of others, for it is my purpose to commence a vineyard on a small scale next spring, with the desire of letting the farmers of the valley of the Grand River see whether or not it will succeed here, where the wild vine grows with the greatest luxuriance.

Presuming the necessity of planting on elevated ground, so as to escape as much as possible the late and early frosts which infest the low lands, and that with proper care the vine will flourish in any soil, it remains to know: 1st. What should be the preparation of the ground. 2nd. What the direction of the rows. 3rd. What the distance between the plants; first, with the view to wine; second, with the idea of marketing the fruit. 4th. Whether to put in rooted plants or cuttings, also when and how; and lastly, whether high training or low pruning is best. Granting that all other things are favourable, the great difficulty remains as to what kind of vine to plant. The Concord and Clinton grow here like a bramble, and set the cold of winter at defiance; but while I fully endorse all Mr. Beadle says of the excellence of the Delaware, its slow growth is a sad drawback. I have thought that defect might be greatly remedied by grafting it on a free-growing stock; and this brings me to the question, has any one in Canada succeeded in grafting the vine? I have never tried

it, but a friend, an experienced horticulturist, tells me that he has attempted it in various ways, but has hardly ever succeeded; yet we find many encouraging accounts of how to do it in books. In J. F. Allen's work on the culture of the grape, it is spoken of generally as of easy management; yet one writer even there says, page 215, we should bore holes in the stock with a gimlet, and insert the scions, concluding with—"I have never known this method fail, and I have never succeeded with any other, though I have frequently tried both with cleft and split grafting." The friend above alluded to has tried this mode also, but without success.

My desire is to elicit such information from practical men as may enable our farmers to enter on (to them) a new practicable, pleasing, and profitable branch of industry, and in this I feel assured of your hearty co-operation. A. P. F.

Cayuga, 3rd February, 1866.

Toronto Gardeners' Improvement Society.

THE Annual Meeting of the above named Society was held in the Board of Agriculture Rooms, January 15th, 1866. Present:—Messrs. A. Pontey, J. Fleming, J. Gray, G. Leslie, Jr., G. Vair, S. Turner, T. Elmitt, G. Farmer, Wm. Higgins, and J. Forsyth.

The President, Mr. A. Pontey, in the chair. The minutes of the previous meeting having been read, the President called upon the Secretary to read the Annual Report for the year ending 1865, which, on motion of Mr. Gray, was unanimously adopted.

The report expressed regret at the thin attendance which had marked the meetings of the Society during the year; pointed out the benefit that might be derived from a wider and warmer interest in the proceedings; made some suggestions as to subjects of discussion; mentioned the contributions of cut flowers, &c., which had been furnished by members at the several meetings; urged the importance of specimens of flowers, vegetables and fruits being brought for inspection, and consultation on their merits; and reminded the Society of the good it might do by calling attention to garden products of tested and approved merit.

Moved by Mr. J. Fleming, seconded by S. Turner, that a vote of thanks is due to the President, Mr. A. Pontey, for the very able and efficient manner in which he has filled the chair, and conducted the business of the Society during the year, and that the meeting signify its appreciation of his services by re-electing him President for the year 1866.—Carried unanimously.

Moved by Mr. J. Gray, seconded by S. Turner, that Mr. G. Vair be Vice-President; also, that J. Forsyth continue as Secretary and Treasurer for the current year.—Carried.

The following gentlemen were then severally nominated and duly elected directors for the year, viz:—J. Gray, G. Leslie, T. Elmitt, Thos. Lee, R. Guthrie, and G. Farmer.

Mr. G. Vair then moved, seconded by J. Gray, that a vote of thanks is due and is hereby cordially tendered to the Board of Agriculture for the liberality and good will they have evinced towards this Society, in granting gratuitously their excellent room for the purpose of holding our monthly meetings, which was carried amid great applause.

