

vicious to the mixture. If, instead of chalk, we use plaster of Paris, the creamy-looking liquid will soon grow hard, and at length become quite solid. The water wholly disappears, for the two substances have combined chemically. Gunpowder may be mentioned as affording a sort of double illustration. This is a mechanical mixture,—that is, the materials of which it is composed are united by mechanical force. The mixture is a very intimate one, still it is a mixture, and it is easy to separate the substances of which it is composed. Gunpowder consists of charcoal, sulphur, and saltpetre. By washing it in water, the saltpetre is dissolved, and can easily be removed and separated from the other two ingredients by filtering and straining. The two other constituents can also be separated and they will be found the same precisely as before they were manufactured into gunpowder. But now, if fire be applied to gunpowder, an explosion results, the whole mixture having evidently formed a chemical combination. A small trace of solid matter, and a little smoke is all that appears to the eye, but it is quite certain that these with some invisible gases, contain all the sulphur, charcoal, and saltpetre that existed in the gunpowder.

"If" says Prof. Dawson, "we take 100 pounds of pure limestone, and expose it for some time to a red heat, an invisible air or gas escapes from it, and at length we have only 56 pounds of quick lime remaining. If we have collected the gas which has been given out, its weight will be found to be 44 pounds, or as much as the limestone has lost, and it will also be found to consist of a peculiar substance known to chemists as Carbonic Acid. Limestone therefore is a compound substance, and can be decomposed or separated into two other substances. But this process can be carried still farther. We can obtain from the 44 pounds of Carbonic Acid, 12 pounds of Carbon or charcoal, and 32 pounds of a gas called oxygen,—and from the 56 pounds of quick lime, 16 pounds of oxygen, and 40 of a metal named calcium. Here then we have:—
12 carbon and 32 oxygen, forming 44 carbonic acid.
40 calcium and 16 " " 56 lime.

Forming when united, 100 limestone, or Carbonate of Lime."

Another characteristic of chemical combination is that the compound substances thus formed always contain definite proportions of the elements out of which they are formed. Thus Chalk or Carbonate of Lime is precise the same material whether obtained from Chalk rocks or prepared by passing carbonic acid into lime water. In both cases, the same substance is got, and consists of 22 parts of Carbonic Acid, and 28 parts of Lime.

All the elementary substances in nature combine in certain fixed proportions. They invariably unite in this way. This is called the Law of DEFINITE PROPORTIONS. How this comes to pass, no one can tell. We only know that the All-wise Creator has made things in this manner. And when we speak of a law of nature, we ought to bear in mind that it operates because of the will and power of the Great Law Giver, and be thankful that the universe is not at the mercy of chance. It is the farmer's duty to study and confirm to this law, and under its unerring operation, he knows that he will not toil in vain. Long as nature's laws continue in force, the earth will bring forth and bud, giving seed to the sower and bread to the eater.

Causes of Unproductiveness in Soils.

(Continued from page 50.)

2. Soils are unproductive when they are deficient in one or more constituents, found in the ashes of cultivated plants.

In many arable soils that have been subjected to an extended course of cropping without adequate manuring, it is often found, by chemical analysis, that they become exhausted of one or more of the inorganic constituents of plants. Phosphoric acid is among the most common and important of these ingredients. The subjoined analyses of both clay and sandy soils, having, therefore, opposite physical conditions, show the great want of phosphoric acid in all these—a circumstance sufficient of itself to explain the cause of

their unproductiveness, though there are other ingredients of importance in much too small proportions. It will often be found that the relative productiveness of different soils is intimately connected, either with an abundance or a deficiency of phosphoric acid.

	Sandy Soil	Clay Soils
Moisture	10.06	12.37
Organic Matter	3.02	7.59
Oxides of Iron and Alumina	4.34	13.36
Phosphoric Acid	.07	.04
Sulphuric Acid	.17	.14
Carbonate of Lime	.17	none
Potash and Soda	.26	1.65
Magnesia	.41	.46
Insoluble Siliceous Matter	91.03	68.33
	100.00	100.00

Lime is another substance in which cultivated soils are sometimes deficient; and hence the ancient practice of liming and marling, that has come down to the present time, is found so generally beneficial. Dry a small portion of soil, and reduce it to powder; pour upon it a little muriatic acid, and if no effervescence takes place, or only a feeble one, such soil requires the application of lime. In some of the limestone districts even of Canada, especially where covered by drift, an occasional dressing of lime will be found advantageous. In the following table, analyses of various kinds of soils are incorporated, all of which require the application of lime.

	No. 1 Sandy Soil from Kent.	No. 2 Stiff Pasture from Somerset- shire.	No. 3 Clay Soil from Demarara.	No. 4 Peaty Land from Somerset- shire.
Moisture	7.03	12.63	11.10	13.03
Organic Matter	3.62	10.03	11.10	13.03
Oxides of Iron and Alumina	7.50	10.03	11.10	13.03
Phosphoric Acid	.13	.49	.06	.06
Sulphuric Acid	.11	.11	.120	.120
Lime	.43	.75	.13	.97
Magnesia	.49	1.56	.33	.54
Potash and Soda	.43	.45	.52	1.02
Insoluble Siliceous matter	87.35	64.36	67.72	27.81
	100.00	100.00	100.00	100.00

A deficiency of the alkalis, especially potash, is a frequent cause of the unproductiveness of soils. The ashes of all farm crops contain a large proportion of potash and soda, and these constituents must be found in the soil, or supplied by manure. "Root crops especially have ashes rich in potash; and as turnips are often grown on land naturally poor in alkalis, with purely mineral superphosphate of lime, and nothing else, and the produce is sometimes sold off the land, or not consumed entirely upon it, the land may thus become drained of its available potash to an injurious extent. Perhaps the failure of roots on land which formerly produced good crops, may have something to do with the gradual exhaustion of their available alkalis." Light sandy land is often found very deficient in potash, but this sometimes happens with clays as Dr. Voelcker clearly shows from several carefully made analyses.

Unproductive soils are seldom deficient in one substance only; for this reason many cannot be made fertile by the application of manures which, like lime, supply only one material. Sandy soils, more especially, often stand in need of lime, as well as of phosphoric acid and potash. Their general deficiency of all these important elements of fertility is clearly seen in the following analysis, showing the

Composition of a poor Sandy Soil:—

Moisture	4.78
Organic Matter	1.03
Oxides of Iron and Alumina	1.72
Lime	.19
Magnesia	.10
Potash	.23
Soda	none
Phosphoric Acid	.04
Sulphuric Acid	.12
Carbonic Acid and Chloride	traces
Insoluble Matter 91.73, consisting of:	
Silica	59.32
Alumina	1.81
Lime	none
Magnesia	.36
Potash	.15
Soda	.15
	100.00

The above analysis indicates a poor hungry soil, alike deficient in lime, phosphoric acid, and alkalis. As in this country we do not possess a cheap source of potash, a liberal dressing of good farm-yard man-

ure is our only available remedy. Upon soils of this character, town sewage, when applied in large quantities, has produced the best economical result.

3. Soils are barren or unproductive when they contain a large preponderance of organic matter, or of sand, lime, or even of pure clay.

The most fertile soils consist of an intimate mechanical mixture, in due proportions of clay, lime, sand, and organic matters. "Sterility, or comparative unproductiveness, is often caused by such a preponderance in the soil of one of these. Each of these ingredients of all fertile soils possesses special chemical and physical properties, conducive to the development of plants, and it will be readily understood how essential to luxuriance of growth, is this intimate and nicely-proportioned mixture, such as we find in alluvial soils."

The following table illustrates the composition of soils which are unproductive on account of the preponderance of one of the four chief materials of all soils:—

	No. 1 Calcareous Soil.	No. 2 Sandy Soil.	No. 3 Clay Soil.	No. 4 Peaty Soil.
Moisture	2.63	4.56	7.04	49.07
Organic matter and water of composition				
Oxides of Iron and Alumina	.730	5.93	10.95	10.58
Carbonate of Lime	73.607	.39	.86	2.29
Magnesia	.825	.26	.75	.90
Potash and Soda	traces	.23	.39	.00
Phosphoric Acid	.242	.10	.00	1.04
Sulphuric Acid	1.546	.30		
Silica	16.710	80.19		
Insoluble Siliceous matter (fine clay)	0.090		79.20	35.01
	100.000	100.00	100.00	100.00

(To be Continued.)

Clover as a Manure.

I have been long trying, "by precept and example too," to get the farmers of the country to believe that the clover plant, stimulated by gypsum, whenever it is proved that gypsum does aid its growth, is the most valuable manure, when we take into account its cost that can be had. In my reports on the County of Onondaga, I said, "The agriculture of Onondaga Co is based on the clover plant," and I now repeat that assertion. Yesterday, a farmer living within two miles of Syracuse, called on me, and, while passing over the farm, remarked that he would not draw manure from the city to his farm if it was given to him, preferring to manure with clover and plaster. This was the opinion of a man who had spent fifty years of his life in earning a handsome fortune as a working farmer, and whose knowledge of scientific matters is quite limited—in short, a man who is governed entirely by practical results. He knows just the value of barn manure, for he has made and used large quantities every year, on the farm where he now lives and has lived for thirty years. Nothing was said by me to draw out his opinion. It was given unprompted, and having long since learned to value the opinion of such men, I was very much gratified at hearing his views. Within the last four weeks I have seen a heavy crop of clover ploughed under, and the harrow and drill to sow wheat at once put into operation. The farmer expects to get a good crop with this single ploughing, and to enrich his land for future crops. How could he do so much for his land in any other way at the same cost? He has cut one crop of hay, and from the middle of July to the middle of September the grass had so grown that it was hardly practicable to get it into furrow. The crop of hay has paid the interest on the value of the land (fully ten per cent), and the crop of wheat will probably pay still better. Now what has this manuring cost? Do your own figuring. Do any of your Eastern farmers manure as heavily as this? They pay more money, but do they manure as highly? Let us look at the future of this land. The wheat will come off next year, and one-quarter of a bushel of clover seed sown next Spring—having put timothy grass seed on when the wheat was drilled in—the buds of the bundles of wheat will, at harvest, be full of the tops of the grasses. A little pasture will be had next Fall, if the season is dry; if it is wet and warm, the clover will blow out before frost. The following year corn, or perhaps barley, will be sown on the new clover and timothy sod, or hay may be cut that year in July, and a crop of clover seed taken off in September, and corn or barley the next year.

If barley, wheat will be sown on the stubble, and a like round of crops be repeated.

I thought, as I saw this man turn under the clover last month, that he was ploughing in from one and a half to two bushels of clover seed to the acre, that he had better cut and save, and put his land into barley next Spring, following with wheat next Fall. But he took his way, and by doing as he did, he has clover seed that will be coming up in his crops for years.

Will this manuring with clover last? I can only say that it has answered for at least sixty-five years on a field on my farm. This field's history is known—it has been cropped constantly with hay, pasture, corn, barley, oats and wheat, manuring with clover and plaster only. No signs of poverty yet, but, on the contrary, increasing fertility. Barley was harvested from it this season, and it is now in wheat.—*Hon. Geo. Coates in N. Y. Tribune.*

New Use for Flaxseed.

The following statement, copied from an English paper, is of great interest to farmers, as it seems to open up a new use for flaxseed, and may greatly enhance the price, so as to make flax-growing profitable. This new use is in the manufacture of an article called Linoleum; deriving the name from *linum* and *oleum*. It is said that it will be a rival of caoutchouc, or, as commonly called, India rubber. The new article is manufactured of linseed oil by oxidizing it until it is solidified into a resinous substance, as we frequently find it when oil has been long exposed to the atmosphere. It is stated that "in this state it is combined with resinous gums and other ingredients, whereupon it assumes the appearance and most of the properties of India rubber. Like India rubber, it can be dissolved into a cement and used in the manufacture of material for waterproof clothing. It can be used as varnish for the protection of iron or wood, or for coating ships' bottoms. It is good as a common cement, having properties similar to the marine glue made from India rubber and shellac. It is readily vulcanized by exposure to heat, and by this means becomes as hard as the hardest woods, and capable of a fine polish. The variety of uses to which it can be applied, in this form, will at once suggest themselves to the reader. The manufacture of linoleum has thus far been made solely to produce floor-cloth, for which it has proved itself well adapted. Combined with ground cork, it is spread on a stout canvas, the back of which is afterward water-proofed with the oxidized oil. The fabric is then printed by means of blocks in the ordinary way. The floor-cloth thus produced is pliable, noiseless to walk upon, washes well, preserves its colour, and can be rolled up like an ordinary carpet. It is very durable, and its component parts will not decompose by heat or exposure to sun or air, as will India rubber.

SALT AS A MANURE.—A correspondent of *The Farmer* (Scottish) makes the following enquiry:—"Seeing in the *Farmer* of the 20th September last a valuable article on 'The Use of Salt for Cattle,' and also on its beneficial effects as a manure, I wish to know the proper quantity to apply in order to promote the growth of green crops, including potatoes, turnips, and carrots; also the proper quantity to apply to cereals and first year's grass—the soil being of a light stony nature, situated about 1½ miles from the sea, and about 100 feet above its level."

The reply of the Editor is as follows:—"Salt acts in two ways:—First, as food for the plant; and secondly, by rendering other substances, particularly phosphates, available for the purposes of nutrition. We have had long experience in the use of salt as an auxiliary manure, and in most cases have found it of much service. There are parts of the country where an application of salt will not produce any marked results, such as districts exposed to heavy rains coming direct from the sea during a considerable part of the year. This we have noticed especially on certain parts of the western coasts of the British Islands. Where much town manure is used salt is also less efficacious, generally speaking, as such manure usually contains a certain amount of it. The quantities we have used are as follows:—For green crops, 5 cwt. to 6 cwt. per imperial acre; for cereals and young grass, 2 to 3 cwt. For roots it may be sown broadcast over the land before the drills are made, and in the case of cereals the quantity to be applied may be divided into equal parts, one-half being first applied, and the remainder after the interval of a fortnight, moist weather being selected for the purpose. When grain crops are apt to lodge, salt imparts strength to the straw, and we have noticed that the grain is also improved in colour."

Stock Department.

What Sheep are Most Profitable?

The following article which we extract from the *Country Gentleman*, is from the pen of Sanford Howard Esq., the able Secretary of the Michigan State Board of Agriculture. It will repay perusal:—Much is said as to what kind of sheep are most profitable, though but little has been done in this country towards a settlement of the question. Trials have been instituted in England, which, if continued long enough, will at least establish valuable facts. Some of the results already brought out, have appeared in the pages of the *Co. Genl.*, and have doubtless been read with interest.

In this country numerous public shearings, or matches, have been held of late years, the object in most cases having been to compare the weights of fleeces as taken from the sheep, sometimes with reference to the proportionate weight of carcass, but generally without regard to the actual weight of wool or its value. The "biggest fleece" has been the chief aim. It is obvious that this presents no tangible idea in regard to the intrinsic value of the fleece, or the profits of the sheep. True, it may answer for a while as a basis for speculation; but the main point of interest to the public is—what sheep are really most profitable in reference to the purposes for which they are kept—wool and mutton?

It is gratifying to see that some steps have been taken during the past season, to place this matter on a better foundation, although no plan has as yet been brought out, which would afford a fair and thorough test in reference to the comparative profits of the animals. In several instances attempts have been made to ascertain the amount of clean wool produced in proportion to the weight of carcass. This, though but one point in the main question, is important. The first, and perhaps most note-worthy of these trials was instituted by the New-York State Sheep and Wool-Growers' Association, at an exhibition held at Canandaigua last season. It appears that on this occasion five Merino rams, nine Merino ewes, and one Cotswold ewe, competed for a premium of \$50, offered in the following language: "For the fleece of one year's growth, or thereabouts, which, on being cleaned, shall be found to give the greatest weight of wool in proportion to the time of growth, and to the live weight of the animal."

The committee appointed to superintend and report upon this trial, took great pains to analyse the facts involved in it, so far as they could be reached, and have embraced the same in a table which has appeared in your columns. It will be observed that the weight of fleece in proportion to weight of carcass is all that is aimed at, the value of the fleece being left entirely out of the question. The process of ascertaining the amount of clean wool comprised in each fleece, is stated by the gentleman who had charge of this business,—himself a manufacturer,—to be the same as that through which wool is put for manufacturing, and was probably unobjectionable. In fact all the rules adopted by the committee, seem to have been as fair in reference to ascertaining the weight of wool in proportion to carcass as the circumstances of the case would admit; and yet they did not embrace all the material points. The weight of the sheep, for instance, was only taken at the time of shearing, and this is assumed as the weight during the whole period of the growth of the fleece. The committee probably could not do otherwise, as they are supposed to have had nothing to do with the sheep till the day of exhibition. But it is obvious that their deductions may have been rendered fallacious on this ground. A sheep may have been kept for ten or eleven months of the year in such a way as to produce the greatest growth of wool, and for a short time immediately preceding the exhibition, so reduced in weight of body that the proportion of wool would be much greater than if the average weight of the animal for the year had been taken.

Let us see whether something of this nature does not appear in the report. The premium was awarded to Mr. Clapp's two-year old Merino ewe, whose weight was 49 pounds, and whose fleece, scoured, weighed a fraction under 4½ pounds for a year's growth, or at the rate of about 9½ pounds to 100 pounds weight of carcass. Her condition is put down as "fair." Mr. Gazley's yearling Cotswold ewe weighed 99½ pounds; her scoured fleece weighed 7 pounds, or at the rate of a little over 7 pounds to 100 pounds weight of carcass for one year. Her condition is put down as "fat,"—the only sheep among the fifteen that competed for the premium whose condition is thus recorded. Now suppose the Cotswold had, just before the exhibition, been reduced to the same condition as the Merino, would she not have produced more wool than the Merino in proportion to weight of carcass?

But suppose the premium had been offered for the sheep that should give the best returns in wool and flesh; that the conditions should have required the wool to be sold, and the sheep sold as mutton, how would the case have stood? Which would have shown the most profit? It is true we are without any information in regard to the cost of the food which the animals had eaten. Neither of them appeared to have been fed with a view to being slaughtered at that time. The Merino was about twice as old as the Cotswold, and weighed about half as much. Admitting that the amount of food consumed was in proportion to weight, the Merino had eaten as much in her lifetime as the Cotswold. The Merino had produced two fleeces. We have no information as to the weight of the first fleece; if it would have weighed three pounds, cleaned, it was pretty heavy as compared with her second fleece—the fleeces of two year olds of that breed being generally considerably heavier than those of yearlings.

