have to day. The best means to restore Canadian cheese or to increase the demand in the British markets is to have a better article. Fully 600 or 800 thousand Canadian cheeses are damaged every year in the curing rooms; therefore, a curing room to keep the temperature of the cheese at about 65 or 70 degrees is an absolute necessity. Cheeses should be kept longer on the shelves to properly cure before they are put into the icehouses It is the rule to icehouse green and uncured cheeses, and they come out chippy and dry and unpalatable. If care and skill were exercised by the farmers and the factorymen in produc ing a better article of Canadian cheese than has been produced heretofore, it would not cost any more than at present, and the consumption would be increased in my opinion fully 25% and the price would be fully 1 and possibly 2 cents higher than the average ruling values of the past four or five years. I am a great believer in excel-.ence of quality. There is a very little of the linest of any article of consumption made, so there is plenty of room at the top."

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The Function of Clover

By T. C. Wallace, Toronto

There is no branch of cultivation so little understood as clover manuring Generally speaking, the farmer's know ledge of clovering is drawn from various experiences and is therefore empirical. These experiences are got from a variety of conditions and soils, themselves not understood by the farmers Present growing and handling of clover seems to represent attempts to fit the clover to the land under changed conditions, instead of fitting the land to the plant. This is also true of other crops than clover. The question is of sufficient importance to warrant us in looking carefully into it.

Clover is of the leguminosæ family It is the natural plant of the family, and each variety is indigenous to some soil and latitude. When we remove any of these varieties to foreign soils and climates we must apply the cultivator s art to succeed in reproducing them, as is quite clearly evidenced in the difficulties experienced in growing alfalfa and crimson clover in the North.

All plants require for their sustenance about nine or ten mineral elements of the soil besides the atmospheric elements. The grasses (except clovers), the roots and the grains (except peas, beans, and vetches) require that the nitrogen of the atmosphere must be organized in the soil before they can utilize it, and when we have plenty of decomposed vegetable matter in the soil this organization is effected. We can also feed them nitrogen in a readily soluble form, as, for instance, in nitrate of soda, which, becoming dissolved, enters the hydroscopic water along the roots, and, combining with the other elements, is taken up as food without much effort on the part of the plant.

On the other hand, clover and the other legumes grow best in a mineral soil in which atmospheric nitrogen is not in such an organized form as required by the other classes of plants. Why is this? Why did nature require such a class of plants as legumes, which we may term "nitrogencollecting plants"? Only one answer presents itself. Original soils are but ground up rock, which, being purely mineral, would have to be organized, and the nitrogen of the atmosphere incorporated with them in a condition for plant food. There then is a necessity in nature for just suc' a class of plants as clovers, plants which feeding upon the mineral elements of the soil can convert nitrogen from lower forms of organism. They in their turn, dying in and on the land, leave the soil organized in a condition that other types of plants can grow from the material decomposed from their bodies.

Clover, then -and the other legumes—is a ural manure, because it is through its agency that hat enriches lands for other plants. When clover has accomplished its mission it dies out, just as every other living thing does. Dumbly it is handing us a seed, and if we "consider the

lilies of the field " properly, we know how to make use of it profitably. The principal mineral elements of the soil required by clover as well as all other plant are the elements of potash and phosphate, and it must ____ve a plenti-ful available supply of these. We presume on the supply of lime which we have with the phosphoric acid, the two forming the phosphate. Potash, being a base, is in pretty good supply in most of our soils, and our system of farming, by which we return the straw and the dung, is not very exhaustive of it. It is not all freely available in the soil, but it is easily rendered so by caustic lime in tetra-basic phosphate. The other substance, being an acid, is not in such profuse supply, and what there is of it is mostly locked up with the bases in the soil, and it is not so easily made available. Besides, the grain and the animals carry away all they consume of it, and only the portion remaining undigested in the dung comes back to us. Consequently all high authorities agree on the necessity of returning it from some other source. The axiom, Α good phosphatic heart is the basis of all successful agriculture," is strikingly pointed in this connection.

From this, then, it will also be readily seen that clovers and other legames do not require to be manured with a nitrogenous manure, as for instance farm yard manure, and that, in fact, such manuring would be extravagant waste, particularly as we require all the nitrogen of our manure to procure maximum crops of grains, roots, and other grasses. But beyond this it may be dangerous practice to grow clover with a nitrogenous manure, and the reason harm has not generally resulted from it is that most farm-yard manure has practically lost the bulk of its nitrogen through the methods employed in handling it before it gets to the land. By growing clover with a dressing of nitrogenous manure the natural conditions of the plant are changed, and instead of acting as a collector of atmospheric nitrogen it may change its character to become a "nitrogen-consuming" plant, and we get a soft, tough plant, which we are obliged to harvest before it is in full strength, instead of a firm plant, with all its parts developed, and, like the hog fed on too much heat and fat-forming materials, it gets weak kneed. Seed from such clover must naturally not only be wanting in fertilization power, but may produce a clover prone to indulge in the liquefied nitrate gluttony of its parents, and the principal benefit we gain from plowing down such stuff is in the mechanical effect on the soil, the effect of acids formed by decomposition, which help to unlock some of the otherwise insoluble soil elements, and eventually a better condition of humus carrying available plant-food extracted from the soil. If, then, several generations of the same clover be grown by application of nitrogenous manures we arrive at the deplorable condition of "clover sickness." The history of the seed we are going to use is as important as the pedigree of our cattle.

It is often stated that clover first uses up the available nitrogen of the soil and only becomes a nitrogen collector when forced to do so for want of more nitrogen. If this were so the growing of clover with grain crops would be a questionable practice, as our soils are not so well supplied with nitrogen that they can afford such a drain. If it is so the grain must suffer materially, or if there is enough available nitrogen present for both crops the clover will bring us nothing new. However, it is scarcely logical except in this way, that any dissolved nitrates entering the hydro-scopic water along the root system of the clover will generally be taken up by the clover. It is not an uncommon thing to see complete failure in clover on highly nitrogenous soils, and clover sickness is never developed on any other condition of soils. The system of growing clover with grain crops may be then questionable practice partly on this account and partly because clover grown on a nitrogenous soil such as we should prepare for wheat has a tendency to become a "nitrogen-consuming" plant through the disuse of its power or function of "nitrogen collecting." No better method of preparing land for wheat and any grain or roots is known than the growing of clover, or peas and vetches with the minerals and plowing them down for manure, but it seems like a lot of wasted energy