A TASTE FOR FLOWERS.—People will go into ecstasies over rare flowers, the more curious and unnatural the better. This may be all right so far as it gratifies; but it is not the true principle—what we bring to the worship of flowers. Association is the law of emotion in aesthetics. Mere curiosity does not come under this head. A flower is loved (not admired) for its classical and other attractions—for the associations of childhood and advanced manhood, as we became acquainted with flowers, in the wood, in the field, in swamps, by the wayside, and in gardens, &c. Time lends its enchantment, and these flowers become endeared, not only for their associations, but for the sympathy they inspire. Many phases do flowers present, which address themselves to our sentiment, call forth our love, pure as the qualities they represent, and partaking of the gentle nature of flowers. Our admiration for the rare, therefore, is an entirely different thing; it is that which may be applied to anything. But a flower has a sentiment of its own, which is always soothing and purifying in its influence. It is cheerful, tender, hallowed; and we hold its love as among the most sacred sentiments of the heart. It becomes us therefore to be careful how we cultivate a taste for flowers lest we should be led astray, and miss the true foundation (attachment), and expose our simplicity. A flower should be made a friend, and such an attachment formed of the most intimate nature. No danger it will be too intimate.—Rural World.

Miscellaneous.

Agricultural Regions

(BY J. M. DE COURTENAY.)

ECONOMICAL LIMITS.

ECONOMICAL limits depend upon extremely complicated calculations, the basis of which may be considered as:—

1st. The quantity and quality of possible productions, in the situation under consideration.

2nd. The prices to be expected in the home market for such productions.

3rd. The expense of cultivation.

The results of a comparison of the above considerations have a tendency to extend or contract the limits of the cultivation of such plants, either *beyond* or *within* the boundaries of their *natural* limits. Excellent wine was formerly produced in abundance in the neighbourhood of Paris; but economical considerations have caused vine culture there to become extremely limited. In Belgium, on the contrary, custom house duties have caused the extension of wine and silk culture, beyond its rational limits.

In Lower Canada, the facilities of water communication with the West, have established an economical limit to the extensive production of grain or Indian corn, and, in self defence they are bound to meet such changes by providing a substitute for grain culture,—formerly the wealth of their flat lands. Hemp should be the great staple commodity of such lands; not from its peculiar adaptation to the lands and to the climate, but also from its great value—from its tendency to *improve* the general system of agriculture in those countries, where it has been cultivated *with success*—as well as from the occupation it creates for the long and unproductive winters. The secret of the popularity of the Bonaparte family, in Central Italy, is that they owe the incalculable wealth of their lands to the 1st Consul, who introduced there the cultivation of hemp, and who never did anything by halves. Had we taken the trouble to examine the means employed by that great reformer, we should have long since endowed the Provinces with this source of immense prosperity. Yet, surely, public money enough has been, spent (at least nominally) for this purpose.

Both grain and corn certainly, as well as silk and hemp, enter into the agricultural economy of the wine regions; but the *reasoned* rotation of crops, resulting from a union of the whole, can alone, in this Province, at the same time, overcome the economical limit above-mentioned, and prevent the reproduction of the midge. All other remedies for the latter must be ineffectual, as the *midge* is not the cause of a failure in the wheat—but is an effect of disease, caused by a disregard of the immutable laws by which all things are governed.

STATISTICAL LIMITS.

Statistical limits depend upon the distribution of population.

M. DeGasparies and other French authorities, calculate that it requires the labour of two persons to produce 250 lbs. of raw silk. The real labour of such production does not extend over a week, being the last of five, comprising the ephemeral existence of the silk worm. The Department of Gard, France, producing more than five millions of pounds of raw silk (2,700,000 kilogrammes), must employ more than half its population above the age of twelve years, during the *last* week of such production. The statistical limit of silk culture may therefore be fixed by the number of persons capable of being employed at such productions, during one week of the year. The extreme brevity of this season of labour would facilitate its introduction into Canada, where it would interfere with no important agricultural occupation. When it is considered that upon the best farms within the wine regions, upon the continent of Europe, the crop of silk is calculated as equivalent to *all* the field crops put together, besides being a *cash* crop, immediately realized, the additional exertions expected from every one during a single week, will never be considered burdensome. The advan-

tage of being able to obtain a large *cash* crop, so early in the spring, is a stimulus to additional exertion, which every farmer will easily understand.

The statistical limit of vine culture, in ordinary cases, is not felt, as it enters into the rotation of ordinary occupations of the farm. The mechanical genius of America has extended by machinery, the statistical limits of most field crops, and in this they have succeeded in a very remarkable manner; but their efforts in the same direction, with regard to the production of wine, and the cultivation of the grape, have been failures. Their attempts to produce "point stock silk," by a *fast* mulberry, (the *Morus Multicaul*), instead of waiting "nature's time," has retarded silk cultivation upon this continent for at least half a century. Their efforts, however, although unsuccessful at the time, may become an ultimate good. In relation to silk culture, they have proved that the fast growing and productive "multicaul" is admirably adapted to the silk worm, during the first stages of its existence. And when (by competition with more favoured climates) the Western States learn that their vine has *too long* a season of vegetation for the production of superior wines, they will, competing along with California, become the brandy producers of this continent, and derive great advantages from mechanical assistance, which in that case will undoubtedly extend the statistical limits of their operations.