We have, then, two fleeces of the Merino, say 7½ pounds of cleansed wool, worth, perhaps, \$1 per pound=\$7.75. We do not know whether the "fair" condition of the sheep indicates that the mutton would have been marketable or not; but let it be considered so, and reckon it at the same price per pound as that of the "fat" Cotswold, say eight cents, live weight—not a very high price for good mutton, at that time, in the State of New-York—the Merino carcass, 49 pounds, would come to \$3.92, making, with the wool, an aggregate of \$11.67.

We will reckon the Cotswold wool the same price as the Merino, though it was probably worth more: Seven pounds would come to \$7; the carcass, 99½ pounds, at eight cents, would come to \$7.96; making, with the wool, an aggregate of \$14.96; being a balance in favour of the Cotswold of \$3.29. A difference like this, in a hundred sheep, would amount to a handsome sum.

But the report is suggestive on other important points. The difference in shrinkage of wool in going through the process of scouring, is very striking, particularly the difference in Merino and Cotswold—the shrinkage of the 11 Merino fleeces averaging 64 per cent., and that of the Cotswold being only 18. The difference in shrinkage between the Merinos themselves is also great. Comparing the ewes, we find that Mr. Clapp's which took the prize, weighed 49 pounds, and produced a fleece which weighed 9.85 pounds; before being scoured, and afterwards 4.75 pounds; being a shrinkage of 48 per cent. The per-centage of scoured wool to live weight is 9.6.

Mr. Sweet's ewe, (No. 12 in the table) weighed 78½ pounds; her fleece weighed 17½ pounds, before being scoured, 5.31 pounds afterwards; being a shrinkage of 69 per cent. The per-centage of scoured wool to live weight is only 6.

The rams present similar contrasts. We will select two of the same age, about a year, and both reported in "good" condition: Mr. Gibbs' ram (No. 5 in the table) weighed 50.5 pounds; his fleece weighed 11.31 pounds before being scoured, afterwards 3.97 pounds; being a shrinkage of 61.9 per cent., and a per-centage of scoured wool to live weight, of 7.6.

Mr. Bovee's ram, (the last on the list,) weighed 108½ pounds; his fleece, before being scoured, weighed 18.9 pounds, afterwards, 5.48 pounds, being a shrinkage of 71.4 per cent., and a per centage of scoured wool to live weight, of only 4.7.

It may not be improper to suggest to persons or associations, who have charge of public shearings or matches, the importance of adopting the most thorough tests in reference to showing the relative profits of sheep, that being the point at which we should aim. There is, of course, no impropriety in endeavouring to ascertain what sheep produce the greatest quantity of wool in proportion to weight of carcass; but it would obviously be better to consider the value of the wool. To ascertain, first, the quantity of wool produced in a year, in proportion to the weight of carcass, something more is required than just to weigh the sheep on the day they are shorn. They should at least be weighed at the beginning of the year, and it would be better to have them weighed every month, taking the averages of the different weighings as the actual live weight during the period of the growth of the wool. In the second place, to ascertain the value of the wool, each fleece should be subjected to the appraisal of some competent person or persons.

The necessity of the fleeces being scoured cannot be too strongly insisted on, as nothing short of this can determine the actual weight of wool, and without knowing that, we have no basis for fixing the value of the fleece. The results of the Canandaigua trial show how deceptive the large yolk fleeces are, and yet it is said by persons who witnessed the shearing of all the sheep exhibited on that occasion, that those which were most gummy did not compete for the premium on scoured wool.

It is worse than throwing money away to offer premiums for this waste matter. Its production is

more than a dead loss, because of the expense of the labour and materials required to cleanse the wool from it. Yet this worthless stuff has cost something. All animal secretions are derived from the food the animal eats, and this oily matter in wool has come from the grass, hay, roots, and grain, which the sheep has eaten—in fact it was derived from the most valuable elements of the food. Besides this, it is well known that sheep which secrete the greatest amount of this matter, consume most food in proportion to their weight, and have the least tendency to fatten. There is as much truth as *originality* in JONAS JOHNSON'S expression, that he could not fatten those Merinos which secrete something in their wool resembling gas (r).

Food and Shelter for Stock.

It will not do to argue that the sheltered animal will always eat less than an unsheltered one, but if he does eat as much, he will accumulate fat much faster, or will convert the overplus of food into fat, though in nine cases out of every ten the sheltered animal will, other things being equal, consume the least food, supposing that in both cases the animal has as much as he will eat. The best and most tenable experiment to prove that "shelter is equivalent to food," is that which was tried by Mr. Chidlers. He divided his flock of forty into two equal portions, as nearly fair to do justice to the experiment as possible, and kept one division of twenty in the open field during the three months of January, February and March, without any shelter. The other twenty were placed under an open shed in a yard, but were not allowed to go out into the yard. Both lots were fed for three months upon as many turnips as they chose to eat, half a pint of linseed cake and half a pint of barley to each sheep. The sheep in the field consumed all the barley and linseed cake given to them each day, as well as thirteen pounds of turnips. Those under the shed consumed as much food as the others at first, but after the third week they eat two pounds less of turnips per head every day. At the end of the eighth week they again eat two pounds less, or only fifteen pounds per day; they also eat one-third less of the linseed cake than the others. At the end of the third month both lots were weighed and it was found that those in the field had gained five hundred and twelve pounds, while in the same time and upon less food those in the shed had increased seven hundred and ninety pounds, or two hundred and seventy-eight pounds more than the others.

Another experiment of a similar nature was made by Mr. Morton, who took from his flock five sheep as nearly alike as possible. To one of these he gave no shelter, the second he confined in an open shed, the third in an open shed, but confined in a small crib, in order to prevent much exercise, the fourth was confined in a close dark shed, while the fifth was confined in a similar shed, but also in a small crib like the third. They were weighed November 18th, when put in, and again March 9th when taken out, with the following result.

	November 18th	March 9th
1st.....	108.....	131.7
2d.....	102.....	129.8
3d.....	108.....	120.2
4th.....	101.....	132.4
5th.....	111.....	131.3

They were fed with as many pounds of turnips as they would eat, one pound of oats and a little hay each day. The following shows the increase compared with the amount of turnips consumed:

1st.....	25.7 lbs. on 1912 lbs. of turnips.
2d.....	27.8 " " 1294 " "
3d.....	22.2 " " 1239 " "
4th.....	28.4 " " 856 " "
5th.....	20.3 " " 856 " "

From this it would seem that a certain amount of exercise was needed to get the greatest amount of increase of weight from a given amount of food, for the third and fifth, which were closely confined, increased less than those placed under the same circumstances but not confined. The rate of increase for every one hundred pounds of turnips consumed was as follows:

1st.....	1.2 lbs.
2d.....	2.0 " "
3d.....	1.9 " "
4th.....	2.1 " "
5th.....	2.4 " "

From this we see that the animal confined in a close dark shed showed the greatest increase in proportion to the amount of food consumed, which is the great point arrived at by all stock feeders.

Aside from the various items of shelter, light and exercise, there are various other items which are very often considered of but little importance. One is regularity in feeding; all animals, especially sheep, soon become accustomed to having their food at a particular time, and if they do not get it become uneasy and restless. It does not seem to make so much

difference when the food is given as that when a particular time is established, that it should be strictly adhered to.

Another item in which I perhaps differ from many readers of the *Telegraph* is, that I think as a general thing we feed too little grain, and that it is more economical to feed some grain at regular intervals to all our farm stock. The reader will remember that I refer to winter feeding only, and must not confound it with grass or summer feeding. It takes no more, if as much, to keep an animal after he is in good order than when he is poor. In by far too many cases our stock cattle (kept over winter on rough provender in order to fatten on grass the next summer) are kept stationary all winter, and in some instances retrograding. We do not generally commence to fatten our pigs until new corn comes, and very often they are kept on very low diet until a few weeks before they are killed, and during these few weeks are fed largely on highly concentrated food. I have found by observation that it requires considerably less corn to keep a pig fat all the time than it does to let him get into poor condition and bring him up again. Again, by deferring the fattening process until cold weather, we lose a portion of our corn which is required to keep up the temperature of the system, which otherwise would be reduced by the cold air.

Many farmers will argue that salt has nothing to do with the winter care of stock. In this I differ with them not only from theory but also from practice. I use the solid clear rock salt, which I have found to be most economical; the cattle have free access to it during the whole year, and from a carefully kept record I find that they consume the most during the months of May and June, or when first turned out to pasture, and the amount used gradually decreases until October, when it again increases until the cattle are brought into the yard, when it falls off and remains stationary all winter. I have noticed that after a long wet spell during the time they are out on pasture, they consume much more than either before or afterward. During the winter after a feed of turnips, mangolds or other roots they will consume double their daily allowance of salt. It is my opinion and practice that cattle should have free access to salt at all times and particularly when fed on succulent food. I have found that during the winter four head of breeding ewes will consume as much salt as a steer weighing fifteen hundred pounds, and if fed on turnips as many as they will eat once a day, two of them will consume as much as four without the turnips.

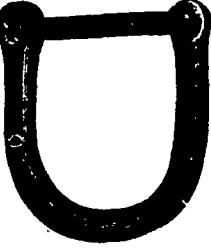
I think our practical farmers are not sufficiently aware of the benefit which will result to their stock from a change of their food occasionally; a turnip may be "all water and contain no nourishment," but if fed to stock once a week will produce a greater effect than any other kind of feed which can be given, not even excepting corn meal.

Nothing has so good an effect upon the appearance of horses as a weekly feed of potatoes, at the rate of about three-quarters of a peck to each horse; they seem to keep the bowels loose, and give the animal a smooth, sleek coat; I would advise giving the roots instead of the regular feed sooner than not at all. There is no doubt but that it will pay as it has been proved by more than one PRACTICAL FARMER.

—In *German Town Telegraph*.

The Best Ring for a Bull.

The ring we here illustrate is far superior to the circular ring in common use. The circular part is placed in the nose and a strong strap is attached to the straight cross-piece. The ring should be about two inches in diameter, made of $\frac{3}{4}$ iron bent into a bow, or U shape. In one end of the U, an eye is made, through which a steel bolt passes, having a screw head, and screwing through the other end of the U, in which a thread is cut. The circular portion should be finished perfectly smooth, so as to cause no irritation to the nose of the animal. The best way to insert the ring is, to lash the head of the bull to a strong post, or to a bar between two trees, or strong posts. (See last issue of C. F., page 52.) Then make a puncture with a white-hot, pointed iron as large as the ring, by thrusting it through the septum, or wall between the nostrils, and drawing it out again instantaneously. It will be easier for some, to use a large leather punch, or even an awl, to make the hole. Then insert the ring, screw in the bolt, which



BULL RING.

should turn in hard, with the strap attached. The strap ought to be of the toughest harness leather and the lap riveted, and sewed besides.—*American Agriculturist*.

The Best Feed for Making Mutton.

A few days ago we saw a small flock of the largest and fattest mutton sheep, in the stock market on 4th street, that we have ever met with. The live weight of some of them was 350 or 400 pounds! They were so very fat that life really seemed to be a burden. Their shoulders and hind quarters swelled out with fat, as if some fatal disease had produced a high inflammation throughout their entire bodies. They were said to be full blooded Cotswolds, and were four years old.

We inquired of the proprietor, who was an intelligent Canadian farmer: What has been your system of management with those sheep for developing such large frames, covered with such thick fat? His answer contained a volume in one short page:—"There is no difficulty in making such mutton sheep. I have more like them at home. I take a few like these to market every year. In the first place I secure a good breed; that is the most important point; the next thing is to keep them growing from the time they are weaned till they are taken to the slaughter house, never allowing them to grow poor at any season of the year. I have fed them all the hay, peas, and oats they will eat. Peas are better than Indian corn for mutton. Oats furnish nitrogenous matter for the formation of the necessary muscle; peas produce more fat than the same number of pounds of cereal grain."

Do you feed any roots and straw? Yes, each sheep gets not less than one or two pounds of turnips daily, with all the straw to eat and lie on that he wants; and a good shed is provided, with a supply of pure water, and salt to lick at pleasure.

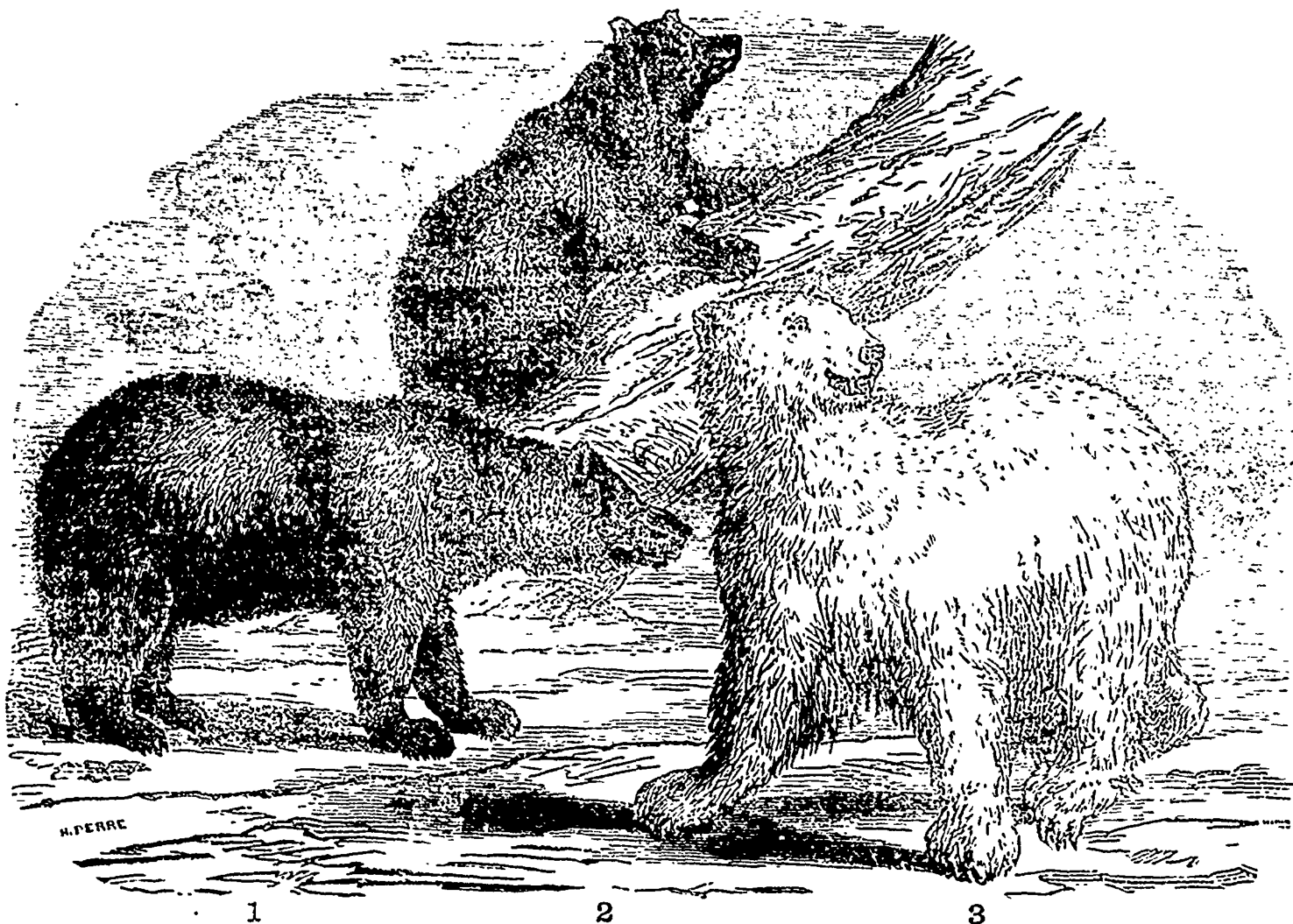
How much do you expect to get for the largest of your flock? Two hundred dollars per head, or I ship them from this market!

The next day we learned they were taken at that price for Christmas mutton.—*New York Independent*.

AGE OF GOOD MUTTON.—Mutton must have age in order to be good. In this respect it is different from beef. Five years is the time held in Europe to be the best—an age which our wethers seldom attain. It is all lamb with us, and young mutton. We can taste of nothing better than well-matured sheep, in which case the muscle is tender and solid, the succulent juices all in perfection.

OAK KNOTS GOOD FOR HORN KNOTS.—Hiram Holt, of Windham Co., Conn., writes, that he has been in the habit of using the great black knotty excrescences which grow often on the black oak, and are vulgarly called "nigger-heads," for making horn knobs, and thinks they are much better than if made of any of the woods mentioned on page 13. He saws out rectangular blocks of the right size, turns out the knobs and applies them about as we directed. The knobs outlast the lives of the animals.—*American Agriculturist*.

FEEDING OF SHEEP.—The experiments of Messrs. Lawes and Gilbert shew that where sheep are liberally fed upon cake or corn, a little hay, or straw chaff with roots, they will yield, over a considerable period of time, 1 part of increase in live weight for from 8 to 10 parts of the dry substance of such mixed food. Sheep fattening for the butcher on a good mixed diet, such as the above, will seldom carry off more than 3 per cent. of the consumed mineral matter, less than 5 per cent. of the consumed nitrogen, if the food be comparatively rich, and more than this, if poor in nitrogen. They should store up ten parts of fat for every 100 parts of non-nitrogenous substances consumed. When fed under cover, a sheep will increase in weight at the rate of about 2 lb. per week for each 100 lb. of live weight. It takes to make 100 lb. of live weight 2 1/2 cwt. of oilcake, the same weight of corn or hay, and about 2 tons (or in some cases 1 1/2 tons) of roots. As a rule, the cost of the food required to produce a certain degree of weight is more than the value of the weight, the difference being made up by the value of the manure. The number of sheep to feed down a crop of turnips, at 30 tons to the acre, has been thus stated:—"16 young and 8 old Leicester sheep, and 20 young and 10 old blackfaced sheep." The elaborate experiments of Mr. Lawes in the feeding of sheep brought out the following, amidst a number of valuable facts:—"Sheep well fed under cover increase for every 100 lb. of live weight from 1 1/2 to 2 lb. per week. To give an increase of live weight of 100 lb., 2 1/2 cwt. of oilcake or corn will have to be consumed, 2 1/2 cwt. of hay chaff, and 1 1/2 tons of roots. For every 8 or 9 lb. of the dry substance of food consumed, sheep increase 1 lb. in live weight.—*Farmer and Gardener's Almanac*."



