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

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

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

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

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

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

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

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

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

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

Familiar Talks on Agricultural Principles.

BUCKWHEAT.

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

Carbonate of Potash	29.5
Sulphate of Potash	3.8
Carbonate of Lime	17.5
Carbonate of Magnesia	13.5
Silica	16 2
Alumina	10.5
Moisture and Loss	9.0

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

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

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

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

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