AGRICULTURAL LIMITS.

Agricultural limits are marked principally by the tenure of land. Were you to propose the culture of vine, mulberry, or walnut, to farmers holding short leases, (the greatest curse of a country,) you would only be answered by ridicule. Even small proprietors, who must exist upon the annual produce of their lands, will not dare to make experiments, except upon mature reflection, and having the example of success before their eyes. Agricultural reforms, therefore, must depend altogether upon the tenure of the soil, which, after all, is the only regulator of its wealth. It will be difficult, if not impossible, to develop the agricultural resources of a country, without the assistance of wealthy landed proprietors; and under the most favourable circumstances many acquisitions and great energy are necessary, in order to carry out great projects of agricultural reform. However, I presume the time may not be far distant when it will become generally admitted that upon the intelligent and zealous exertions of the Bureau of Agriculture, must depend our best prospects of immediate prosperity, and future greatness. Under a change of circumstances, the position of Minister of Agriculture will be sought after by our most zealous and able agriculturists—not with the hopes of rendering transitory assistance to this, or that, political party of the day—but with the glorious ambition of raising the general standard of public wealth and happiness, and, indeed, of public morality, as an immense and imperishable monument of their patriotism. Then, indeed, the circle of our agricultural limit will *expand*, and we shall have no other bounds to prosperity than that *invariable* limit, ordained by the Giver of all things.

Having, as briefly as it lay in my power, endeavoured to classify agricultural regions, I must, before entering upon the laws of rotation and details of cultivation, endeavour also to classify soils, and explain, as far as my means will allow, the principles of "Agricultural Geology."

A Lit-tle Stor-y for Lit-tle Pro-tection-ists.

[IN WORDS MAINLY OF ONE SYLLABLE.]

There was a man in I-o-wa who grew Wheat. One Day he had Need of a new Plough Share. A man in Eng-land said, I will sell you a Plough-Share for five bushels of Wheat. A man in Penn-syl-van-i-a said, Buy your Plough-Share of me. But as it costs me Twice as much as the man in Eng-land to make a Plough-Share, you must give me Ten Bushels of Wheat for it. And the Man in I-o-wa said, No! for I can buy the Plough-Share of the Man in Eng-land for the Half of That, and have the Rest left to buy Something else, or I can buy Two Plough-Shares, and I shall be so much the more rich. It is a waste to give Twice as much for a Thing which can be got for the Half. Then the man in Penn-syl-van-i-a went to Un-cle Sam who ruled that Land and the Lord of I-o-wa; and said, when the Man in Eng-land Sends the Plough-Share, You must not let the Man in I-o-wa have it, if he does not give you Six Bush-els of Wheat. For if the Man in Eng-land Sells Plough-Shares here, I can-not sell mine, for his are more cheap, and there shall be no Work for the Men of our Trade, and your land shall get poor, But if the

Man in I-o-wa finds that he has to give Five Bush-els of Wheat for the Plough-Share to the Man in Eng-land, and has to give Six Bush-els of Wheat to let the Plough-Share come into your Land, then he will buy my Plough-Share instead, and Plough-Shares shall be made here in-stead of com-ing from Eng-land, and your land shall get rich. And Un-cle Sam said, Yes. And when the Man in I-o-wa saw that he would have to pay E-lev-en Bush-els of Wheat for the Plough-Share from Eng-land, he bought the Plough-Share of the Man in Penn-syl-van-i-a. By which he lost Five Bush-els of Wheat, with which he had meant to buy a Blank-et for his Bed, so that he was cold all Win-ter; but the Man in Penn-syl-van-i-a laughed in his Sleeve and grew Fat. Now, was it not a Waste of La-bour and loss to Un-cle Sam to make a Plough-share in Penn-syl-van-i-a, when Half the La-bour would have brought a Plough-Share from Eng-land? And when, too, the Rest of the La-bour might have gone to make Some-thing else, which the Man in I-o-wa would have bought with the Rest of his Wheat, so that the Man in Penn-syl-van-i-a is an un-just greedy Man, and Un-cle Sam a Sil-ly old Man to let him have his Way?—*New York Evening Post*.