Canadian Natural History.

Bears.

(*Ursidae.*)

ALTHOUGH the Bear is classed among carnivorous or flesh-eating animals, it differs from them in many respects. In the first place it does not confine itself to animal food, but eats succulent vegetables, honey, and various other substances. In the second place, it does not kill the animals, which it eats, by a sudden plunge and death-stroke like the Lion or the Tiger; but, on the contrary, it hugs or tears them to death. And in the third place, Bears that inhabit the cold climates—which are their appropriate places of residence—generally hibernate during the winter, or some part of it, which is never done by the typical carnivora. This animal, therefore, may be appropriately described as forming a connecting link between the carnivorous family and the herbivorous animals. The Bear plants the entire naked sole of its foot on the ground in walking. Naturalists have applied the term plantigrade to this peculiarity, which occasions the well-known shuffling gait of the animal. Owing to the large surface which is thus placed on the ground, the creature is enabled to raise itself with great facility, and to maintain an erect position. In this posture, it frequently uses its fore paws in adroit self-defence; or else it strikes the strong, obtusely-formed claws into the assailant with terrible effect; or, as a last resource, it hugs its adversary to death by muscular pressure.

Bears are found in all latitudes from the equator to the poles. Compared with those that inhabit the frigid zone, the natives of the warmer regions are tame and feeble. "The whole genus has a polar rather than an equatorial character, and may thus be

considered as geographically the reverse of the more formidable of the strictly carnivorous animals—the Lion and Tiger in the Eastern, and the Jaguar in the Western hemisphere.

The positive qualities of the Bear were likely, in all ages, to make it an object of interest and attention. Accordingly, we find it spoken of in the most ancient histories which we possess. Goodrich reminds us of the she-bears which came out of the wood, and tare forty and two of the mockers of the prophet Elisha. And then, unmindful of the earlier record of the valiant minstrel of Israel slaying the bear that would have stolen a lamb from his flock, the writer incorrectly adds: "these are probably the first bears on record." Aristotle accurately describes the Bear as "an omnivorous animal, which, by the suppleness of its body, climbs trees, and eats fruits and vegetables. It also devours honey, having first broken up the hives; ants, too, it eats, and also preys upon flesh."

The Bear has long been extirpated from Britain; but two or three centuries ago it was imported for the purpose of being baited by mastiffs. This disgraceful and savage pastime was very fashionable among the nobility of that period; and was even participated in by royalty itself. The reader of Sir Walter Scott's *Kenilworth* will readily recall the characteristic scene, in which Essex is represented as pleading before Elizabeth, the cause of Orsin Pinnit the bear-warden against Will Shakespeare and his stage-players. "Said the Queen, laughing, you have described the whole so admirably, that, had we never seen a bear-baiting, as we have beheld many, and hope, with heaven's allowance to see many more, your words were sufficient to put the whole Bear-garden before our eyes." It was only after Raleigh defended Will Shakespeare by deftly quoting the passage from the immortal *Swan of Avon*, in which Her Majesty is described as "a fair vestal throned in

the west" that the virago queen "dropt into the Thames the supplication of Orsin Pinnit, keeper of the royal bears, to find more favourable acceptance at Sheerness, or wherever the tide might waft it." In the city of Oxford, there formerly obtained a custom of carrying a crowned bear's head on Christmas Day, before a procession. The practice is said to have originated from a professor, who was walking in the forest reading Aristotle, being "met by a bear, that set upon him with mouth wide open." Upon this "the professor rammed the book into his throat saying 'Eat it, it is Greek.'" We are not informed whether Bruin survived this abrupt and unusual demand on his digestive powers.

A modern writer, the author of a "Tour on the Prairies" describes in vivid back-woodman's vernacular, the Bear's love for the sweet hoardings of the bee. "The Bear," he says, is the knowingest varmint for finding out a bee-tree in the world. They'll gnaw, for a day together at the trunk, till they make a hole big enough to get in their paws, and then they'll haul out honey, bees, and all."

Few antagonists are so formidable to the experienced hunter as the Bear. According to the Scandinavian aphorism the beast "has the sense of ten men and the strength of twelve;" and, unless provided with trustworthy fire-arms, there are few animals whom a hunter would not rather oppose than this. The extreme tenacity of life which characterises the animal renders it a terrible antagonist; while the fearful energy which it compresses into the last moments of existence, enables it to wreak more deadly vengeance in its expiring agony, than it did while still uninjured. "Many a hunter; has received mortal wounds by incautiously approaching a Bear which lay quiescent in apparent death, but was really only stunned for the moment by the shock of the injury which it had received, and which in a few minutes would have deprived it of life."

There are several species of Bears recognized and described by naturalists. The life-like illustration at the head of this article represents:—

1. THE BROWN BEAR.—(*Ursus Arctos*.)

2. THE MOSQUAW, OR BLACK BEAR.—(*Ursus Americanus*.)

3. THE POLAR BEAR.—(*Ursus maritimus*.)

1. THE BROWN BEAR.—As may be supposed from the title of the animal, the colour of its fur is brown. In some specimens the neck is encircled with a white band, which, in general, changes into brown after the second or third year; but in some instances, it remains during the whole life of the animal. The Brown Bear is not such a formidable enemy to cattle as might be supposed from its well-known voracity. If, however, the animal once acquires a taste for cattle stealing in a particular locality, there is no peace in that neighbourhood till Bruin is summarily ejected from it. This animal is particularly fond of vegetables of all kinds, fruits, and ripe corn. Even in captivity, it retains this weakness for garden produce.

During the autumn, the Bear becomes immensely fat, a condition which serves the double purpose of sustaining the creature during its long winter sleep and of supplying the body with carbon for the purpose of inducing the lethargy. "A curious phenomenon now takes place in the animal's digestive organs, which gives it the capability of remaining during the entire winter in this somnolent state without food, and yet without losing condition. As the stomach is no longer supplied with nourishment, it soon becomes quite empty, and, together with the intestines, is contracted into a very small space. No food can now pass through the system, for a mechanical obstruction—technically called 'the tappen'—blocks up the passage, and remains in its position until the spring. The 'tappen' is almost entirely composed of pine-leaves, and the various substances which the bear scratches out of the ants' nests."

The breeding season of the Brown Bear is about the end of January, or the early part of February,—the number of cubs produced varying from one to four. It is a curious fact that although the mother has been deprived of food for nearly three months, she is able to afford adequate nourishment to her young till the spring, without impairing her own condition.

2. THE BLACK BEAR is found in many parts of this continent, and formerly existed in large numbers. It cares little for animal food, and unless pressed by hunger, confines itself to a vegetable diet. It is a magnificent climber, and possesses an insatiable appetite for honey. Its flesh is held in high esteem by hunters, and the hams, when cured after an approved recipe, form a welcome refectory to the jaded stomach of the epicure."

"The chase of this Bear is an extremely dangerous one, and there are but few Bear-hunters, however dexterous they may be, who do not in the end succumb to the claws and teeth of this dangerous animal." The Indians pay great veneration to the intellectual powers of the Musquaw, and they endeavour to appease the manes of a slaughtered Bear by various solemn and time-honoured ceremonies. The head of the animal is grotesquely decorated with trinkets, and ostentatiously displayed on a new blanket. A few whiffs of tobacco smoke are blown into the breathless nostrils by the successful hunter, and "a deprecatory speech is made, in which the orator extols the courage of the defeated animal, pays a few supplementary compliments to its still living relations, regrets the necessity for its destruction, and expresses his hopes that his conduct has been, on the whole, satisfactory to the dead Musquaw and its relations."

3. THE POLAR BEAR is the largest, strongest, most powerful, and, with the single exception of the Grizzly Bear, the most ferocious of all the species. Its peculiar characteristics are, the "great length of its body as compared with its height; the length of the neck; the smallness of the external ears; the

large size of the soles of the feet; the fineness and length of the hair; the straightness of the line of the forehead and the nose; the narrowness of its head, and the expansion of its muzzle." The colour of the animal is invariably a dingy white, except the top of the nose and the claws which are jet black. The size varies considerably, some being described as over thirteen feet in length, but this is probably an exaggeration. Captain Ross brought back a specimen measuring 7 ft 10 in and weighing, after losing thirty pounds of blood, 1131 lbs. Another specimen described by Captain Lyon measured 8 ft 7 1/2 in. and weighed 1600 lbs. Dr Kane in his "Arctic Explorations" remarks that the animal is next to the Walrus, the staple diet of the North, and, excepting the Fox supplies the most important material of the wardrobe. "The liver of the animal," he says, "is for some reason poisonous, though eaten with impunity by the dogs."

The domestic habits of this powerful animal are not well known, and it is not clearly ascertained whether it hibernates or not. Dr. Kane relates that she-bears with their cubs visited his winter quarters during the midnight darkness. It is purely maritime in its habits and its food, from necessity, is wholly animal. The flesh of the Polar Bear is highly esteemed by Arctic voyagers.

The Dairy.

The Address at the Cheese Makers' Convention.

The following is a synopsis of some of the most important points in Mr. Willard's address at the late Cheese Makers' Convention at Utica:

He spoke of the immense waste that was suffered to be on annually in cheese making, and pointed out where it could be corrected. The waste was mostly in the oily particles of the milk. Vast quantities of this matter was allowed to pass off with the whey, and certain practices demand immediate correction.—The flavour of cheese had been improved in a large number of factories and private dairies during the past year, and this effort on the part of dairymen to make a better article has kept up prices. Efforts in this direction must be continued, and cheese made attractive to customers. Copies were found of foods that were palatable and attractive, and would purchase them at high prices; but it was useless to try to force upon the home market, a poor, spongy and putrid lot of rubbish, such as was manufactured a few years ago. Such cheese could only be sold in limited quantities, at low rates, and to a certain class. He pointed out the manner in which cheese could be improved in flavour by manufacturing and in curing, giving the result of some new experiments which had been conducted on his dairy farm, as a test of this matter. In manufacturing, the first requisite to success was to have good, clean, healthy milk, upon which to commence operations. The nature of milk ferments was perfectly understood, and it was wonderful what a small quantity of ferment would taint a large quantity of milk. Dairymen were negligent about cleaning pails and dairy utensils properly. They were often careless in allowing dirt and filth to drop in the milk while milking, or adding feverish and partly decomposed milk to that which was good. This bad practice tainted milk and caused trouble in securing high flavour. Ferments were often induced which it was difficult to control. These ferments were sometimes of such a bad character that the curds floated upon the surface of the whey before of proper texture for the press, often causing the loss of large quantities of cheese. He gave his views as to the manner of treating floating curds, and the best way of conducting operations so as to save the cheese. Ferments were more active at from 70 degrees to 100 degrees. They could be checked in a measure by reducing temperature and by addition of salt. The cheese should be cured in a low temperature. Milk was often tainted from the use of putrid rennet. The rennets obtained in large cities like Boston and New York, were mostly of a very bad character. The calves before they were killed were in a starved condition, and the stomach highly inflamed—then when saved were little better than putrid animal matter, and when used for cheese making, poisoned the cheese. Cases of poisoning from eating factory cheese had occurred during the past season, and there was good reason to believe that it was the result of using bad

rennet. He did not believe any better flavoured cheese could be made by the "coarse curds" process than by the "fine curds" process, if a proper attention to the management of the acids was had in either process, but a larger quantity could be secured by the coarse curds process. He showed from analysis that a nice, mellow, palatable cheese was not chiefly due to the butter it contained, but, on the other hand, to a nice admixture of moisture among all its particles. The analysis of the finest English cheese—that which sold in the English market for 24@28 cts. per pound, in g. l. contained much less butter and a higher percentage of moisture than the American cheese. The difference in moisture alone was seven pounds to the hundred weight, a very important loss to dairymen. The great point in the future manufacture of cheese was to produce a fine flavoured, mellow, rich tasting, high priced cheese from milk not particularly rich in butter. By the new system of manufacture it could be done, and immense sums in the aggregate saved annually to the dairy region. This point was new, and had not before been presented to American dairymen.

Hints About Dairy Management.

BY A COUNTRY CLERGYMAN'S WIFE.

SINCE trying a very simple plan for raising the cream in winter, I have found that I can produce fully double the quantity of butter from the same amount of milk. In our Scotch climate the weather for eight months of the year is so much below the temperature requisite for the proper separation of the cream from the milk that any plan to obviate this is of importance.

My plan is simply this:—On receiving the milk I have ready dishes just dipped in boiling water. After straining the milk into these, I place them inside other basins containing a quantity of boiling water. I place them thus in the dairy, and at the end of 12 hours renew the boiling water in the outer dish. At the end of 36 hours the cream will astonish those who have been accustomed to the cold basin plan.

A friend to whom I lately showed a large basin of milk treated in the hot water way, placed a copper penny piece on the top of the cream, and there it remained comfortably until I removed it some time after. No winter cream, after being even forty-eight hours on the milk, could bear the weight of even a silver penny.

The first week of my new plan gave me fully 4 1/2 lbs. of butter. I had scarcely 2 lbs. the previous week when the basin was cold, and no outer one with boiling water in which to place it. The renewing the hot water, after twelve hours, could be prevented by a closer fitting box being used in which to place the milk dish. I am proposing to have round boxes made either of tin or wood, and after once having boiling water in these, the milk basin sitting exactly, will prevent the air getting in to cool the water before the cream has separated thoroughly from the milk. A small plug or "screw button," placed at the side of the box, would be a good plan for withdrawing the water when it cools quickly in extreme cold, and renewed boiling could easily be substituted without disturbing the milk.

Many Mistress McClarty's managers of a dairy will say, that the trouble of this hot-water plan is far too great to be thought of. But surely what is worth doing, is worth doing well; and, now that cream and butter are so valuable, a little extra trouble should not be grudged to procure a double supply of both from the same quantity of milk.

By the hot water plan, however intense the frost, the cream thus produced is churned as speedily as in summer, and the quality is finer than when long-continued churning is necessary.—*The Farmer* (Scottish.)

SELECTING A COW.—It is sometimes the case that the best judges will be deceived. A cow of very unpromising appearance, coarse in the neck, large boned, and second or third rate milk marks generally, will now and then turn out to be first-rate, while another with these marks largely developed, fine in the head and neck, and promising every way, will prove unsatisfactory. But a failure in this case is rare. Let the head be light, the forehead broad, the horn rather thin and clear, the eye clear and prominent, the neck thin, and the fore-quarters rather light, the back straight, the hind-quarters well developed, wide over the loins, the curves deep the udder coming forward and well-shaped, the skin soft to the touch, the teats well set, not too large or too small, the tail long and thin like a whip-lash. Such a cow ought to be a good one.—*Rural N*

Veterinary Department.

Shoulder Slip in Horses.

A VERY common occurrence among farm horses in the spring of the year is what is known as shoulder slip, or as it is called in some parts of Canada, *Siccanie*. Shoulder slip consists in sprain or laceration of the fibres of the antea and postea spinatus muscles, which are situated on the external part of the shoulder. The muscular fibre becomes atrophied or wasted, in some cases to such an extent that the scapula or blade bone can be easily felt, leaving a large hollow extending from the upper to the lower part of the shoulder. It is oftenest met with in young horses, and is caused by going in an awkward manner when first put to work, or from badly fitting collars, and ploughing on rough and heavy grounds. It is also caused by circling horses when being broken. The first symptom is a slight stiffness of the shoulder, which is best seen in bringing the horse out of the stable. The muscles sprained are also somewhat swollen, and are hot and tender. The swelling soon disappears, and atrophy of the muscular fibre ensues. The heat and pain ceases; the wasting of the muscles becomes quite evident, giving rise to the depression commonly called *Siccanie*. When the external muscles only are injured, the horse has a peculiar action, owing to the contraction of the muscles on the inner part of the shoulder not being counter-balanced by the contraction of those muscles situated externally. The shoulder joint appears to spring outwards at every step; and this symptom often leads to the erroneous supposition that the joint is dislocated.

In the treatment of shoulder slip, the horse should be kept perfectly quiet and confined to his stall, which, in this case, is preferable to either a loose box or being turned out to pasture. The shoulder must be fomented with hot water twice or thrice a day, and this treatment continued for several days. When the fibres are wasted, and the process of reproduction has begun, it is encouraged by the application of mild stimulants, repeated every third or fourth day, together with gentle walking exercise and good keep. If given time and properly treated, the worst of cases will completely recover. It takes a considerable time before the muscular fibre becomes reproduced, and we must trust more to nature than to medicinal remedies.

Entomology.

The Canada Thistle Caterpillar.

It generally falls to our lot to have to discuss, in this column of THE CANADA FARMER, the demerits and wrong-doings of some hated insect foe,—to chronicle all its mischievous works, or to suggest some means of ensuring its speedy extermination, as an evil-doer too bad to be suffered to live. But lest our readers should gradually be led to believe that every insect is destructive, and therefore must be trodden under foot and crushed to death without a moment's hesitation as a meritorious act, we would turn our attention in our present issue, to one that ranks on the opposite side,—one that is actually the farmer's friend!

Every one knows how great a pest to the country the Canada thistle is, but it is not every one who knows, in like manner, that there is a caterpillar which devours immense quantities of this noxious plant. Let us see, then, what this friendly caterpillar is like, that we may know better than to kill him, when he next comes in our way. From May until September (for there is more than one brood in the year), there may be found feeding on the leaves of the Canada thistle, and other similar plants, speci-

mens of this caterpillar, either solitary, or two or three near each other. Each one spins for itself a slight web, on the upper surface of the leaf, which it draws over in such a way as to form a shelter for itself. Under this covering it devours the skin and pulp of the leaf, without touching the under skin; and when all within reach is consumed, it removes to another part, and constructs a new habitation, of larger dimensions, of course, to correspond with its own increased size. When full-grown, the caterpillar is about an inch and a half long. It is dark-brown or blackish, with narrow yellow strips along the back and sides; its head is black, and feet reddish; on each segment except the first, there are several whitish, black-tipped spines, varying in number from two up to seven, the greatest number being in the middle. The chrysalis is about three-quarters of an inch in length; it varies in colour from light grey or ashen to brown, and has three rows of golden or silvery tubercles on the sides and back. It is usually suspended from the bars of fences or other objects near the plant on which it has fed. In this state, it continues for about a fortnight in summer,—in the autumn for nearly a month,—and then comes out in the form of a beautiful butterfly, the Painted Lady, (*Cynthia cardui*, Linn.)*



The fore-wings above are tawny, with the middle almost rosy red, and spotted with black, while the tip is widely black, spotted with white; the hind wings are principally tawny or reddish, with three rows of black spots near the edge. On the under side, the fore wings are marked as above, but the red is much brighter, and the black paler; the hind wings are dappled with brown, white, and grey, and have near the outer edge a row of five beautiful eye-like spots, the two middle ones being the smallest.

