

and clover, or wheat and pease, may be profitably grown for a long period of years. Probably one-tenth of the wheat lands in Western Canada would warrant a severe course of farming like this; but, to keep up the condition of the soil with any degree of certainty, the manure made on the farm must be regularly applied, in a suitable condition, to give a constant supply of the requisite food for the plants; and, also, to act mechanically upon the latent properties of the soil. By gradually deepening the soil, from an average depth of five inches, to that of ten or twelve inches, on most of the clay soils, or those in which the subsoil contains a large proportion of clay, phosphate, and carbonate of lime, and potash, a heavy growth of wheat and clover may be taken from such a soil, as alternate crops, for a very long period of time, without in the slightest degree affecting the average yield. A portion of sand in the soil, say twenty per cent., would not seriously affect a rotation of this kind, but would rather tend to give strength to the straw, and would keep the active soil open and free for the speedy escape of superabundant moisture. Of course, where cropping of this kind is practiced, the fact must not be forgotten, that full-grown and healthy plants extract from the soil annually, a quantity of certain ingredients, and when those ingredients are exhausted to that extent that the plants begin to assume a sickly or stunted growth, then the only inference that can be made is, that the rotation must be changed, so as to bring into action other ingredients of the soil, that was not required by the crops previously cultivated. To form correct conclusions regarding matters of this kind, the farmer, by right, should possess a knowledge of agricultural chemistry, and in the absence of an acquaintance with that useful science, the judgment must be brought into close exercise, so as to form correct estimates of the condition of the soil and its productive powers, adapted for the peculiar crops intended to be cultivated.

In growing wheat and clover alternately upon the same land, for a long period of time, much pains will have to be taken to prevent the soil becoming foul with weeds and wild grasses. This will be somewhat difficult to do, as neither of the crops can be horse-hoed; but, by using

a liberal amount of seed, both wheat and clover plants will so thickly cover the ground that this object will be partially attained. It is not, however, wise to depend upon such a contingency, and to retain thorough cleanliness to the ground, the cheapest and most efficient means of securing that object would be found in delaying the breaking up the clover sward until the month of July, or just before wheat harvest, of its second year's crop. The number of crops of clover cut, or whether any are cut at all, should depend entirely upon the strength and condition of the land for the wheat crop. If the soil be rich, a crop of hay and clover seed may both be had the first year, and the second year pastured until the first of July, or up to the period for ploughing; if it be only moderately rich one crop would be sufficient, which might consist of either hay or clover seed, or part of both, as might be required; and during the remainder of the period, if possible, the ground should be pastured with sheep, as those animals more equally distribute their droppings over the land than any other stock; and if it be rather poor, and a crop of hay is required, in addition to a liberal dressing of gypsum, which by the way should always accompany a crop of clover, a dressing of barn-yard manure should be given sometime during the growth of the clover crop. The sooner it can be given the better for the clover plants; and if a supply could be had for that purpose, the best period would be found in the autumn, or as soon as possible after the wheat crop is removed from the ground.

In breaking up the clover sward soon after the removal of a crop of hay in July, if it is practicable to delay the ploughing until three or four inches growth of young clover covers the ground, the wheat crop will thereby be improved. One thing however must be observed; viz., that the breaking up of the clover fallow must not be driven so late as to risk injury being done, by not giving sufficient time to decompose the inverted sod. A clean clover and timothy soil, if it be thinly ploughed, will thoroughly undergo decomposition in about five weeks, in midsummer, but if there be any wild grasses—especially couch grass—a longer time than this will be required to effect that object.