Valuable Suggestions.

Subscribe for one or more good agricultural papers. The farmer needs papers devoted to his own interest, as much as a merchant or a politician. The farmer who does not take an agricultural paper is decidedly behind the times. He must change his course, take the papers and read them, or he will be an inferior farmer.

Get some good agricultural books to read and study during the leisure of stormy days and the long winter evenings.

If you have children, send them to school; take an interest in their studies, and help them to a good education. A good common sense education never came amiss to any one; and in these times the saying is true, "Knowledge is power."

Keep a record of your farm operations, of what you do each day; especially note the time you begin to plough, plant, &c., the early and late frosts, and of the ripening and harvesting of grain. Such a record may be pleasant to refer to in future years.

Keep your accounts. Be able to tell at the end of the year how much money you have received, how much you have paid out, and how you stand with the world.

Finally, do your business on scientific principles; act up to all the light you have; read, reflect, and study; make home attractive; have books and papers for every member of the family; improve your time and your mind. Act well your part in life and you will not need to envy men in other walks of life, but will have cause to rejoice that you are an American farmer.—A NEW ENGLAND FARMER, in the *Rural American*.

SHELTER THE TOOLS.—Our esteemed correspondent, S. W. A., of Illinois, in a communication intended for the benefit of all *Rural* readers, pertinently says:—Are your tools and machinery all sheltered from the snow and rain? This is very important. Western farmers suffer more loss from the decay of machinery by exposure, than from the wear of it: ten times more. Everywhere we see reapers and mowers, threshers, fanning mills, drills, waggons, and all kinds of farm machinery, lying just where last used—and there many of them will be till wanted. But our soil is so fertile that Western farmers, as a general thing, are prosperous in spite of all this bad management. Yet "a penny saved is as good as a penny earned," says "poor Richard," and I think it would be well to begin the saving process by housing the tools.—S. W. A., of Illinois, in *Rural New Yorker*.

PROVERBS BY JOSH BILLINGS.—Young men, be more anxious about the peddygree yuro going to leave, than you are about the I somebody left you.

There iz only I advantage that I can see in going tew the Devil, and that iz, the rode iz easy, and you are sure to find the way.

When a man's dog deserts him on akownt of his poverty, he kant git any lower down in this world—not bi land.

Men ain't apt tew git kicht out of good society for being rich.

Two common "Yankee Noshuns" are the noshuns that skeul houses are cheaper than Staats Prizons, and that the United States iz liable at enny time to be doubled, but aint liable at enny time to be divided.

There iz a I kind of kissin that has always bin deemed extry hazardas (on akownt of fire), and that iz kissin yuro naber's wife. Gitting the wife's consent don't make the matter enny less risky.

Markets.

Toronto Markets.

"CANADA FARMER" Office, Feb. 15, 1866.

The Grain and Provision markets still remains dull, the receipts by farmer's waggons being very light. Rather larger supplies of wheat have, within the last few days come forward by cars, and prices have, if anything, declined.

The stoppage of the importation of cattle into the United States has begun to have its effect upon our markets. Beef, which formerly sold, retail, at 12 1/2 cts per lb, now sells at 10 cts. There has been a much larger supply of cattle than usual in the market, and prices have fallen fully 20 per cent. Toronto and Montreal are now the only large cattle markets at the command of drovers, it is therefore possible that before long a still farther decline in the price of live stock will take place.