This handsome butterfly is found in every part of the world, and is common in North and South America, Europe, Australia, parts of Africa, and the East Indies. In some seasons it is extremely numerous, while in others but one or two are to be seen. Last year it was very abundant throughout the greater part of Canada. A friend informed us that when travelling through a portion of the county of York last summer, he met with immense swarms of these butterflies, all proceeding westward, and forming a column of three or four miles in length; he estimated their number at some millions! A correspondent also told us that in the rear of the county of Hastings, he found the farmers rejoicing in the fact that nearly all their Canada thistles were eaten up by the larvae of this insect. In 1858 also, we remember it to have been exceedingly numerous.

Mr. Westwood, in his work on British Butterflies, states that "this is one of those species remarkable for the irregularity of its appearance; in some years occurring plentifully, even in the neighbourhood of London, after which it will disappear for several years. Indeed, instances are on record in which, owing to the vast numbers, migration has become necessary; and in the *Annales des Sciences Naturelles*, for 1828, an account is given of an extraordinary swarm which was observed in the preceding May, in one of the Cantons of Switzerland, the number of which was so prodigious, that they occupied several hours in passing over the place where they were observed."

*In this figure the upper side of the wings is represented on the left, the under side on the right, a little detached from the body.

Destruction of Insects in Orchards, &c.

M. Mellot Brule, a distinguished French horticulturist, has demonstrated by experiment, the efficacy of the powdered proto-sulphuret of iron (which has been before used for the preservation of timber) in destroying noxious and annoying insects.

The powder may be strewed over the ground, around the roots of the tree, or fixed on the surface of a collar surrounding the stem. No insect will pass it; or, if they attempt it, they are immediately killed. The proto-sulphuret of iron (black pyrites), is manufactured for the purpose of developing sulphuretted hydrogen, which is undoubtedly the effective agent in destroying the vermin.—*Cosmos*.

NOTE BY ED. C. F.—Perhaps some of our scientific friends would kindly try the experiment next summer, and let us know the result. We fear, however, that there are but few insects injurious to fruit-trees that would not avoid this preparation by simply flying over it.

The Apiary.

Management of the Apiary for March.

BY J. H. THOMAS.

Much will depend upon weather. If snow continues on the ground and the weather remains cold, but little can be done. If bees are housed and there is no doubt about their having sufficient honey, do not disturb them; but if the weather is warm, and the snow gone, or nearly so, there are several things which should be attended to. On a clear warm day, set out stocks that have been housed; and if in moveable comb hives examine each stock by lifting out each frame. See if they have plenty of honey; if some stocks are found with only a small amount, while others have plenty, and to spare, exchange combs of comb, first brushing off the bees into the hive with a wing. By so doing, weak stocks may be strengthened, while the strong stocks are not injured. If box hives are used, they should be turned up in the sun-light, and a search made for sealed honey. If there is any, it will be found near the top and in the outside combs. If none can be seen, they should be fed. Remove the hive into a warm room or cellar, and invert it. If honey in the comb can be had, lay pieces of such directly on the combs in the hive, and cover so that the bees cannot escape, but do not close up all ventilation. If liquid honey or sugar is to be fed, follow directions given in the "Canadian Bee-keepers' Guide." All comb that is mouldy to any great extent should be removed from either box or moveable comb hives, if but slightly affected let it remain. If my hives are used, drop the bottom board and clean out all dead bees and filth; contract the entrance to half an inch to prevent robbing. If any stocks are found to be queenless, which may be easily known where moveable comb hives are used, they should be given to other stocks having a queen. Select a good stand for each stock. In my opinion, the distance stocks are set apart is of but little importance, so that they have a good stand, and get the morning and evening sun, which is very necessary. If there is no water near the apiary, put some in a dish with some straws or any thing to prevent their drowning, and set near the hives. It is well also to set a dish of oatmeal, buckwheat or rye flour when they can get it, for if short of bread they will use it in preparing food for the brood. Keep an eye to all weak stocks, and see that they are not robbed. See that all old hives are well cleaned and ready for use. Those who have not yet ordered moveable comb-hives, but are intending to do so, should not delay. If three or four persons in a neighbourhood ordering hives of J. H. Thomas & Bros. would form into a club, and send in their orders together, having their hives sent to one address, it would be to their advantage, as three hives may be sent to one address for the same freight charge as one hive.

Poultry Yard.

The English National Poultry Company's Establishment at Bromley.

The following interesting particulars and illustration of this great undertaking are from the *Journal of Horticulture*.

The site has been well chosen, for the soil is very light, and the subsoil gravel. This is essential, not only for rearing early chickens, but for the health of adult fowls. It is more especially needful for carrying out the experiment now in course of trial by this Company—namely, to rear all kinds of domestic fowls in pens, without any runs whatever, avoiding the usual consequent taint and disease-engendering by the deodorising and disinfecting power attributed to dry earth. The floors of the hutches where rabbits are kept, and of the pens in which the fowls are confined, are covered about 3 inches deep with perfectly dry earth. This earth is turned over thoroughly twice-a-week, and had been unchanged when we saw it for nearly a month, and we can testify that though there were about five hundred fowls in the building, and about a dozen rabbits, there was not the slightest offensive effluvia perceptible. The earth in the pens was perfectly dry, and, even when applied close to the nose, inodorous. Whether after the lapse of three or more months, by which time it is hoped to be rendered a strong fertiliser, it will still be non-offensive, and whether the earth thus treated will be disinfecting as well as deodorising, remains to be proved.

When we visited the establishment the fowls had been little more than three weeks in their pens. They were then apparently in perfect health; but it remains to be proved whether this sanitary state can be preserved. We are inclined to fear that it cannot, and that it would have been a more salutary arrangement to have had grass runs, in

which the birds for some hours daily might have had the advantages of free exercise, air, and sun-light.

Each pen is 12 feet long, 3 feet wide, and more than 7 feet high; behind it is another compartment of the same size, with the ground covered with short litter, wetted every day, in which the fowls, six hens and a cock, may scratch whenever so inclined. The dry earth in their front pen supplies them with the dust bath so needful for keeping them free from vermin. In front of each pen, as shown in our engraving, are two boxes, each box containing two circular earthenware nests with hay in them, such as is held by the man shown in the engraving. The yield of eggs, when we were there, was very small; but, then, the fowls were moulting. The feeding-troughs are outside, in front of the pens, which facilitates the supplying of food; but the water-taps are inside.

Vines are trained in single rods against the wood work on each side of the path—a vine between each two pens—but we fear, through the roof of the building is glazed, that there will not be sufficient light to enable the vines to be fruitful. They look well, and may promote healthfulness among the fowls by helping to purify the air; but they would do the same, would have cost less, and have had the advantage of being evergreen, and consequently, ornamental and beneficial throughout the year.

The ventilation is particularly good, and the contrivance by which it is effected very simple. The ventilators are at the sides of the ridged-roof. They close by their gravity, aided by a quadrant lever; a rope attached to this lever, and pulled down, raises the ventilator, and another rope from the lever, but

there. The eggs are to be laid on shelves covered with dry earth.

A house, fitted up with rabbit-hutches, pig-styes, and six tanks for Ducks, is now forming.

In the beds about the buildings are growing cabbages, broccolis, lettuces, and other garden produce, suitable for the London market. One serious drawback is the want of water, but an artesian well and a small steam-engine to raise the water are intended.

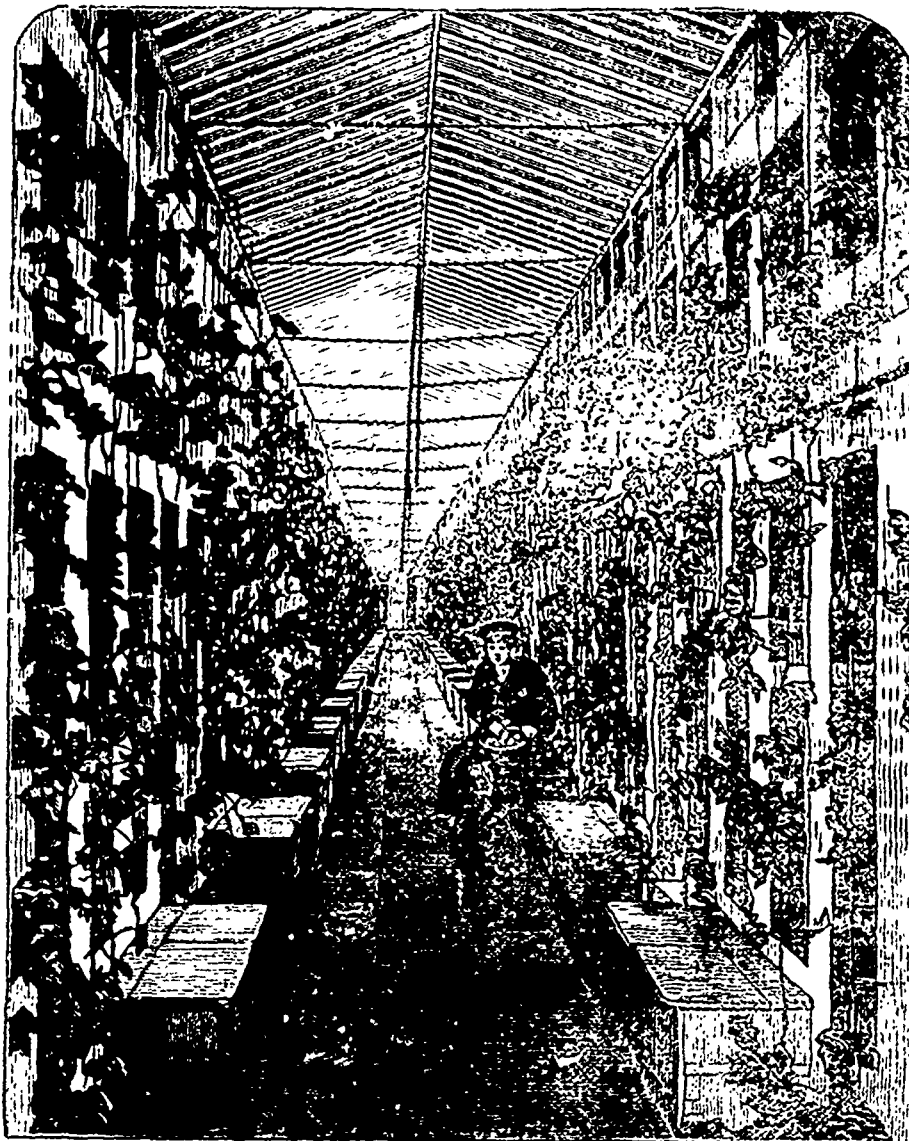
Our readers will perceive that the object the Company have in view is to utilise the manure and other refuse obtained from the poultry by applying it to the growth of vegetables and fruits. This can be done only by confining the poultry; whether they can do so and yet maintain the health of the fowls, remains to be proved. One fact is established—namely, that the dry earth acts most effectually as a deodoriser.

Mr. Geyelin also told us, that of about 150 chickens just hatched, brought to the building August 24th, only two had died, and that from being crushed accidentally. We saw many of the chickens on the 11th of September, and they were then looking quite healthy, though they had no other nursing than that from artificial mothers of wool. Mr. Geyelin seems to prefer the French breeds, the Houdan, La Flèche, and Crève Cœur, probably because he observed in France that they bear confinement well. Most of the fowls at the National Poultry Company's establishment are of those varieties, but there are also common Larn-door fowls, Brahma Pootras, Cochins-Chinas, Dorkings, and Spanish.

A GREAT FACT FOR NATURALISTS.—The patent deceptive hen's nests is one of the most ingenious contrivances of the age. The design is to deceive poultry into the speedy and liberal laying of their eggs, which is accomplished by the peculiar construction of the machine. At the bottom of the nest there is a trap-door which works on a hinge, being supported by a spring. The moment the egg is placed on this, the trap opens and lets it fall through into a cushioned

apartment prepared for its reception.—The consequence is that the bird, just as it is prepared to cackle, glances at the nest and, seeing nothing, actually reasons herself into the belief that she has not laid at all, and resumes her position on the nest in hopes of making a more successful effort.

On the first trial of this curious contrivance, before the Commissioners of Patents, to test its virtues, a singular result was effected. A large imported Russian hen was located on the nest, and left to her meditations. On account of pressing business the hen was forgotten until the next day, when, to the utter astonishment of the commissioner, and even the inventor himself, they found nothing but a pair of claws, bill, and a bunch of feathers. The mystery was explained however, on examining the chamber beneath, in which they found half a bushel of eggs.—*E.*



passed over a pulley and pulled down, closes the ventilator.

The food given to the fowls is chiefly ground corn made into a paste, with some offal meat as a compensation for the insects which they pick up when at liberty. For green food they are to have the refuse vegetables and weeds from the garden.

Tiers of fattening-coops are in course of erection in another building. There will be accommodation for about fifteen hundred fowls, six in each coop. The coops are barred in front, and the building is not to be dark.

An incubating-room, fitted up with hot-air stoves and regulators, also with hot-water pipes, and gas-heating apparatus, is also in progress. About four thousand eggs can be hatching at the same time. It is proposed that any one may send eggs to have them incubated



The Board of Agriculture and the Sheep Department of the Provincial Exhibition.

To the Editor of THE CANADA FARMER :

Sir,—I would like, through your columns, to call the attention of the members of the Board of Agriculture to the necessity of making it publicly known what rules they intend this year to adopt in order to prevent sheep, that have been unfairly shorn, being allowed to compete at the next Provincial Fair—if they have any intentions in that direction. In 1861, they stated in their Rules and By-laws that a committee would be appointed to inspect the sheep offered for competition, with power to throw out such as were not fairly shorn; but that committee, if it was ever appointed, did not carry out the law, and the consequence was that sheep that had not been shorn that year, were allowed to compete and were awarded prizes. In some of the classes the judges used their own discretion, and threw out such as were unfairly shorn; but in other classes they were allowed to pass. In 1865, the rule that all sheep exhibited must have been shorn bare after the first of April, appeared in the prize list; but the list and the rule were not issued till long after shearing time, so that exhibitors did not know what the rule would be, and consequently while some of the sheep shorn at London were honestly and fairly shorn, many were not; and sheep that had been the most unfairly shorn, won prizes there.

Now, I hold that if the Board intend to put any restrictions upon the time and manner of shearing for exhibition this year, that intention should be made known in due time, before the season for shearing arrives. And unless they mean to enforce the rule uniformly and impartially, the sooner they give up those pretensions to restriction the better, both for the credit of the Board and of exhibitors; for it is only a mockery to publish rules and not abide by them, and is manifestly unjust to honest competitors. Whether the Board or any committee is competent to decide in September whether a sheep was fairly shorn in April or not, I leave for themselves to say.

AN EXHIBITOR.

The Hawthorn as a Live Fence.

To the Editor of THE CANADA FARMER :

Sir,—In your issue of February 15th, 1866, I notice a letter from C. Yale, Esq., St. Catharines, on the above subject, in which he advocates the adoption of Professor Buckland's suggestion, viz:—"Making the English Hawthorn Hedge a substitute for our present snake rail-fence."

No one can question the benefit. As to the feasibility, I beg to corroborate the testimony of Professor Buckland and Mr. Yale.

English Hawthorn Hedges have been raised, have been trimmed, and made a perfect wall of living green, securing the usefulness of a fence with the beauty of a hedge, in this vicinity. The difficulty we experienced in raising the hedge was very little; but unfortunately a Yankee Rochester fruit-tree seller came along with some fruit-trees. My father bought some. They had the borer in. The borer has killed almost the whole orchard. It got into the two hedges of English Hawthorn, and killed them also, so that they had to be cut down. The destruction of the orchard and the hedges arose from the same cause, and if there be any argument in the one case, the same argument will hold good for not planting any trees at all.

From this experience, learn two lessons:—

1st. Plant your English Hawthorn Hedge, and take care of it, and trim it, and it will grow.

2nd: Never buy fruit-trees, or anything else, from a Yankee-Rochester fruit peddler, or the hedge will not grow much longer. Yours, &c.

ROBT. C. JONES.

Rockford, Brockville, Feb. 20th, 1866.

HORTICULTURAL QUERIES.—"Cultus" solicits information from practical nurserymen, on the following topics:—

1. Has the Dwarf Walnut (*Juglans praeparuriensis*) been tried in Canada; and if so, with what success? Is it kept in stock by any nurseryman in the Province?

2. Has the Mountain Ash been tried as a stock for the Pear by any horticulturist in the Province? If so, how did it succeed?

3. Can you inform me what the Mahaleb stock is?

GATE BALANCE: REPAIRING BOARD FENCES.—"Samuel Hall," inventor and patentee of "Hall's Portable Straight Fence," communicates the following: "My invention of a Gate Balance is to mortise a piece of timber into the back side of the gate post, as a counter balance. Its size and length in proportion to the gate. It will not be in the way, it hangs along the side of the fence. By putting a weight on the end of it when the ground is wet it will bring the post upright. When setting posts sharp the ends so that if the frost lifts them the weight of the gate and the balance will set it down, if it is kept upright. This is a valuable invention to prevent the breaking of gates and hinges.

"My mode of repairing board fences when the posts are rotten, or were too small to stand up. First remove the earth 8 or 10 inches deep from both side of the posts; then right them and get sawed or split wood 3 or 3½ feet long, and wider than the old posts, drive one in each side of the posts, then nail two pieces from one to the other on each side of the posts, above the first or second boards of the fence, or put wire round them. I have seen so many fences falling down that I believe it a duty to give that which will be a benefit to many, though it may prevent some of a present need of buying my invention."

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, MARCH 1, 1866.

Agriculture of Maine.

The recently issued Report of the Secretary of the Maine Board of Agriculture, forms a neat volume of over 400 pages, abounding with useful information and valuable suggestions. Most of the discussions on important agricultural and horticultural questions, which the volume contains, bear satisfactory evidence that those who took part in them really had something to say, and knew how to say it. We can, of course, do little more within the limits of a short article, than give a bare outline of the principal topics which we find treated in the Report.

