

the vexatious labor problem of our present day will be worthy of empirical recognition. Around Thamesville there are a goodly number of farms manifesting a spirit of thriftiness, but it was when the neighborhood of Melbourne was reached that we found ourselves in one of those rich dairying sections scattered over Southern Ontario. Here again corn was in the ascendancy not for ripening but ensilage. Fields of roots were in evidence, while herds of sleek well-fed cows were pasturing on every side. A few miles west of Delaware there is a landscape view which, once witnessed is not easily forgotten, where the broad valley of the Thames stretches away to the north and south. Passing through this tract of rich lowlands we return northward by way of Lambeth to London. Here also may be seen testimonials of time's ravages in decaying and neglected farms. Nearing the city we passed the now widely known "Advocate" farm, Weldwood, and truly the words applied by Israel's shepherd King in his description of Mt. Zion apply here, "beautiful for situation is Weldwood." As a well-watered portion in a desert, or a cultivated oasis in a wilderness, it stands as a demonstration of what can be, has been, and is being done by following safe, sane, scientific lines of farming, within easy reach of every enthusiastic, energetic, soil-tiller. What is wanted all over southwestern Ontario is just such practical demonstrations of up-to-date farming as may be noted by a passer-by at Weldwood.

Essex Co., Ont.

A. E.

Maryland Investigations re Liming.

In summing up the results obtained through investigations of the Maryland Experiment Station on the rate of diffusion and deflection of different limes, in different types of soils, the following facts are observed by L. B. Broughton, author of Bulletin 166, "How is Lime Distributed through and Lost from Soil."

Different substances have very different rates of diffusion, and in consideration of the salts used in this investigation the most diffusible salt of any is calcium sulphate; magnesium carbonate is considerably less diffusible than calcium sulphate; calcium carbonate is less diffusible than magnesium carbonate; calcium oxide is but little less diffusible than calcium carbonate, calcium phosphate less than either the carbonate or oxide, and barium hydrate considerably less than either of the six salts studied.

The rapidity of diffusion depends on the difference in the concentration of the salts; the greater the difference the more marked the effect will be.

Diffusion is considerably influenced by temperature, and becomes more rapid in respect to some salts as the temperature rises.

Of the three soils used, salts diffuse most rapidly through the sand soil; less rapidly through the loam soil and only to a slight extent through the clay soil.

The movements of salts in a soil are to a large extent governed by the physical constitution of the soil; the soil having the coarser particles allowing the salts to diffuse more rapidly than the soil with many small particles.

The amounts of lime removed from the soil by the drainage water is the greatest source of loss of lime to the soil, and the extent of this loss depends entirely on the kind of lime added to the soil, and the kind of soil limed.

The carbonic acid in a soil plays no insignificant part on the influence of diffusion of lime in the soil, checking the movement of calcium oxide by forming insoluble carbonates, and forming more soluble salts with the insoluble forms as calcium phosphate, carbonate, sulphate, and magnesium carbonate.

The amount of lime removed from the soil, by the crop is in the most part very small, yet it is one of the principal means by which lime is taken from the land. In considering the exhaustion of the soil by the crop it is readily seen that exhaustion by this means is in no way so great as is suffered by depletion.

THE PRACTICAL APPLICATION OF THE RESULTS.

Clay soils held or fixed all kinds of lime better than sandy soils.

The loss of different kinds of lime from a clay soil was much less but relatively the same as with the sandy soil.

The results with the loam soil stood approximately between the clay and sand soil—showing that the greater the amount of sand in a soil the less is its capacity for holding or fixing lime, or in other words the more sand in a soil the more frequent should it be limed.

Magnesium lime suffered a greater loss through drainage than calcium lime.

Carbonate of lime was more easily removed by drainage water than caustic or burnt lime.

Gypsum or "land plaster" was more easily

lost from the soil by the drainage than any other form of lime.

These results would seem to indicate that the presence of sulphates in the soil, which could unite with the lime of the soil, would have a tendency to cause a loss of lime through leaching.

Cleaning Grass and Clover Seeds.

(From a circular issued by the Seed Branch, Ottawa.)

Any good fanning mill, in which thorough control over the air current is obtained and a series of four or more riddles and sieves may be adjusted at will, may be fitted and operated to

It is most important to have a full equipment of both wire and perforated-zinc riddles and screens of all sizes made for small seeds. The want of any one of these may entail a waste of good seed or other loss many times greater than the total cost of the full equipment of screens.

Before fitting the mill for cleaning, trails by hand should be made with the screens arranged in series, one over the other, to determine what screens should be used to produce the best possible results with the least possible waste of good seed. It will very often be found practicable and profitable to the farmer to make two grades in preparing his grass or clover seed for market. If, however, the seed has been taken from a weed-infested field, it is usually to the advantage of the producer to sell it in an uncleaned condition to a wholesale merchant who can clean it with special power cleaners.

SIZES OF SCREENS.

For grass and clover seeds the following sizes of screens are employed:—Wire cloth, (sizes given are the number of wires to the inch each way), 32x32, 30x30, 28x28, 26x26, 24x24, 22x22, 20x20, 4x30, 4x28, 4x26, 4x24, 4x22, 4x20, 3x18, 3x16 and 3x14.

Perforated zinc, (sizes given are the diameter of the perforation in parts of an inch), 1-15, 1-16, 1-18, 1-20, 1-22 and 1-25.

Ridging Land in the Fall.