Hay—from \$7 00 to \$10 00 per ton. Straw—\$6 to \$7. Flour.—The market remains without material change. No. 1 \$6 to \$5 10; Extra, \$6 50 to \$7, Double Extra, \$7 25 to \$7 75. Fall Wheat dull at \$1.20 to \$1.23. Spring Wheat—Sales at \$1 to \$1.05. Barley—prices ranged from 55 to 65c. Peas quiet, at 61c to 63c. Oats quiet, at 30c to 32c. Rye 50c. Provisions—Butter from 14 1/2c to 17c for kegs, choice dairy, 1 1/2c to 20c. Potatoes—Cups sold at 50c to 55c; other varieties, 25c to 30c. Salt—American, in barrels on the wharf, \$1 75, on the cars \$1 77; dairy, 10c per bag. Liverpool, coarse, per bag, 9c to \$1. Cheese—American prime, 13c to 15c. Eggs—selling at from 13c to 17c for packed. Hops—Market firmer; selling at \$7 50 to \$7 80; park quiet; prices nominal; mess, \$20 to \$23 per bri; primo do., \$19 to \$21. Live Stock.—The market is active. The figures here given are off red by the butchers and drovers in this market per 100 lbs, dressed weights:—Cattle, 1st Class, \$6; do. 2nd class, \$5; do. inferior, \$4 to \$4 50. Calves, good, \$5 to \$6, inferior, \$4 to \$4 50. Sheep, prime heavy, each, \$5 to \$6, do. light, each, \$4 to \$4 50. Lambs, each, \$2 50 to \$3. Fruit.—Apples, farmers' packed, \$1 75 to \$2 00.

Hamilton Markets.—Feb. 14.—Spring Wheat, \$1 to \$1 10; white wheat, \$1 20 to \$1 40; red do., \$1 10 to \$1 14. Peas, 55c to 60c. Oats, 35c to 6c. Oats, 35c. Flour.—XXX, \$7 25; extra, \$7 50; superfine, \$5 50 to \$5 75. Corn meal, per 100 lbs., \$1 75 to \$2. Oatmeal, do., \$2 75. Buckwheat Flour, do., \$2. Lard do., 21 1/2c. Beef, do., \$4 75 to \$6. Mutton, do., \$1 to \$2. Lamb do., \$1 50 to \$5. Pork, do., \$7 to \$7 50, live at factory, medium weight, \$7 50, hams, 15c to 16c, shoulders, 12 1/2c; lard, 14c to 16c. Potatoes, per bushel, 50c. Butter, per lb., 18c to 22c, do. in 17 lbs, 12c to 15c. Eggs, per doz., 20c to 25c. Lard, per lb., 12c to 15c. Hay, per ton, \$8 to \$9. Straw, per ton, \$7 to \$8.—Special

London Markets, Feb. 13.—Fall Wheat, per bushel, superior, \$1 20 to \$1 50. Spring Wheat, \$1 07 to \$1 10. Barley, 60c to 65c. Oats, do., 27c to 29c. Peas, do., 55c to 60c. Corn, 50c to 55c. Hay, per ton, \$7 to \$8. Broad Hops, per 100 lbs., \$7 50 to \$8 50; do. nut for, \$5 to \$6. Oat Straw, per load, \$3 to \$4. Beef, per cwt., \$5 to \$7. Butter, fresh, per lb., 14c to 15c; butter, best, per lb., 12 1/2c to 15c. Potatoes, 45c to 50c. Eggs, per dozen, 20c to 25c.

Galt Markets, Feb. 12.—Flour, per 100 lbs., \$2 50 to \$3 25. Fall Wheat, per bushel, \$1 30 to \$1 49. Spring Wheat, per bushel, \$1 05 to \$1 10. Barley, per bushel, 50c to 60c. Oats, per bushel, 25c to 30c. Butter, per lb., 15c to 17c. Eggs, per dozen, 13c to 16c. Beef, per 100 lbs., \$5 to \$6. Pork, per 100 lbs., \$7 to \$7 75. Cheese, per lb., 9c to 11c. Hides, per 100 lbs., \$5. Calveskins, over 8 lbs., 8c. Sheepskins, \$1 to \$1 25. Potatoes, 31 1/2c to 40c. Hay, \$8 to \$10. Apples, 37 1/2c to 70c. Corticool, \$2 50 to \$2 75.—Reformer.

Quebec Markets, Feb. 13.—Fall Wheat, per bushel, \$1 20 to \$1 40. Spring Wheat, \$1 10 to \$1 02. Oats, 20c to 20c. Peas, 55c to 60c. Barley, 55c to 60c. Hides, per 100 lbs., \$5 00. Beef, do. \$5 to \$7. Pork, per 100 lbs., \$7 to \$7 50. Straw, per load, \$2 50 to \$3 50. Hay, per ton, \$8 to \$10. Wool, per lb., 40c, to 45c. Eggs, per dozen, 15c to 18c. Butter, per lb., 15c to 16c. Apples, per bushel, 60c to 80c. Potatoes, per bag, 40c to 50c. Sheepskins, 75c to \$1 25.—Herald.