The minutes of a meeting, at which the propriety of imposing a tax on each dog kept in the State was discussed and warmly supported, occupy the first place in the transactions. A suggestive, but slightly bombastic essay on "Improved Agriculture" follows. The use of "Salt as a Fertilizer" is then considered. Several members had seen good effects follow the use of salt on barley and mangold crops. Others had found it to be of great service to plum trees—one party "had never seen a black knot on any of his trees, where he had used salt." Some

fifteen pages are then devoted to the "Culture of Small Fruit"—in which we find nothing particularly worth quoting. "Feeding Fish Offal to Sheep" is the heading of the next paper. The writer states that the sheep is "an omnivorous animal, living not upon vegetables alone, but greedily eating and thriving upon animal food as part of its diet." The carnivorous muttons, we are informed, are in no way fastidious. They are perfectly indifferent whether the fish be fresh, or rank and stinking. A discussion followed the reading of this paper, in which the Secretary is reported to have said: "Mutton, fed in this way, might be too high flavoured to be agreeable." This is putting it much too mildly. He might have safely stated, that mutton fed upon fish, offal, &c., would be little better than carrion.

We are next treated to an instructive essay on the "Influence of Manufactures on Agriculture." The writer well says—"Agriculture, manufactures, and commerce comprehend all the multifarious branches of industry prosecuted among mankind. Their varied interests are one and inseparable, now and forever. They are not antagonistic, but so entirely entwined and dependent upon each other, that it is impossible to benefit either without advancing the interests of each, or to injure one without embarrassing all."

The Report of the Committee to whom was referred the question, "What have been the most profitable branches of husbandry the past year?" then follows. It states that "hay crop of your State, is by far the most valuable and important crop that we produce." And again, "We have \$12,215,790 as the value of the hay crop in this State the past season, an amount three times the value of all the corn, wheat, rye, barley, and oats that are produced in the State."

Next we have an able paper on "Bones and Superphosphate of Lime;" from which we learn that the discovery of the fertilizing properties of crushed bones was due to an accident. The cutlers of Sheffield, who used bones largely in the manufacture of handles for knives and forks, threw the refuse of their turnings, scrapings and planings into large heaps, which remained undisturbed for a long time. This refuse was carted away and spread on grass land, when its fertilizing effect astonished the natives.

Nearly fifty pages are then occupied by the subject of "Aquaculture"—which, for the present, at least, we must leave unnoticed.

"Fruit Culture," with some very indifferent cuts, follows. Respecting the Curculio and black knot pests, the writer knows no better method of destroying the former than by shaking the insects from the trees, and summarily destroying them. Of the latter it is remarked, "There is a strong probability that the disease is a constitutional one, and that it affects the whole circulation." Removal of diseased portions, and amputation of limbs, when necessary, are recommended. Some of the common errors in grape culture are noted as follows:—Neglect of pruning and training during the earlier years of its growth;—allowing to many upright canes;—failing to thin out the weaker shoots from the spurs early in the season; and neglect of properly thinning out the fruit. In a paper on "Beet Root as a source of Sugar," the writer sagaciously remarks: "Not much success can be expected from making sugar from beets in small quantities. Experience abroad has shown that nearly every factory which used less than two thousand tons of roots, has, one after another, given up the business." The writer states that the "White Silesian" is the best variety for the production of sugar. It succeeds best in a mellow, deeply cultivated loam; and is an ameliorating rather than exhausting crop, as it derives much of its support from the atmosphere. It forms a succulent and nutritive food for stock, and in many districts rivals the mangold in popular estimation. Several other papers of less importance close the Secretary's Report. The second division of the volume is occupied with Abstracts of Returns from District Societies, to which we may probably advert at no distant day.

Rinderpest.

The failure of vaccination as a preventive of the fearful cattle pestilence, has been announced by Dr. Marchison in a letter to the London Times. He says:

The points of resemblance between cattle plague and small-pox are so striking that certain observers were led to hope that vaccination might protect cattle from the prevailing disease. The experiment, I believe, has now been fairly and fully tried, and, although the first accounts appeared favourable, there is sufficient evidence that vaccination confers no permanent protection from the plague. It is well that this fact should be generally known by publication in the Times. Rigid isolation and the suspension of all movement of living cattle must still be the preventive measures on which we mainly rely.

This plain statement—from the eminent practitioner who was the first to bring vaccination as a prophylactic into notice—will surely remove the last pretext for any further temporizing measures on the part of the Government. There should now be decided action. The dire harvest of death ought to be arrested by the only means at command. Infected animals should at once be stricken down with the pole-axe and deeply buried, and the spread of the contagion would necessarily cease. This is the simple and serviceable ground which has all along been held by Professor Gamgee. Had his energetic counsels been adopted last year, the ravages of the deadly rinderpest would unquestionably have been stayed long ago. Notwithstanding the derision that was showered upon his "sensational" predictions by certain professional brethren, the "quack," the "alarmist," the "humbug" of 1861, has proved but too true a prophet. It is something in such an emergency, and amid such a tumult of professional opinion, for any man to have been right, and to have ultimately silenced and convinced his opponents. "This," says the *Medical Journal*, "is what Professor Gamgee has done, and it is but just that the credit he deserves should be given to him."

The weekly tabular returns issued by the Privy Council do not impress every one with their full significance. The effect produced on the public mind by a disease that "incubates" before declaring itself in symptoms, which is irregular in the duration and intensity of its attacks, and which is disseminated with varying rates of speed, must necessarily be of a fluctuating nature. It is only when we group the weekly returns into monthly periods that we fearfully uniform rate of increase of the terrible scourge is exhibited. Thus arranged, the grim statistics, up to January 6th, are full of awful interest and of deadly warning.

The 12 Census Divisions, Scotland included.	Four weeks ending Nov 11th	Four weeks ending Dec 9th.	Four weeks ending Jan 6.
Totals	7934	15 363	29 123

For a round statement, it is sufficiently accurate to say that the above totals are in geometrical progression, doubling every month. This aspect of the subject is far from comforting, but we gather from our recent British exchanges that there is reason to hope that the danger is now fully appreciated, and that something like uniformity of action will be promptly established.

Various opinions as to the nature of the disease are still hazarded by members of the legal profession. Dr. Letheby, in a report lately presented by him to the City Commissioners of Sewers, speaking of the cattle disease, says: "It is living germinal matter, so minute that its particles are probably less than one-hundred-thousandth of an inch in diameter. A single infected animal placed in a public market, or permitted to travel along the highway, may be the means of unlimited contagion."

On the other hand a surgeon, in a communication to the *Manchester Examiner*, propounds the theory that "the Rinderpest is a combination of scarlatina maligna and erysipelas," two amongst the most fatal diseases to which the body is subjected, and requiring treatment very different to what has already been practised both as a preventive and cure.

The Iowa Farmers' Club on Fences.

We learn from the *Iowa Homestead*, that at the recent meeting of the "Legislative Farmers' Club," the following discussion took place, respecting fences.

Mr. Tracy had great confidence in the Osage Orange—thought it the best fence that could be made. Next to the Osage he ranked the Cottonwood, and thought that in five years it might be grown into a fence. He has fenced his farm on one side with Cottonwood and Willow.

Mr. Palmer said, we want to find out what will make the cheapest, quickest and best fence. It is difficult to dwarf Cottonwood. It is a very rapid grower, and rapid growing plants are often short lived. He has tried weeping willow, but failed to get a fence, the winter killed it. Maple willow will make a wind breaker, but cannot be kept in shape to make a fence. He had tried the Osage and believed it would do. He would not put more than one thousand plants to forty rods, and can purchase them for twelve dollars per thousand. His practice is to let the plants grow two years before trimming them. Leaves are the lungs of plants, and you must not touch the leaves nor prune, until the roots of the plants are well established in the ground. All summer pruning has a tendency to dwarf. Prune in the fall, the winter, or the spring, but never in the summer, unless you want to dwarf, and that should not be attempted until the roots are well established in the earth. He has two hundred rods of Buckthorn hedge on his farm, and it makes a reliable fence. The plant is not so rapid a grower as the Osage. Six years will make a Buckthorn fence. It makes a dense and compact fence. A thorny plant is necessary for fencing purposes. Honey locust is not to be relied on. Barberry makes a good inside fence. It bears a valuable fruit good to use, and beautiful as an ornament if left on the plants in winter.

Mr. Buck said, Cottonwood will do for groves or ornamental planting, but will not go for fencing. Every tree of it will require the land for the distance of a rod around it. Osage Orange is just the thing for a good fence. The seed can be raised here. He knows men who raised a hundred bushels of the apples last season. He agrees with Mr. Palmer in relation to pruning.

Mr. West would not advise any one to be in a hurry purchasing Osage Orange seed this coming spring. The war is now over and there will soon be plenty of good seed. He would sow the seed about corn planting time—say from the 1st to 15th May. He would prepare the ground well and sow the seed where he intends the hedge to grow. Before winter the row of young plants should be well mulched on each side with straw or something similar, to the height of six or eight inches, but not so as to cover the plants. In the spring, spread the mulching on each side; this will keep the ground moist and kill the weeds. Let the hedge grow for three years, then partially cut the plants and lop them over, then trim for two years, some higher each year, and by the sixth year you will have a good fence.

Mr. Thompson, said he has one piece of Osage fence ten years old, and it is to-day an excellent fence from top to bottom. He would plant the hedge at the same time that corn should be planted. Let the plants be taken up in the fall, kept moist till spring, then put strong plants near each other, and not weak and strong plants side by side. Buckthorn is not a native of Iowa, it is brought from New Jersey, and some parts of Indiana.

Agricultural Intelligence.

Cheese Factories.

There are says the *Rural New Yorker* in twenty-nine counties of the State of New York, 425 cheese factories. Oneida contains 80; Jefferson, 78; Otsego, 35; Madison, 31; Lewis, 32; Herkimer, 31; Oswego, 21; Chenango, 19, &c. The aggregate summary of these 425 factories is as follows:—

Cost of buildings and apparatus	\$802,931
Persons employed, male	705
Persons employed, female	731
Average number of cows	128,526
Pounds of milk used	507,077,242
Pounds of cheese made	32,663,014

The reports of 133 factories for the year 1861, present the following aggregates:

Cost of buildings and apparatus	\$378,157
Persons employed, male	258
Persons employed, female	362
Number of cows used	67,034
Pounds of milk used	187,822,838
Pounds of cheese made	18,042,435
Average number of pounds of milk to one of cheese	10,915
Pounds of milk to a cow	2,802
Pounds of cheese to a cow	263
Value of cheese at 10c. per pound	\$3,789,637
Average value of cheese to a cow	\$56.75

In 1861 cheese was sold from 10 to 20 cents per pound, the average price being about 20 cents.

The quantity of salt used to 160 pounds of cheese was reported from 377 factories. In 101 of these, the amount used was 3 lbs.; in 87, 2½ lbs.; in 51, 2¼ lbs.; in 40, 2-7-10 lbs.; in 19, 4-5 lbs.; in 9, 2 lbs.; and in 6, 5 lbs. The least quantity used was 3-10 of a pound. In Limburg cheeses, the quantity was much greater, ranging from 14 to 17 pounds.

The following table will exhibit the amount of cheese produced in five leading counties:—

Counties	Pounds of Cheese	Value.
Oneida	3,107,019	\$1,621,403 60
Jefferson	3,357,540	671,509 20
Madison	3,420,057	684,011 40
Herkimer	3,022,263	618,453 60
Lewis	3,171,721	634,344 20
Total	21,148,611	\$4,229,721 00

Illinois Wool Growers' Association.

The following resolutions have passed the Executive Committee of the Illinois Wool Growers' Association:

Resolved, That we are opposed to the renewal of the reciprocity treaty with Canada, and the British Provinces of North America.

Resolved, That on account of the heavy taxation (including the U. S. income tax.) under which we labor, we are opposed to the importation of any wools duty free.

Resolved, That it is due to the American wool grower that he be protected from the ravages of dogs.

Resolved, That, it is our opinion, such protection can best be afforded by a National tax on dogs, thus tending to the extermination of many of them, while affording a revenue to the government.

Mr. William Burt, Teviotdale, Minto, sold a hog in Guelph market last week which weighed 633 lbs. It realized over \$50.

A new material for paper making has just been discovered in France. With the root of lucernes M. Caminade has succeeded in making a pulp which can be employed jointly with rags in the manufacture of paper, and even separately.

GROWTH OF FLAX.—The *Markham Economist* says that between fifty and sixty acres of flax were grown within an area of some eight or ten miles of Markham village during the year 1863. The crop generally was a good one, considerably better than can fairly be considered an average yield.

THE HOG CROP IN THE STATES.—The *Cincinnati Gazette* of the 26th ult. says that it is yet too early to decide conclusively the crop of hogs. Packers, however, are confident that the total packing will not exceed 1,500,000, against 2,400,000 last year, and on this faith they are holding their stocks.

TREES ON THE PRAIRIES.—A Mr. Dunlap, of Champagne, Ill., in seven years has grown a forest of silver maples, some of which are 25 feet high. Other persons at the West are growing forests of pine, walnut and other trees. The farmers of the West will do well to commence the growth of forests upon large open prairies as soon as possible.

British Cleanings.

FINE NAMES.—A Bristol paper advertises a meeting of "milk producers" about to be held. Strange to say, not a word is said about the cows, the milkmen intending to have the meeting all to themselves.

A NOBLE EXAMPLE.—*The Farmer* (Scottish) states that "one of the tenants of Lord Bagot, who has lost several head of cattle from pleuro-pneumonia, has been presented by his Lordship with a receipt in full for his last half year's rent."

FIRE-PROOF PAINT.—The following recipe for fire-proof paint, is recommended by an engineering firm in New York, and indorsed by insertion in a good English authority, the *Building News*:—1 lb. best blacklead, 1 lb. of fine gilders' whiting, and ½ lb. of Quarterman's patent dryer—the whole ground together finely with linseed oil, and then thinned for use with linseed oil alone, and applied like other paints.—Wood thus covered will not take fire from sparks.

STILTON CHEESE.—A correspondent of the London Field supplies the following information:—"The origin of the name of these cheeses is not from a town, but from Mrs. Stilton, housekeeper for many years at Belvoir Castle, and afterwards to George IV. They were made best (after her especial recipe) in the Trent Valley. Stilton, the town, made an *ad captandum vulgus* use of its name to catch purchasers of these delicious cheeses."

THE SUEZ CANAL.—We gather from the correspondence of an English exchange that the Suez Canal has been completed, and that "nothing now remains but to give to the canal all the width and depth necessary to ensure a free passage for large ships—to finish the dykes, ports, basins, and dockyards; but all that is an affair of time only, and time will find the means of fully completing a work so valiantly commenced, so laboriously prosecuted, and so skillfully disengaged from all the difficulties, which paralyzed it at the outset."

HIPPURHAGY IN FRANCE.—We are informed by a British exchange that "a Paris butcher has obtained authority to open a shop for the sale of horse-flesh, on the condition that he will construct a special slaughter house for the horses, the flesh of which is to be sold as food. The slaughter house will be placed under the superintendence of an inspector specially appointed for that purpose. The opening of the shop is to be celebrated by a grand popular banquet, at which horse meat will form the principal ingredient of the dishes."

QUEEN VICTORIA'S MANGLE.—An English paper says:—"The mangle in operation at the royal laundry is undoubtedly the most perfect and expensive machine of the kind ever made. The bottom and upper plates are of solid glass; the former is 7 feet in length, 3 feet 9 inches in width, and ¾ of an inch in thickness, and it rests upon a slate bed. Some idea of the duty it has to perform may be gathered from the fact that, when the Queen is in Windsor, twenty-four baskets, averaging one hundred and fifty pounds each, are sent to the laundry daily, or 3,600 pounds, equal to a ton and a half of solid linen."

THE SILENT COAL SCUTTLE.—We learn from *Bell's Messenger* that "Mr. John Murray, of Whitehall-place, suggests, for the annoyance caused to invalids by the act of putting coals on the fire, a very simple remedy. It consists in wrapping the coals in paper bags, and placing them quietly on the fire with the hand, when the bags quickly ignite, and leave the coals to be distributed noiselessly over the fire. Bags of the required size, holding from three to five pounds of coal, may be purchased for a mere trifle. The inventor says he has for many years tried this plan with complete success, in the houses of himself and friends."

A ONE-LEGGED CROWD.—The following is from the Metropolitan correspondence of an English local paper: London is a queer place. To-day I was attracted to a spot near Holborn where a large crowd of persons were assembled; and what was my surprise, however, to find they were all one-legged men! It appears that notice had been given that upon this day a certain shop would be open for the sale of odd boots and shoes, for a nominal sum, and the placards were headed "Good news for one-legged persons." I did not count the number I saw around the shop, but I think there must have been at least 500. I went past the same place later in the day, and still there was a one-legged crowd—not that the customers had been disappointed. I remained waiting for a chance. No; the first were served, and still there were others arriving. I had the curiosity to ask the shopman in the evening how many boots and shoes he had sold, and he told me over 3,000. Where on earth could you get such a number of one-legged persons but in London!

ENCOURAGING TO PATRONS.—Lord William Lennox relates the following incident as having occurred at Lord Shaftesbury's examination of a girls' school:—Just as the noble lord was about to take his leave, he addressed a girl somewhat older than the rest, and among other things inquired, "Who made your body?" "Please, my lord," responded the unsophisticated wench, "Betsy Jones made my body, but I made the skirt myself." Another charity scholar, under examination in the Psalms, was asked, "What is the pestilence that walketh in darkness?" "Please, sir, bugs."

TO MAKE SUPERPHOSPHATE.—A correspondent of the *Irish Farmers' Gazette* wants to learn "the best method of making superphosphate, with proportion of bones and acid." The editor gives the following directions:—"Saturate the bones with as much warm water as they will absorb, without running off; open the heap as if for making mortar; pour on the sulphuric acid, in the proportion of ½ ew. to 1 ewt. of dry bones, and mix the whole well up; make into a heap, and cover well with fine, dry earth, turf-mould ashes, or saw-dust; leave it to digest for a week or ten days, and then mix some of the above drying stuffs, to absorb the superfluous moisture and render it of easy distribution."

FEEDING SILKWORKS ON OAK LEAVES.—A British exchange supplies the following:—"The silk husbandry societies in France have, for the last three or four years, paid great attention to the breed of worms which feed on oak leaves, and the result is reported as satisfactory. The breed has been propagated with great success in several departments. It is announced that a joint-stock company is about to be organized on a large scale for extending the breed of this silkworm, which comes opportunely to replace the old silkworm, whose destruction by disease has for the last ten or fifteen years, caused so much distress and suffering in the silk-producing departments in France."