A certain amount of heavy clay soil is ridged every autumn in order to place it in better tilth the next spring for seeding, and to somewhat hasten the seeding season. It is a well known fact, that loose soil will retain more moisture than packed soil, and consequently fairly deep fall plowing is resorted to. A rough surface is also advised for heavy soil during the winter. Clay owes its tenacity to a colloid material upon which the peculiar heaviness and stickiness depend. It is astonishing what an effect this small amount of colloidal kaolin—only about one and one-half per cent. of the whole—has upon the soil. Clay is made up of very minute particles, and the smaller the particles the greater the cohesion of the mass. Thus it is that clay is more impervious to water than other soils. The tenacity of a clay soil depends greatly upon the condition of the colloid clay contained in it. To make it friable and easy to work, it is necessary to flocculate the particles. Lime or chalk is used for this purpose, and frost is a very effective agency. When a soil freezes, more or less slowly as it always does, the water in it forms a clear ice, the colloid clay is concentrated, and finally separated the particles coagulating or flocculating. The more of such soil that is exposed to the direct action of frost the better. Here is where fall plowing leaving a rough surface is beneficial. The rougher the surface the greater the exposed area. This being the case ridging would have a still more beneficial effect.

Ridging, provided the rows run at right angles to the lay of the land, aids in diminishing washing of the soil. Never should the rows be run parallel with the slope, as they would tend to promote washing. In these days of disappearing forests together with the rapid increase of wire fences, it is often difficult to hold the snow in the fields. Ridging is a great help in keeping the field covered with this natural blanket, thus giving the field a more even distribution of moisture in the spring. These things are important.

The increased exposed surface has a more or less marked effect upon the drying of the soil in the spring. The more soil exposed to sun and wind the greater the early evaporation, and consequently the soil is in condition for tillage earlier than it otherwise would be. This is important as almost invariably early sown seed produces largest yields, and besides it facilitates farm operations by allowing the farmer to keep well ahead of his work.

Ridging cannot be profitably practiced under all conditions. A well underdrained loamy soil is not in as great need of it as the heavy clay. Light soils are not so much benefited. It means extra labor at a busy season, and the land must have previously been plowed to a fair depth because it is necessary to have it loose for either the double mold-plow—which is the most satisfactory plow to do it with or the single plow

to cut and cover satisfactorily. Where land is plowed to a fair depth soon after harvest and cultivated a few times to kill weeds, it is in a good state for ridging. If a double mold-plow is not available a single plow may be utilized, it doing better work if it does not clean too freely. With a good team and the soil in fair condition, from three and one-half to four acres may be ridged up daily. It is worth a trial under some conditions as heretofore outlined, and may be done at the last moment before freezing up.

THE DAIRY.

Cows exposed to late fall rains during the cold nights will very soon show a considerable reduction in yield of milk.

The food that a cow gets has a very important bearing on the amount of milk given. Yet the same amount given to each of two cows does not cause them to produce like quantities of milk. The output of the cow is the real measure of her value, and it can only be accurately ascertained by weighing her milk.

The slime which accumulates on the inside of a separator bowl should be carefully removed and burnt at once, says Prof. H. H. Dean, in his book "Canadian Dairying." Never allow this to dry and be blown about on the farm as it may spread disease, he cautions. Neither should it be allowed to go into a drain from the dairy as it may clog the drain.

A certain amount of exercise is necessary with all classes of live-stock, milk cows not excluded. When kept under the best sanitary conditions it is doubtful whether very much exercise is needed, but under most conditions a little outdoor exercise tends to maintain vigor, and the greater the vigor the greater the cow's usefulness as a milk producer. Besides getting exercise, there is nothing like fresh air for stabled stock, and an hour or two daily in a sunny yard is beneficial to all classes of stock.

Dairying is specialized farming, and for most profitable returns must be operated as a specialty. Nothing but the best cows should be considered, and these high producers require careful attention in breeding and feeding, that the maximum production of milk be reached without injury to the fecundity of the cows, or to their constitution, or that of their offspring. It is a nice point to divide just where the limit of real profitable production lies. A cow that breaks a record under forcing, but fails to breed again represents a great loss, for with just a little less strain on her system she might have become a producer of more of her kind. This is perhaps the most possible result, but forced production due to too long lactation periods, early breeding or too frequent milking and over-feeding may cause the progeny to be weakened, and the ultimate result if persisted in would be a degenerate race with an over-drawn dairy type, but no constitution to back it up, no digestive capacity for manufacturing rough feed into milk. Heavy production is where the profit lies, and comparatively few cows in the country do their best, but there is no doubt that milk production may be forced to such a stage where it is injurious to the breeding possibilities of the cows.

Ropiness in Milk and Cream.

Ropiness in milk is one of the most serious troubles with which milk dealers have to contend. This condition, which is objectionable more on account of its unwholesome appearance than from any known harmful effect which it produces, has received its popular designation from the viscid, slimy consistency which characterizes the affected milk. The cause has been found to be the action of certain bacteria, and a number of apparently different species have been described as possessing the power of producing the ropy condition.

This trouble, which is widespread and of considerable economic importance to milk dealers and butter makers, should not be confused with the abnormal changes in milk which accompany an inflamed condition of the udder, frequently called "garget." Milk drawn from udders in this condition is more or less thickened by the presence of pus, or may in addition contain white, tough, solid masses of casein, which pass through the duct of the teat with more or less difficulty. Milk in such condition is by some called ropy, and consequently it has been asserted that a diseased condition of the udder is the cause of all ropy milk. The investigations which have heretofore been made do not throw any definite light upon this alleged cause.

My observations upon the occurrence of ropi-