Boston Markets, Feb. 12.—Flour.—The market is firm with a fair demand; sales of Western superfine at \$7 25 to \$7 75; common extra \$8 00 to \$9, medium do., \$9 75 to \$10 75, good and choice do., \$11 to \$16 50 per bbl. Grain.—Corn is dull; sales of new Southern yellow at 90c; Western mixed at 85c to 90c per bushel. Oats are firm and in good demand; sales of Northern and Canada at 65c to 62c per bushel. Rye is dull at 95c to \$1 do. Shorts are selling at \$25 to \$29, fine feed \$30 to \$33, middlings 65 to \$55 per ton. Provisions.—Pork is firm and in good demand, sales of prime at \$24 to \$24 50, mess \$20 to \$22, clear \$23 to \$25 per barrel cash. Lard is firm and in good demand, \$17 to \$24 per bbl. cash. Tallow is firm, sales in barrels at 19c to 19 1/2c. Hams are selling at 19c per lb. cash.

New York Markets, Feb. 13.—Cotton quiet, at 44c to 45c for middling. Flour—Receipts 4,205 barrels, market dull, and common and inferior grades, 10c to 15c lower, sales 5,500 barrels, at \$6 95 to \$7 35 for superfine State; \$7 75 to \$8 for extra State; \$8 05 to \$8 25 for choice do. \$6 80 to \$7 35 for superfine Western; \$7 75 to \$8 45 for common to medium extra Western. Canadian flour dull, and common grades 10c lower, sales 200 barrels at \$8 to \$8 50 for common, and \$8 60 to \$11 50 for good to choice extra. Wheat—Receipts 1,500 bushels, market dull, and 1c to 2c lower; sales 7,200 bushels choice new amber Milwaukee, at \$1 75; and 690 bushels new amber State, at \$2 40. Rye dull. Barley dull. Corn—Receipts 5,200 bushels, market dull and heavy, sales 6,000 bush. \$1 at 7 1/2c to 7 1/2c for unsound and 7 1/2c to \$10 for sound mixed Western in store and delivered. Oats rather more active, at 22c to 42c for unsound Western; 55c for sound do., 55c to 60c for Canada. Pork heavy; sales 3,500 barrels at \$23 50 to \$23 65 for new mess, closing at \$23 60 cash, \$23 for old do., closing at \$23 for cash. Beef steady.

Advertisements.

Government Immigration Office.

Quebec, 25th January, 1866.

SIR.—The Honourable the Minister of Agriculture and Immigration, having authorized the publication, by this department, of an occasional paper, to be called the "CANADA IMMIGRATION GAZETTE," which will be devoted exclusively to the encouragement of immigration and to the diffusion of accurate and useful information concerning Canada abroad, I beg leave to bring under your notice the advantages this sheet will offer as an advertising medium to landowners and others, having properties for sale or lease. As information of this kind is eagerly sought for, and much valued by every intelligent emigrant, many will thus be afforded of placing the matching purchaser or lessee in Great Britain in direct communication with the property-holder here.

The Honourable the Minister of Agriculture and Immigration has also authorized the opening of an Information Office in Liverpool, under the management of Mr. Wm. Dixon, a gentleman well acquainted with this and the mother country, who will be specially charged with the distribution of this paper throughout the United Kingdom, and in bringing the same prominently under the notice of the emigrant.

The first number will appear in the course of next month, the second in April, bringing down the information to the latest period, to be followed up in July or quarterly, as may be required. As the space it is intended to allot for advertising purposes will be limited, and in view of the large circulation the sheet will obtain (for it will be distributed gratuitously) the prices of advertisements cannot be made lower than the following:—

For each advertisement not exceeding 10 lines, £2 the insertion; and 5 cents for every extra line. For a square of 22 lines, to stand for a twelvemonth, £6.

In all cases, advertisements must be prepaid; and an early transmission is recommended.

The undersigned will gladly receive communications of a practical character, for publication, bearing on the subject of Immigration, such as letters from actual settlers, showing their progress in the country, and pointing out the peculiar advantages of their district in particular, &c. It is desirable that they should be written as concisely as possible, and be free from anything like exaggeration.

I am, Sir, Your obedient servant, A. C. BUCHANAN, Chief Agent.

v3-4-1

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The territory of the Lower Province will be sold cheap, as we have sufficient in Canada West for our own purposes. v3-4-21* J. H. THOMAS & BROS.

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