SWEDEN OR MANGELS FOR FEEDING FAT CATTLE.—The following queries and answers are from a recent issue of the *Irish Farmers' Gazette*:—"J. H."—1 Which is best for finishing off stall-fed heifers, swedes or yellow globe mangels? The cows are getting 7 lbs. a day of barley meal, crushed oats, and oil cake, all mixed together. Ans. Up to the end of March or early in April, swedes are best; after that mangels are best.

2. Which is best for ewes, swedes or yellow globe mangels? How soon before yearning time should they be given? or whether sliced in troughs or thrown whole on the ground? Ans. Ewes in lambs should get none or very little of either. A short time before yearning, say a week or ten days, they may get a very limited supply. The swedes are best till the end of March, after that give the mangels. Give the roots sliced, and scatter on the grass in small quantities daily. If given otherwise, and too plentifully, there is danger of abortion or apoplexy."

NOVEL PREVENTION OF CATTLE PLAGUE.—An English exchange contains the following:—"Mr. Jarvis, of Lineal, near Ellesmere, whose fields adjoin those of Mr. Bright, who has lost sixteen head of stock by disease, has adopted a novel prevention to infection. He has dug holes, each eight feet deep and three yards wide, in which he has placed his cows, two in a hole, and has lightly covered them with brush and straw. To each hole he has made a gangway, down which to convey the stock, and his beasts he regularly feeds with turnips and hay. Mr. Jarvis' object in all this is to keep the cattle out of the infected air, and so far (although the holes are in the next field) to one infected he has been successful. And another melancholy satisfaction Mr. Jarvis has, which is that if he should die there, the graves are all ready. In 1816 cattle were in some places buried up to the neck in mud, as a preventative or cure, but it seems an odd remedy to dig graves to prevent death."

AN ANECDOTE OF CHOLERA.—The London correspondent of the *Doson Commonwealth*, discoursing on the prospects of the cholera, tells the following anecdote of Thomas Carlyle:

"When the cholera was raging at Dumfries, Scotland, a little over thirty years ago, to such an extent that every third person was seized, Mr. Carlyle, who was residing near by at Croisgenputtock, called his domestics together and addressed them as follows:—"It is indisputable that the cholera is raging near us. It turns people blue and kills them. It may come here and kill us. It is a comfort to know that the worst it can do is to kill us. All we have to do is to go on, each of us doing his other proper work, and avoiding those things which are conducive to cholera—chief of which is the fear of it. Therefore, if my authority passes for any thing, the word cholera will not again be mentioned in this household." All were made stronger by these words, and the cholera passed by them."

CONSERVATORIES AT KEW AND CHATSWORTH.—We learn from an English exchange that "the dimensions of the new conservatory in the pleasure grounds at Kew are as follows:—Centre—length, 212 feet; breadth, 137 feet; height, 60 feet. Octagons—each, 50 feet in diameter. Wings (not yet built)—length, 112 feet; breadth, 62 feet. Total, when complete, 582 feet long, and covering a superficies of 1½ acre. Length of pipes, 3½ miles. The length of the conservatory at Chatsworth is stated in Mr. Intosh's 'Book of the Garden' to be about 282 feet; its breadth, 120 feet; height, about 60 feet."

A WELL-MERITED TESTIMONIAL.—We learn from our British exchanges that on the retirement of Mr. Hall Maxwell, from the Secretaryship of the Highland and Agricultural Society of Scotland—a post which he has most efficiently filled for upwards twenty years—a testimonial consisting of "one thousand pounds and a handsome silver epergne and candelabra in the form of an oak tree, with six branches," was presented to that gentleman, by the Duke of Buccleuch, on behalf of the Society, at its recent meeting. The epergne bore the following inscription:—"Presented, with other Articles of Plate, and a Purse of One Thousand Sovereigns, to JOHN HALL MAXWELL, of Dargavel, Companion of the Bath, by 820 Members of the Highland and Agricultural Society of Scotland, in grateful appreciation of the zeal, energy, ability, and success with which for twenty years he discharged the duties of Secretary of the Society. 1866."

AGRICULTURAL EXHIBITION IN AUSTRIA.—*Bell's Messenger* contains the following announcement:—"The Austrian Ambassador in London has informed her Majesty's Secretary of State for Foreign Affairs that it is the intention of the Imperial Society of Agriculture and Rural Economy at Vienna to hold in that capital an exhibition of animals, produce, machines, and instruments relating to agriculture and plantations. This exhibition will take place between the 17th and 31st May: it will be international as far as regards machines, instruments, and tools; and medals of silver and bronze will be awarded to the best specimens; the jury for the distribution of these prizes being partly composed of foreign jurors, from the various countries which may take part in the exhibition. The Austrian Government have taken this exhibition under their patronage, and they express a hope that foreign countries will be fully represented thereat; and that the department of machines and instruments relating to agriculture and plantations will present a complete collection, not only those used in Austria, but also of the products of foreign countries."

IS A MARE BARREN AFTER BREEDING A MULE?—The following query recently appeared in the *N. B. Agriculturist*:—"I have bought a mare with a mule colt, and I have been told that no mare will breed with a horse after having had a colt to a donkey. Will they, or will they not?"

To which the Veterinary Editor replies:—"There is no reason whatever why your mare should not breed again either with a horse or donkey. Canaries we know breed perfectly well with their own kind after having paired with linnets. The notion that the mare becomes barren after breeding with the ass probably originates in the same error as that which has given rise to the idea that a woman of any of the savage or aboriginal races of America, Australia, or India, who has had fruitful intercourse with a European will not afterwards bear children to a man of her own race. This is contradicted by more recent and careful observation."

MOONLIGHT AND DISEASE.—An English exchange says:—"The moon's brightness is evidence of the absence of clouds and of condensed vapours in the atmosphere. Such circumstances are highly favourable to the radiation of heat from the earth, and, in fact, they produce what are known as early frosts. As the heat radiates from the bodies of men or of animals sleeping in the open air at such periods at a rapid rate, paralysis is not unfrequently induced, or the limbs may become frost-bitten. In India this law and fact are well known, and turned occasionally to useful account in wine-cooling, &c. Similar things occur with regard to vegetable productions. Turnips are frozen and plants milled by the rapid radiation of heat in a clear atmosphere and under a full moon, whilst the exhalation of solid gases from decaying animal and vegetable substances is expedited in proportion. We do not assert that the moon is the active agent in effecting these consequences, for its brightness perhaps but indicates the existence of an atmosphere highly favourable to their development. Would it not be well to consider duly these circumstances, and to guard cattle against this source of evil? Cattle or sheep when protected from radiation escape chills which are the forerunners of disease and death."

The Household.

Homedale Farm.

GARDEN PLANS.

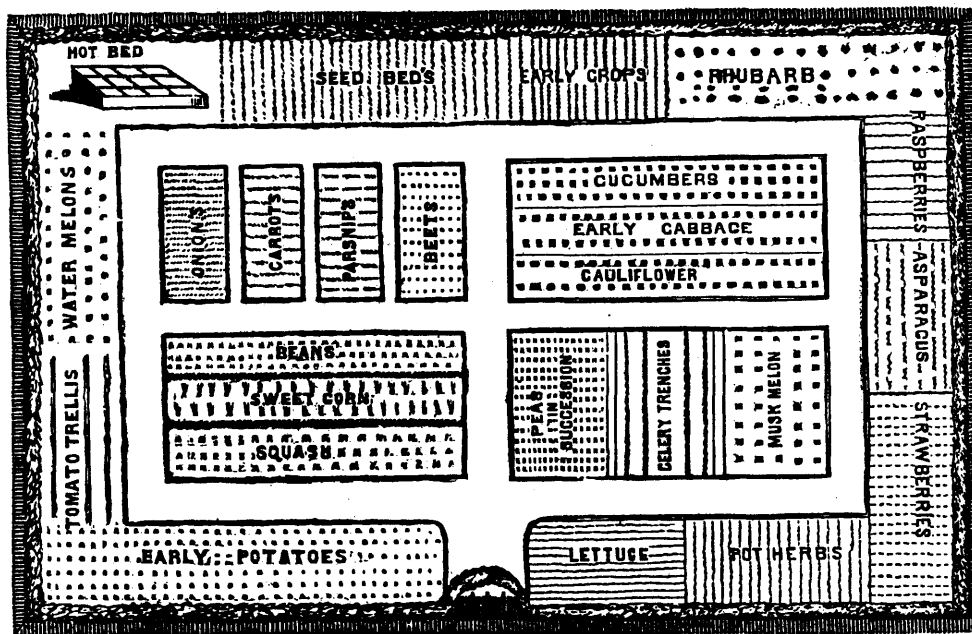
ALMOST the first thing the young Perleys did on alighting from the conveyance in which they rode to the farm, was to scamper off, headed by Charles, to take a look at the hot-bed about which they had heard so much. Soon half a dozen curious faces were peering into it, and the enquiries "what's that, and that, and that?" were eagerly put to the eldest of the group, who found himself somewhat non-plussed, for with all his recently acquired knowledge of gardening, he could only identify with certainty, a few of the commoner plants, such as radishes, lettuce, and cabbage. The contents of the hot-bed were in a flourishing state, thanks to Mr. Perley's vigilant supervision, and Peter's attention to the orders given him, from time to time, about watering, admitting fresh air, and maintaining a proper temperature. A thermometer had been hung on the back wall of the hot-bed, and he had been instructed how to keep the right degree of heat. On warm days, the plants had been treated to plenty of air, and they were almost hardy enough to do without the lights altogether. They were well grown, and did not look at all spindly and weak.

After a hasty survey of the hot-bed, and of things in general, the children made their way to the house, Lucy exclaiming that the hot-bed was full of nice plants, and Charles informing his mamma, with an air of quiet pride, that she might expect soon to have radishes and lettuce for the table. "We must get some garden ground ready very shortly," said Mr. Perley, "for a number of the hot-bed plants will need to be transplanted before long." The first and most urgent duty, however, was to get things put to rights in the house. All hands busied themselves about this,—a portion of the furniture and necessaries for immediate housekeeping having been, with prudent foresight, sent on, so as to be ready for the arrival of the family. The work of unpacking and arranging went briskly forward, and by bed time the new house, though smaller and humbler than the one they had left, really looked very home-like. The family had a treasure in their maid Mary, who, having lived with them for several years in Hamilton, had come with them to the farm, and with a lively interest in the new arrangement, did her best to make matters comfortable. So by the joint endeavours of all, it was astonishing what rapid progress was made toward "getting ready to live" at Homedale.

Next day, among the first subjects of conversation, the location, size, and laying out of the garden were discussed. "We must aim," said Mr. Perley, "to grow everything that we need or can use to advantage. It is quite possible for farmers to have as good a supply of nice fresh vegetables and fruits in their season, as well-to-do city people, who go to the market and buy them. Indeed they ought to be better furnished with these things, because they have plenty of land, manure, and implements, and can, if they manage well, do a great deal of their garden-work by horse-power instead of hand-labour." "Did Mr. Turnberry have a good garden, papa?" asked Lucy. "He had an apology for one," said Mr. Perley, "and you can see traces of it near Charley's hot-bed. There are some straggling currant-bushes, a few herb roots, with here and there patches of mellow soil, where a few onions, beets, cabbages, and cucumbers were grown last year. The currant-bushes have been eaten down by the cows, and they are quite choked with grass. The herbs, too, are matted round with turf?" "Are the currant-bushes any good?" enquired Charles. "They are not worth much," replied Mr. Perley. "They must be dug up and separated. The old scrubby bushes may as well be burnt, but the young shoots can be trimmed and replant-

ed." "I don't think the people that used to live here cared about flowers," said Lucy. "There is a clump or two of lilac bushes," replied her papa, "and if you will look outside the kitchen windows, you will see that they had some scarlet-runners and morning-glories. Perhaps, too, they had some house-plants. I dare say Mrs. Turnberry and her daughters loved flowers, but they had a great deal of work to do in-doors, and Mr. Turnberry saw no use in such things, and wouldn't spend time or money over them. If he had encouraged and helped them, very likely they would have had quite a nice little ornamental flower-garden and shrubbery round the house." "How much pleasanter the place would look with a lawn, some shade-trees, flowering shrubs, climbing roses, and flower-beds around it," remarked Mrs. Perley. "It would be easier to work hard in a house that had beautiful surroundings. A look out of doors would be relieving, and in warm weather when the doors and windows were left open, the fragrance of the flowers, and the music of the birds would be so agreeable and cheerful." "It is the duty of parents to make home attractive," said Mr. Perley. "One way of doing this is, to pay some attention to outside appearances. A kind Providence has given us the means of rendering our dwelling tasteful and commodious, but the plainest cottage in

to run, and even pigs occasionally, as they will destroy insects and eat up fallen and unripe fruit. The best place for the flower-garden is around and in front of the house, and beds may be cut out of the green sward, and mixed in with the shrubbery. But the fowls must be kept out of the flower-garden, as well as the vegetable garden, or they will do mischief." "How can the fowls be kept out?" asked one of the children. "Can't they fly with their wings?" "They can," said Mr. Perley, "but a good fence of palings, or of tight boards, with points on the top, will keep them out. The flower-garden should have a picket or paling fence, and the vegetable garden a close fence, or what would be still better, a live fence." "A live fence," exclaimed Lucy, "why, papa, what's that?" "It is," replied Mr. Perley, "a fence made by planting very young trees closely together, and afterwards pruning and clipping the branches, so that they grow strong and thick. There are several sorts of trees that make a good hedge. The hawthorn is used for the purpose in England, and sometimes the holly. In this country but few persons have succeeded with the hawthorn, but the buck-thorn does very well, and for an evergreen fence, the hemlock, white cedar, and Norway spruce are found to succeed admirably. But we cannot get a live fence without waiting for it



the country may be made to look beautiful by means of climbers, trees, and other natural adornings, which, like 'good words, are worth much, but cost little.'" "I should like to have a garden of my own," exclaimed Lucy. "So should I," said the rest. "Well, you shall," replied their papa. "We will lay out a curved walk with a border outside of it, and you shall each have so much to take care of. But beside that, you must help all you can in weeding and keeping in order the rest of the ground. I and the boys will look after the kitchen-garden, while Mamma and the girls must take care of the flower-garden, when it is once laid out." "What is a kitchen garden, papa?" asked George, a bright, little boy, some nine years old. "The kitchen garden," replied Mr. Perley, "is so named from its being the place where vegetables of all sorts are grown for the table. As they go first into the kitchen to be cooked or washed, the spot where they are cultivated is called the kitchen-garden." "Can't everything be grown all in one garden?" enquired Charles. "Yes," replied his papa, "but it is better on many accounts, to have distinct places for vegetables, flowers, and fruit. Vegetables do better in an open piece of ground away from the shade of trees. Besides, they require to be fenced in to keep the fowls from scratching out the seed and spoiling the plants. In an orchard, where the trees are established, fowls may be allowed

to grow, and so at first we must have a fence of boards. We can, however, plant the young trees, and, by and by, they will grow large enough to answer the purpose." "Where shall we have the vegetable garden?" asked Charles. "Just behind the house," said Mr. Perley, "between the orchard and the barn-yard. There is a nice piece of ground there, and some time ago, in Hamilton, after much study over it, I made a plan which I will show you. Here it is. It includes about an acre of land in the form of a square or parallelogram, which is, all things considered, the best shape. Your hot-bed will be in the south-west corner, a few feet out from the fence. The permanent things are to be put along the north and east borders, to give an opportunity to plough as much of the ground as possible. I have ordered from Mr. Arnold's nursery, at Paris, raspberry and strawberry plants, currant trees, grape vines, together with rhubarb, and asparagus roots. These, in addition to the plants from Charley's hot-bed, and the seeds we shall sow, will enable us fully to stock our kitchen-garden. I have also ordered some shade trees ornamental evergreens, shrubs, and bedding out plants, to set about the house; and what with planting, fencing, and building, we will so alter the look of the place, within a month or so, that Mr. Turnberry, if he makes us a visit, will hardly know his old home."



A New and Singular Variety of Radish.

We learn from the *Gardeners' Chronicle* that Mr. W. Bull, the eminent London seedsman, has recently introduced to British horticulturists, a remarkably useful and interesting Radish. The seeds were imported from the East Indies, and portions of them were cultivated by Mr. Bull in the stove, in the greenhouse, and in the open air respectively. "In the stove the plants failed, in the greenhouse they did very well, but in the open air, its cultivation was most successful." The seed, it appears, when sown, easily vegetates, and in about eight weeks the plants flower profusely. Numerous seed-pods quickly follow, and "elongate in the most rapid manner (sometimes as much as three inches in a night), until they get about three feet in length. The seed pods vary in colour, on some plants they are purple, on others green, while others again are purplish-green. When the plants are tied upright they have a very singular appearance, for each plant produces from 15 to 20 pods, some hanging quite straight, others twisted or whorled into fantastic shapes. These pods being succulent and far superior in delicacy of flavour to the ordinary root radishes, can be eaten in their young state the same way, and applied to all similar purposes; for salading they are delicious, and for pickling invaluable; indeed it may be regarded as one of the most useful vegetables that has been introduced for many years." Mr. Bull appends to this flattering description of the new comers, the following modest offer to intending purchasers:—"Price, in sealed packets, three seeds, half a guinea; seven seeds, a guinea!"

Grape Culture for Wine-making:

BEING THE SUBSTANCE OF AN ADDRESS GIVEN BEFORE THE LINCOLN COUNTY GRAPE GROWERS' ASSOCIATION, BY W. H. READ, OF FORT DALHOUSIE.

THE subject for to-day's discussion is:—What are the most desirable varieties of grapes to be cultivated in this district for wine? This is, probably, one of the most important questions to which our attention, as an Association, can be directed. By way of introducing the subject, I would remark that the vine is extremely long-lived. It is stated that some have lived six hundred years; and, according to Bosc, there are vines in Burgundy four hundred years old. Our native grapes, the indigenous vines of this district, unmistakably show that they have braved the northern blasts of more than a century, ascending to the summits of the highest trees of the forest, growing sometimes to enormous dimensions, entwining the tops of some half dozen trees, and bearing an abundant crop of fruit from year to year. The fact that the grape is found growing wild and bearing abundantly over the whole Niagara District, is a sufficient guarantee of the adaptability of both land and climate for successful vineyard culture.

The question naturally arises:—Are these native grapes of any value for wine? I reply, yes, certainly. A few years ago, I sent a pencil drawing, accompanied by a description of the Chippawa grape, to the editor of the *Country Gentleman*. In the course of time it reached Mr. N. Longworth, of Cincinnati, who wrote me, saying that he was making a collection of wild native vines from all parts, and testing them for wine purposes, and would like to try the Chippawa, offering to send me any vines desirable in exchange for some cuttings. He died soon after-

wards, and the cuttings were not sent; but in the letter above mentioned he said that he had imported from the different wine districts of Europe 30,000 grape vines, consisting of their best varieties for wine, and after giving them a fair test, had finally abandoned all on account of their liability to mildew and winter kill, and that now he confined himself altogether to the native American sorts, from which he said he had made wine, and had stored in his wine cellars, one hundred and fifty thousand bottles of sparkling Catawba, and expected to add fifty thousand more the next year, worth one dollar per bottle, and further stated, "this wine is all sold here, mostly to our German population." Again, a gentleman near St. Davids, in this district, whose mother owns thirty acres of vineyard in Germany, sent him five thousand cuttings of the leading sorts, both for wine and raisins. I saw them growing on a hill-side, which had been prepared after the German mode. The aspect was one of the best—East by South—and the soil good; in short the spot was admirably well adapted for the purpose. The vines grew finely, and looked very promising for a year or two, then came the inevitable mildew, and blighted all future prospects of success. This has also been my experience with foreign vines. They will not do for open air culture here. Seeing, then, that none but natives can be depended on for vineyard culture, and that they have flourished probably for centuries past, it is not reasonable to suppose any failure can take place now. We may lose the sheltering benefit of our forests, yet our great inland lakes, by whose waters we are nearly surrounded, will, by their modifying influences protect our climate and vineyards from those fierce and sudden extremes of cold which prove so disastrous to the vine in many other places. Here, on the Niagara peninsula, every inducement is held out to the vigneron, and if the members of this Association carry out what they have so nobly undertaken, and erect a house and wine cellars, with their appropriate appurtenances for manufacturing wine, what an immense source of profit will it be to this district; for after an experience of twenty years with the vine, I can truly say thousands of tons of good grapes can be grown here with as much certainty as Indian corn.

To show the importance of grape culture, I will bring before you the following statistics: "The number of proprietors of vineyards in France is very great. In 1823 there were 1,270,000 acres in cultivation. The annual mean product 920,721,088 gallons of wine, at an average value of about thirteen cents per gallon, amounting to \$120,000,000. and the product per acre near 200 gallons. This estimate was sustained by the Minister of Commerce in his report for 1828. Beside this, 24,000,000 gallons of brandy are made from wine, nurk, pummice, grape seeds and skins, after being pressed." The wine product of France must have greatly increased since 1828 when these estimates were made.

The statistics of vineyards about Cincinnati for 1862 give as a fair average yield per acre 363 gallons; amount produced that year, 500,000 gallons of native wine, mostly sparkling Catawba, worth \$1 per bottle and all sold in the state.

It has been reported that the young vineyards at Cooksville, Canada, will turn off, for 1865, 50,000 gallons of native wine, and that this wine has all been purchased by the Lower Canadians. This augurs well for the future, and means nothing but real success.

The question has been asked, how many grapes can be grown on an acre? In reply, this will depend in a great measure on the variety, manner of training, and number of vines planted. The Delaware, Concord, Chippawa No. 2, and Canada vines, will be the most reliable to commence with for wine. These planted 8 by 6 feet, will take nearly 1,000 vines per acre. Allowing 15 lbs. of fruit to each vine, the product would be seven and a half tons of grapes. Our native vines, planted forty feet between rows, and trained to a trellis six feet high, and then over an arbor covering the entire forty feet, would probably yield 20 tons of grapes per acre.

My advice on quantity is, that we should not overtax our vines. I would rather have one ton of Delaware grapes grown at the rate of 7½ lbs. per vine, than two tons at the rate of 25 lbs. The former will ripen up of a dark red colour, early in the season, sweet and full of sugar; the latter in part will not colour well, and be very inferior to the former. However, the amount to be grown is, to a certain extent, under the control of the vineyardist, who, by pruning and pinching can regulate the crop according to the strength of his vines. Our natives are capable of carrying and maturing larger crops than any other varieties with which I am acquainted. I have been credibly informed that eleven bushels of grapes have been gathered from one of these native vines in one year, and driven to Marshville market. This variety has been in bearing on my ground for the last five years,

and fully sustains its reputation as a productive and early variety. It is as hardy as an oak. This grape makes a wine resembling port, but of a darker color, and when mixed with Delaware, bushel for bushel, and pressed together, the wine is beautifully transparent and excellent. In my last experiment I added one-third Concord, and have now what I think a very promising claret, with and without sugar. There seems to be a difference of opinion with regard to adding sugar to the must. In modern France, sugar is now added, when its presence is essentially wanting; and vineyards, which before would never make anything, or but very poor wine, are now by this addition alone, rendered productive in good wine. In this way we can make good wine from Diana, Isabella or any other variety that will ripen early. There are several varieties recently introduced which claim our attention, such as Roger's No. 15, Iona, Hattie, Adirondac, Lincoln County, and our own natives of which I have five in bearing, one from the Township of Clinton, one from Grantham and three from Chippawa Creek. These vines belong to the class *Vitis Cordifolia*, vine strong and vigorous, foliage large and clean, clusters medium, compact leaving a small bunch attached to one side like the Delaware, berries medium in size, black, covered with a blue bloom ripening up early and in advance of any of the American sorts; not desirable as table grapes, but valuable for wine. It is well known that people in Europe never think of eating the grapes from which some of their best wines are manufactured; and I cannot do better than urge upon this Association the great importance of our own native vines for vineyard culture with a view to wine-making.

The vines composing the bulk of the Cooksville vineyards, are of this class, and from the description given me of the clusters and quality of the fruit grown there the past year, I am inclined to think it is the native vine of Clinton, Canada, as it was first seen growing there. This native is very prolific, ripens early and uniformly, but the fruit is very acid. From this grape Mr. Kilborne makes his first-class wine. The American Clinton in most localities particularly about here, ripens very unevenly, its clusters remain at the end of the season full of mouldy and green berries which never ripen, this is a great objection to it as a variety for the vineyard, and I will not recommend it for general cultivation here. To obtain a good and suitable wine grape for this locality, I should recommend our natives to be impregnated with the best European wine grapes such as the White Kissling, Red Traminer, White Tokay, &c. A hybrid from any of these would probably possess the good qualities of both parents; our native vine to be used to mature the seed. From such a crop might be produced a variety worth millions of dollars to the country.

In conclusion, and aside from the commercial aspect of the subject, to the amateur and lover of nature, what sight can surpass that of a vine covered over with its beautiful foliage, and laden with its elegant and delicious fruit; or who can contemplate throughout the progress of every returning season, the beautiful elaborations of nature in the successful development of the bud, the leaf, the blossom, and the fruit of the vine, without emotions of the purest gratification.

The Cultivation of the Mushroom.

BY MR. JAMES BARNES, GARDENER, BICTON, DEVON.

WHERE I lived fifty years ago this winter, there was a mushroom house, heated from a flue by peat fires. The shelves were placed one above another for the reception of the heating material or mushroom beds, cow-lung was collected from the fields, the stable droppings were shaken out, and turned and dried in open sheds, the beds made, rammed tight and spanned in due course; the whole then covered with nice friable loam to the depth of two inches or thereabouts. This system was then called "Clidacre's method." At that time it was considered a great feat among horticulturists to grow the mushroom successfully; and I well recollect watching for the mushrooms springing up—and so they did, very nicely, in about six weeks.

Three years later I entered a large London market garden, now all built over. There, besides extensive pine, grape, cucumber, and general forcing and plant culture, mushrooms were largely grown, on pretty much the same principle; only, instead of shelves, the beds were made on the floor against the back walls of sheds, where the flues ran along, or in ridge beds in the centre, according to convenience and with general success.

In the summer, beds were similarly made in an underground cellar, and in ridge beds out of doors, with good results. Indeed, we were at that time con-

sidered crack mushroom cultivators for the London market the year through. There were at that time but very few mushroom cultivators about London, so that a good price was always obtained. I recollect my employer would never sell under 1s. per pottle, (that is, a strawberry pottle) for the buttons, and a small flat pannel for the open or flat mushrooms; but I have known them sold in quantities at that time from 2s. 6d. to 7s. 6d. per pottle, and when very scarce, I have known a few sold for half a guinea a pottle.

I next undertook the management of a much more extensive market garden, on the Surrey side of London, where pines, grapes, cucumbers, melons, salads, and vegetables, &c. were forced very early and extensively; but mushrooms had not then been attempted. I soon got about it, however, on a very extensive scale, and also the manufacture of spawn, which I fully entered into, with great success; and I was here engaged by the then Lord Mayor's cook to teach his gardener to cultivate mushrooms.

I had now greatly simplified the Oldacre system, so that any one could grow mushrooms who could get a little dung and some fresh earth; good loamy holding or stiff soil certainly is best.

How I first arrived at this was as follows. I was removing an old worn-out bed in dry weather, in summer time, when I observed how the spawn had run into the earth, as well as into the muck or litter that had been used, and I traded about near the bed. I at once asked myself, why take so much pains and trouble in preparing and drying the dung to make the mushroom beds? So I set to directly, and laid the dung and litter from the stables, by shaking it only a small portion of the longest dry litter, intermixing with it a quantity of the natural earth there at command, ramming and treading it down as firmly as possible to the desired size and depth or height. Here was at once secured the full properties of the manure and soil, and genial heat, without a chance of burning or becoming too moist. Such a composition, in a general situation, will sometimes actually breed or produce spawn without using artificial spawn. Beds made on this principle always produce mushrooms in abundance, of the finest and heaviest kind, and continue to bear or produce them for many months. After the beds have for some time been in bearing, and are beginning to get dry, we always water with tepid clear manure-water, made or formed only from sheep, deer, or cow-dung; no chimney soot or lime is used for this purpose. It is astonishing the long time a mushroom bed may be kept in full bearing by this simple treatment.

For the last thirty years I have made my beds entirely on the floor in sheds; carrying in the stable dung as we bring it fresh, and a sufficient quantity of soil at the same time, incorporating and mixing it well together, treading and ramming firmly down, letting it remain free or six days; then shaking it up and intermixing it well together; and if it is found fermenting, as we consider, too strong, we add more soil, treading and ramming down as before. Very soon afterwards it is ready to spawn and ease with soil; when, a very gentle genial heat and moisture being secured, these properties are afterwards fully maintained.

In winter we make our beds, when finished and cased, about 16 or 18 inches thick, and in summer about 6 inches less, thus securing mushrooms every day in the year.

[Our readers will observe that Mr Barnes's system is much simpler than that in general use, and requires less time in preparation. The mushrooms are as well grown at Brixton as the Ives, which is equivalent to saying they are as well done as at any place in England.]

Charms of a Country Life in Winter.

TWO PICTURES.

Ye denizens of the city, what know ye of these? At 7 A. M. this 31st day of December, 1861, my thoughts revert to you, now slumbering amid your walls of brick, as I look out on the noble forest stretching along my right with the sloping lawn before me, while to my left lies the garden, now buried deep in snow. How sublimely still and grand the scene! The lofty trees and clumps of evergreens, clothed like the lillies of the valley, in mantles of spotless white, through which may be seen the most picturesque and fanciful views, with groups of fantastic figures the whole presenting a perfect fairy scene; and all this wonderful change, wrought by nature's handy work, whilst I have been soundly sleeping on my bed of comfort. What know ye of these lovely works of Nature's God? Ye who pursue the

"Lying vanities of life,
Ye ever tempting, ever cheating train!
Where are ye now, and what is your amount?
Vexation, disappointment and remorse,
Sad sickening thoughts and yet, deluded man,
A scene of cruda disjuncted vision past,
And broken slumbers, still resolved
With new flushed hopes to run the giddy round."

You can scarcely have an idea how the heart of man swells up with wonder, love and gratitude to the Giver of all good, when on waking he opens his eyes upon such a wonderful exhibition of his power as the scene before me displays. Yesterday, as I retired to rest all nature lay stripped and bare. Now behold it clothed as Solomon in all his glory never was, and as no potentate, with all the wealth he may accumulate, ever can be. Yes, country life has its charms, its sweet repose of spirit, and at no time more so than at this season, when driven from out-door pursuits one has time to contemplate nature in her grander exhibitions. Spring has its loveliness and beauty, but its changes, though wonderful, are gradual, and come upon us more understandingly; the buds swell and open little by little till the leafless forest is again clothed with its covering of verdure, upon which the eye delights to dwell. Summer brings with it its flowers of marvellous variety, and so delightful to contemplate; and autumn its stores of plenty, tempting the appetite with its luscious fruits, but winter, stern winter, alone in its marvellous wonders, like the scene I have described, which while I write is fast vanishing, and as I again look out on the landscape, upon which at early morn my eye dwelt with such delight, it is gone as mysteriously as it came.

Now when we consider the power of God exercised in the energies of nature to produce this effect, we are lost in wonder and amazement. Speaking on this subject, a scientific writer on heat, remarks:—"I have seen the wild stone avalanches of the Alps, which smoke and thunder down the declivities with a vehemence almost sufficient to stun the observer. I have also seen snow flakes descending so softly as not to hurt the fragile spangles of which they are composed; yet to produce from aqueous vapour a quantity of that tender matter which a child could carry, demands an exertion of energy competent to gather up the shattered blocks of the largest stone avalanche I have ever seen and pitched them twice the height from which they fell." Need we wonder then at the amazement with which the mind contemplates a scene so suddenly and secretly wrought, and that it is led to acknowledge the truth of the declaration—"great and marvellous are thy works, Lord God Almighty."

So far a correspondent of the *Country Gentleman*. Not to spoil the beautiful picture above-drawn, but to show the other side as rendered by a pencil not less graphic, we clip the following extract from the "Editor's Table" of *The Horticulturalist*. It is, evidently, a lady's hand which holds the pencil in this case.

"How I dread the winter and the snow; I never loved it. It is so cold, so glittering, so shroud-like. I think of the earth as one great charnel-house, wherein decay jostles the dead with rudeness. I feel the slow procession of the hours, as separately they pass along in one vast funeral train. I fear the snow, for it turns to a blank all the beautiful book that the south wind and the west wind, and the warm rain opens for us to read. It frightens all my lute lovers, the ground-sparrow and the tree-sparrow, and the katy-did, and the bee, and it hides all the summer-brooks so deftly that none can find them, save sweet spring, and she sleeps. Why should I love the snow? I am fair and shivering when it falls upon me, and I loathe the heavy garments I must don. When I fold away the pretty adornings that are fitted to the season of the morning-glory and the sweet-pea, when I consign to the dark wardrobe, the transparent scarf and the pearl-white dress, I wrap up in their foldings many a tear that will fall, despite my womanly courage. May it please God, I die not in the days of the hoar-frost and the black frost, of sleet and white driving snow! I should leave the world gladly, forgetting to thank heaven for its beauty and exceeding loveliness. I should stretch out my hands towards the bannered golden city, built of emerald, and amethyst, and sapphire, forgetting that even with such help my pathway here been paved. I should lie impatiently on my sick couch, "biding my time." I would listen for the melody of the rapt seraphs near the throne, not remembering that the Lord had prepared richest music for my ear many thousand times, when I had not even prayed for it. I should say, "Thank God, I die!" rather than, "Bless God that I have lived."

(Incapacity,) like murder, "will out." Some say the defect is in my head. I think it is in my heel, where there is a shocking chilblain. I think Thetis must have plunged me in the Styx, as she did Achilles, all but my heel by which she held me, and that this spot is the only one vulnerable to Jack Frost.

I have had only one sleigh-ride this winter. Judge whether it was a joyful one when it led me to a hotel where an insufficiency of lights, fire, food and clothing made winter dreadful. You know I hate sleighing, and snow, and ice, and all other manifestations of cold weather. When I am queen, in my realm there shall be no winter, but one long, golden, glowing summer. There shall be a perpetual shower of rose leaves on my grass, and the poplar leaves shall be the only creatures to shiver all the year round. There shall be a violet-colored twilight to last all night, and sweet south winds in the morning. I am a summer child, and true to the season that gave me birth. How can you like snow? It is so unmeaning, dead, stifling. I would rather see the coarsest brown furrow in dear mother earth's wrinkled face, than all the brilliancy of frost, and snow in which poor shivering mortals rejoice."

DISTANCE APART FOR STRAWBERRIES.—I invariably plant in rows and never in beds. I hold that the objections to planting in beds are so great and so palpable, that it will admit of no discussion whatever. My standard rule is to plant in rows three feet apart, and plants two feet in the row.—*Cor. Hort.*

THE DIANA GRAPE FOR WINE.—Mr. F. C. Brehm, Waterloo, N. Y., thinks that the Diana grape is superior to the Delaware for wine. He says that the Diana makes a wine fit to sell in 14 months, and it brings a much higher price than that made from Delaware grapes. The Diana, being a very rampant grower, does best on a light, moderately fertile sandy loam, that is dry naturally or well underdrained.

STRAWBERRY CULTURE IN FRANCE.—It appears they are beginning to appreciate the stool system of culture in France, as well as we, thanks to the labours of Mr. Knox. Mr. Glæde, in his recent work on the Strawberry, "*Les Bonnes Fraises, maniere de les Cultiver pour les avoir au maximum de beauté,*" says the difference of produce between that of a plant with the runners regularly cut off, and one left to emit them freely, is, incredible. Digging between the rows is to be avoided; and the old leaves should be left for the protection of the plants till February or March.

SOIL FOR THE GRAPE.—It is a curious fact that very rich and highly manured land has rarely produced a grape that would yield a high quality of wine. The grape that contains the most saccharine matter will make the best wine and the different varieties differ widely in the proportion of sugar. In Italy and in Sicily the very finest and sweetest grapes grow on the rocky rubbish of volcanoes, and those that grow on low rocky soils or along hillsides covered with rocks are often the best. These facts ought to teach us not to select the richest soils, and not to stuff them with organic manures, for the grape. *Ploughman.*

GRAPE MILDEW PREVENTED.—E. W. Herendeen, of Macedon, N. Y., who has recently visited the Experimental Grounds at Washington, under the charge of W. Saunders, informs us that some experiments for preventing the mildew of the grape, by erecting a cheap roof over them, seemed to answer the purpose perfectly. The roof, he states, may be simply a board sixteen inches wide, nailed to the posts. On a hundred varieties treated in this way, not any mildew was seen; while all the rest in the same yard were entirely ruined. Further experiments are necessary.—*Co. Gent.*

CLIMBING DEVONIENSIS.—Thos. River, in his Descriptive Catalogue of Roses, the 32d edition, remarks:—"Some persons, ignorant of the nature of cultivated roses, have disputed the claims of this rose to be a climbing pillar rose. It evidently originated in some strong shoot of Devoniensis, and has retained its character by budding. Here it has made shoots 15 feet long without putting forth any blossoms; these generally break forth in autumn. The climbing deviations are no rarity. Geant des Batailles has sported into a climber."

THE CONCORD. A gentleman, says the Massachusetts *Ploughman*, who has been visiting the gardens of Cleveland and the grape growers on the Islands of Lake Erie, says that—"Everywhere I went this blight was visible, and no variety was exempt but one. This showed leaves as green and as crisp as if in June. One will want to know what vine has such remarkable vitality and such healthfulness and vigour as to pass unharmed through all the trying scenes of this most extraordinary season, and come out in flying colours. I will tell you. It is the blessed Concord. I am aware that it is reported as having done badly in parts of the East, but I am writing for the West. It is true, also, that the fruit did rot in some places in the West, but I am sure that this was owing to too thick planting, but everywhere the foliage is fresh and perfect."

Miscellaneous.

Agricultural Geology.

By J. M. DeCOURTENAY.

The progress of the science of Geology has drawn attention to a great blank yet visible in so useful a study. For, until lately, geologists had only considered the skeleton of the globe we inhabit as worthy of any interest; so far differing from the practical farmer who regarded the flesh of that skeleton (the loam from the cultivation of which he derived his existence) as the only part worthy of notice.

In the eyes of the geologist, this valuable loam was at best an amount of rubbish, by which the crust of the globe was covered, and was of little interest, further than being particles of the crust itself, reduced to its pulverized state by friction, or decomposed by time, or physical and chemical agencies employed by nature in its wonderful metamorphoses.

Monsieur Elie de Beaumont and Monsieur Dufrinay, in their admirable description of the geology of France, were very strongly convinced of the necessity of filling up this gap, and Monsieur de Caumont made a formal proposition to the Council General of Agriculture (which was received with enthusiasm) that a map of Agricultural Geology relating only to the pulverized or workable surface of France should be produced, thereby conferring upon agriculture the same advantages that purely geological maps had previously conferred upon the mining interests of the country. These interests, however important they are becoming, can never be compared to those of agriculture, the only solid basis of national prosperity, and of real wealth; although in new countries mining holds out more imaginary attractions to the masses, than the more certain and solid, although more tardy, profits of agriculture can offer. It has been calculated with precision that men labour more willingly, and for less remuneration in their search after gold, than for any other purpose whatsoever; and there is evidently something instinctive in the minds of men that renders mystery attractive—which makes them value more the possible gain, uncertain and concealed in the bowels of the earth, than the more probable and positive one, so easily calculated, and so readily obtained by patient and honest labour at its surface. The fast proclivities of this continent, the haste to enjoy, the repugnance to enterprises of long term, prevent men from undertaking anything, by the fruits of which they may not immediately profit. The decay of family feeling caused by a rapid transmission of the soil, passing from hand to hand, and rendering transient all enterprises formerly belonging to many generations, has destroyed the faith that formerly existed in agriculture, as a means of prosperity; and has urged on the rising generation to enterprises where the hopes of rapid realization are the greatest. In mining as in war—success is a lottery, where the fortunate are prominently visible, and the blanks are silent.

The mining interests of Canada (an active minority whose interests are well attended to) have accused Sir William Logan of paying more attention to the age of an old bone, than to the importance of their more positive and material interests; and that feeling was represented at one time both in the House, and even in the Cabinet, and an abortive effort made to abolish the geological survey, which has proven itself so useful and so creditable to the province.

The recollection of this very effort, may yet, and perhaps at no distant period, be a means of inducing Sir William Logan and his very efficient staff to initiate a project so important to the material interests of the country, as would undoubtedly be, a survey of its Agricultural Geology.

I hoped to have been able to enter more fully into this very important question which, however, may be developed some day by Sir William Logan or Dr. Hunt, and with their usual professional ability—but many friends engaged in preparations for the planting of vines in early spring, request me to abbreviate my remarks upon other subjects, or postpone them to a later period—to which I willingly accede in the hope of being to them of some utility—and of perhaps inducing others to follow their example and my own.

SIN-TAX.—“Well, my boy, do you know what syn-tax means?” said a schoolmaster to a child of a teetotaler. “Yes, sir, it is the duty on spirits.”

Dr. Channing, in his recent lecture before the Boston Science Association said that the Russian Peasantry had a way of washing which he had not seen related in any book of travels. They took a mouthful of water from the pump, and, after holding it until the chill was well off spurted it with a lively jet, into the hands, and applied it briskly to the face. Towels they have none.

“A MAN'S A MAN FOR A' THAT.”—Robert Burns was once taken to task by a young Edinburgh blood, with whom he was walking, for recognizing an honest farmer in the open street. “It was not,” said the poet “the great coat, the scone bonnet, and the boot-hose that I spoke to, but the man that was in them; and the man, sir, for true worth, would weigh down you and me, and ten more such any day.”

CLEVER ANAGRAM.—It is said that Napoleon, when he was asked by Dr. O'Meara if he really thought he could have invaded England at the time he threatened to do so, replied in the following anagram:—“Able was I ere I saw Eba.” Whether this is true or not, we should like to see a more ingenious or extended anagram, which, the reader will observe, reads the same backward or forward.

TO KEEP RATS FROM EATING HARNESS.—“Philomen,” of Champaign Co., writes the *Agriculturist* as follows: “I have a remedy that has never failed with me. It is simply salting the rats regularly. I do this by laying salt on the sills and ties of the stable, if that is the place they most frequent; but in fact, they will hunt for it. It will occur to any farmer that sees this remedy, that harness is most cut where the greatest amount of sweat has dried, an indication that salt contained in it is what they want.”

LUBRICATOR.—Having considerable machinery to run the past winter by horse power, and knowing of no accessible lubricator that would not grow hard in cold weather, I have been experimenting, for the purpose of getting a lubricator that would stand the cold, not gum, be cheap, and accessible to all, and have found the following to answer the purpose very satisfactorily.

Lard oil, three parts, and kerosene one part. The oil should be warm, i. e., about 75° Fahrenheit, when the kerosene is put with it, and then shaken occasionally through the day, when it will be cut and mixed. This compound remains liquid some 60 or 60 degrees colder than the best lard oil. I have used it four or five months on most kinds of wood and iron working shop machinery, with better satisfaction than with any sperm oil I have ever found. A larger proportion of kerosene stands cold still better, and a smaller proportion gives more body. The same also works well for the axles of carriages, putting in more or less kerosene, according to the time of year and degree of cold.—*Locust Homestead.*

THE TWO LABOURERS.—Two men I honour, and no third. First the toil-worn craftsman that with earth-made implements laboriously conquers the earth and makes her man's. Venerable to me is the hard hand, wherein lies a cunning virtue; venerable is the rugged face, whether tanned, with its rude intelligence, for it is the face of a man living manlike. Toil on; thou art in thy duty, be out of it who may. Thou toiled for the altogether indispensable—for daily bread. A second man I honour, and still more highly; him who is seen toiling for the spiritually indispensable—not daily bread, but the bread of life. Is not he too, in his duty, with Heaven-made implements, conquering Heaven for us? If the humble toil that we may have food, must not the high and glorious toil for him in return, that he may have light and guidance, freedom and immortality? These two, in all their degrees, I honour; all else is chaff and dust, which let the wind blow whither it listeth. Unspeakably touching, however, is it, when I find both dignities united, and he that must toil outwardly for the lowest of man's wants, is also toiling inwardly for the highest. In him we may see the splendour of Heaven spring forth from the humblest depths of earth, like a light shining in great darkness.—*Thomas Carlyle.*

WORK AND INVENTIONS.—Mr. Mill tells us in his “Political Economy,” that the labour-saving inventions of modern times have not yet lessened the daily labour of mankind. The steam engine does the work of about one thousand millions of men—more men than are in the world—and this inconceivable addition to the world's working force has all occurred in ninety years; yet no man finds his day's work diminished by it. On the contrary, we work harder than we did ninety years ago, and hardest where there are the most steam engines. The farmer on our western

prairies, by the aid of the moving machine, gets in, in one week, a crop which his father could not have got in by working till the grain dropped over-ripe from the straw; and then he thrashes, in six hours, more than his father could have flailed out in a whole winter. But he works harder than his father did, winter and summer. Ladies have made the same remark upon the sewing machine; they can sew at a pace that would have made their grandmothers gape to see, but their sewing is never any nearer done than it was when they set every stitch by hand.

We believe it will be so to the end of the chapter. We do not believe that any possible development of invention will ever much lessen the amount of human toil. As long as the world stands, we think the world will daily require, for carrying on its business, its entire daily revenue of force.—*Mining Press.*

THE WONDERS OF THE UNIVERSE.—What assertion will make one believe that in one second of time—one beat of the pendulum of a clock—a ray of light travels over 155,000 miles, and would therefore perform the tour of the world in about the same time it requires to wink with our eyelids, and in much less time than a swift runner occupies in taking a single stride? What mortal can be made to believe, without demonstration, that the sun is over a million times larger than the earth, and so far from us that a cannon-ball shot directly towards it, and maintaining its full speed, would be twenty years in reaching it, yet the sun affects the earth appreciably, by its attraction, in an instant of time? Who would not ask for demonstration, when told that a gnat's wing, in its ordinary flight, beats many hundred times in a second? Or that there exists animated and regularly-organized beings many thousands of whose bodies laid together would not cover the space of an inch? But what are those to the astonishing truths which modern optical inquiries have disclosed, and which teach that every point of a medium through which a ray of light passes is affected with a succession of periodical movements regularly recurring at equal intervals no less than five hundred millions of millions of times in a single second; that it is by such movements, communicated to the nerves of the eye, that we are enabled to see; may more, that it is the difference in the frequency of these movements that enables us to appreciate the diversity of colour? That, for instance, in acquiring the sensation of redness, our eyes are affected four hundred and eighty-two millions of millions of times; of yellowness, five hundred and forty-two millions of millions of times; and of violet, seven hundred and seven millions of millions of times, per second? Do not such things sound more like the ravings of madmen than sober conclusions of people in their waking sense? They are, nevertheless, conclusions to which anyone may certainly arrive who will only beat the trouble of examining the chain of reasoning by which they have been obtained.—*Mark Lane Express.*

Poetry.

The Lessons of the Leaves.

How do the leaves grow
In spring upon their stem?
Oh, the sap swells up with a drop for all,
And that is life to them.

What do the leaves do
Through the long summer hours?
Oh, they make a home for the wandering bird,
And shelter the wild flowers.

How do the leaves fade
Beneath the autumn blast?
Oh, fairer they grow before they die,
Their brightest is their last.

We are like leaves, too,
O children, weak and small;
God knows each leaf of the forest shade,
He knows you each and all.

Never a leaf falls
Until its part is done;
God gives us grace like sap, and then
Some work to every one.

You must grow old, too,
Beneath the autumn sky;
But lovelier and brighter your lives may be,
Like leaves before they die.

Brighter with kind deeds,
With love to others given;
Till the leaf falls off from the autumn tree
And the spirit is in heaven.

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First Prizes at Provincial Exhibition in Kingston... in 1859.

First Prizes at Provincial Exhibition in Hamilton... in 1860.

First Prizes at Provincial Exhibition in London... in 1861.

First Prizes at Provincial Exhibition in Toronto... in 1862.

Did not exhibit, there being no competition at the Provincial Exhibition in Kingston... in 1863.

First Prizes at Provincial Exhibition in Hamilton... in 1864.

First Prizes at Provincial Exhibition in London... in 1865.

Medal and Diploma for First Prizes at the Provincial Practical Test Exhibition, or grand special and Agricultural Implements at work, held under the direction of the Board of Agriculture, on Mr. J. G. S. Farm, near Montreal, in August, 1863, at which these Tools completely victoriously, not only with Canadian makes, but with those from some of the best makers in New York, Vermont, and others of the United States.

The Proprietors have also the honor to state that these Tools obtained the FIRST PRIZE at the World's Fair or Exhibition of all Nations in London, England, in 1862, for which they now hold the Bronze Medal. Also First Prize and Medal at the International Exhibition in Dublin, Ireland in 1865, at which they were specially commended for their excellence of manufacture and their moderate price.

Caution to Farmers.—As every tool of this make is thoroughly reliable, purchasers should always be particular in seeing to the stamp, A. S. Whiting & Co., Oshawa, C. W., make certain of getting the genuine article.

A. S. WHITING & Co., PROPRIETORS, Oshawa, C. W.

v35-m. 11.

J. H. THOMAS'

FIRST-PRIZE BEE HIVES

MAY be sent safely to any part of Canada. We are daily sending them to all parts of the Upper and Lower Provinces, and even to Nova Scotia and Cape Breton, and the demand is increasing. Send early. All orders for Hives, Bee Books, etc., promptly attended to.

The delivery of the Lower Provinces will be sold cheap, as we have a direct trade with West for our own purposes.

v34-2-7

J. H. THOMAS & BROS.



TILDEN'S SEEDLING TOMATO. THE MOST PERFECT TOMATO GROWN.

IS a distinct variety, and highly recommended by the best authorities in the country. Distribution of Seed.—The publishers of The Prairie Farmer have purchased of Mr. Tilden, the originator, the entire lot of this seed at a very high price to distribute to the subscribers to The Prairie Farmer. The distribution will be as follows:—

One package to every present subscriber who has renewed or does renew for 1866, and sends 5 cents to pay for postage and putting up.

One package to every new subscriber who sends 5 cents in addition to subscription, for postage and putting up. Each package will contain seed enough to raise from 75 to 100 plants. Fifteen plants, well cultivated, will produce sufficient to supply an ordinary family.

Packages of seed will be sent to any address in Canada, post-paid, on the receipt of 60 cents.

Sample copies of The Prairie Farmer sent FREE to any who desire them.

Annual subscription to the Weekly Prairie Farmer, \$2.00.—Canada subscribers will send 20 cents extra for Am. postage.

Thos. Meehan, Philadelphia, says of the "Tilden":—"I have tested them in various ways, satisfying ourselves that they are the best tomato out."

Reschal Morris, of Philadelphia, says—"I consider it a better variety than has yet appeared in this market."

Hovey & Co., of Boston, says—"It promises in a greater degree more excellence than any other variety we have grown. Carries well and handles well for market."

The American Agriculturist says—"This comparatively new tomato is held in high estimation by the cultivators about Philadelphia."

Jonathan Peirson, of Chicago, says—"I consider this tomato to be the best I have grown."

N. J. Colman, of the Rural World:—"They are the largest and smoothest tomato we ever saw, and their quality even surpassed their appearance."

v35-11. Address, EMERY & CO., Chicago, Ills.

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 EMIGRATION 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, means will thus be afforded of placing the intending 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 monthly 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 longer than the following:—

For each advertisement not exceeding 10 lines, \$2 the insertion, and 8 cents for every extra line.

For a square of 22 lines, to stand for a twelvemonth, \$8.

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 Emigration, 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.

v34-21

IMPORTANT TO FARMERS.

THE undersigned has for sale a quantity of Imported I.E.S. highly prolific. Price, \$20 per bushel. Respectable references can be given as to last year's yield in Canada.

Address, A. BOYCE, Geo. Cooper's Farm, Davenport P.O.

v35-11*

BLACKSMITH'S TOOLS.

Peterson's Patent Tyro Upsetting Machine. Patent Regulating Blast. Tyners Iron. Patent Double Geared Tyro Bender. And other Blacksmith's Tools.

FOR SALE BY ARCHIBALD YOUNG, Junior, Sole Agent, Sarnia, C. W.

County rights for sale. Send for an Illustrated and Descriptive Circular. v24-24

MILLER'S Infallible Tick Destroyer, FOR SHEEP.



A CERTAIN cure for Tick, and all skin affections in Sheep. No flock master should be without it.

Prepared only by

HUGH MILLER & CO., Chemists, Toronto.

Toronto, Jan. 1.

v31-11

IMPORTANT TO FARMERS!

SNOW'S

CANADIAN SUPER-PHOSPHATE,

A Standard Manure for all Field & Garden Crops.

PRICE, in Montreal, \$50 per ton, in bris. of about 225 lbs each.

It is also put up in One Dollar Packages for Retail.

For Sale by Country Merchants, at Manufacturer's Prices and Freight, and by

F. L. SNOW, Manufacturer, Montreal.

Send for a Circular.

v33-11-5-11*

Contents of this Number.

Table listing various articles and their page numbers, including 'The Field', 'Stock Department', 'Canadian Natural History', 'The Dairy', 'Veterinary Department', 'Entomology', 'The Apiary', 'Poultry Yards', 'Correspondence', 'Editorial', 'Agricultural Intelligence', 'British Clearing', 'The Household', 'Horticulture', 'Miscellaneous', and 'Poetry'.

THE CANADA FARMER is printed and published on the 1st and 15th of each month, by GEORGE BROWN, Proprietor, at his Office, No. 24 and 25 King Street East, Toronto, U. C. where all communications for the paper must be addressed.

Subscription Price \$1 per annum, (POSTAGE FREE,) payable in advance. Bound volumes for 1864 may be had for \$1.70. Subscribers may either begin with No. 1, receiving the back Nos. for 1864, or with the first No. for 1866. No subscriptions received for less than a year, and all commence with the first number for the respective years.

CLUBS will be furnished at the following rates:— TEN COPIES for... TWENTY COPIES for... FORTY COPIES for... ONE HUNDRED COPIES for... To Agricultural Societies ordering more than 125 copies, the FARMER will be sent at FIRST CLASS.

THE CANADA FARMER presents a first-class medium for Agricultural advertisements. Terms of advertising, 20 cents per line of space occupied, each insertion—one inch space being equal to 12 lines. No advertisement charged less than \$2, being ten lines of space.

Communications on Agricultural subjects are invited, addressed to "The Editor of the Canada Farmer," and all orders for the paper are to be sent to GEORGE BROWN, Proprietor and Publisher.