enlists the aid of people who otherwise would not hunt the birds. A friend of mine has a very effective sparrow-trap that I will try to explain. A square tube, like an elevator leg, about 10 inches square, and 15 inches or more in length, is built of cull lumber. It is nailed to the end of the barn, the upper end being against a swallow hole, which is cut about 8 inches square. A hole in the tube is cut opposite the swallow hole, and a pane of glass inserted. The sparrows fly through the swallow hole and strike the pane of glass, falling down to bottom of tube, where they may be taken out through a door. A piece of tin nailed to one side of tube, and slanting down to within two inches of opposite side, helps to keep sparrows from fluttering up. When one enters the barn the sparrows all rush for the swallow hole, and, passing through, strike the pane of glass in the tube, and fall to the bottom partially stunned. As many as forty have been taken from this trap at once.

Grain soaked in a strychnine solution is effective, but great care must be exercised to keep it away from poultry and animals.

Middlesex Co., Ont. W. E. WILLIAMS.

Plea for Better Plowing.

The principle upon which the modern plow is made is not different from that of the plow of fifty or one hundred years ago. There have been improvements, no doubt, all tending to make the plow a more efficient implement. It has been modified to meet modern ideas, as regards soil cultivation, but, generally speaking, the change has been more towards speed in turning over the soil than in a better method of doing this. As people's ideas as to how the soil should be turned over have varied, so the plow has varied in construction to meet these ideas, though the essential points remain unchanged. The important question, then, is whether or not modern methods of plowing are an improvement over those in vogue twenty or twenty-five years ago. May it not be that speed in plowing has been gained at the expense of efficiency in work done?

Whether the modern plow is a better implement than its predecessor for the work it is intended to do, or not, good plowing depends more upon the skill of the man handling the plow than any other part of soil cultivation. Good harrowing depends more upon the harrow than upon the person in charge of it. Not so with good plowing. A plow may be ever so well suited for the soil in which it is to be used, but the work it will do may be poorly done through the plowman not being competent. Good plowing, therefore, is not so much a question of good plows as of good plowmen. Are there as good plowmen in the country to-day as there were twenty or twenty-five years ago? The writer is inclined to answer this question in the negative. Has there not been of late years too much dependence put upon the plow itself to do effective work, rather than upon the man between the handles?

The question is, How can improvement in plowing be brough about? If, as has been shown, the principle of the plow is the same as it was a hundred years ago, and the improvements in recent years have not tended to relieve the plowmen of any responsibility, then, improvement can only come by training the plowman to do better work. Is this training needed? If all plowing is as well done as it should be, then the answer is negative. But no one who knows what good soil cultivation is, and what it means in improved crops and in clean fields, will venture to say that the plowing of to-day is as well done as it should be. There are many good plowmen in the country, but we are well within the mark in saying that the percentage of good plowmen is no larger than it was a generation ago. Judging by the number of dirty farms, the modern Canadian farmer is not making much progress in plowing and in soil cultivation generally. Good plowing is at the basis of all soil cultivation. If it is not well done, and not suited to the needs of the soil, no after-working will make the cultivation of that soil and its preparation for the seed perfect.

Education of the individual is the best force in improving soil cultivation. But how best educate him? There was a time, in Ontario, when the annual plowing-match was an event of importance in many localities. Interest in these competitions seems to have died out. While they may not have been all that one could wish from an educational standpoint, they were an incentive to good plowing, with proper management, and prizes awarded by men who know what good plowing means, and the kinds of plowing suited to different soils, the plowing-match should be a valuable agency in training plowmen. There are plowing-matches held to-day in some parts of the country that are doing very effective work in this direction. Their number could be increased with advantage.

A plowing-match need not necessarily be confined to contest in plowing alone. Its scope could be widened to include other contests in soil cultivation. It might be made the occasion for testing the value of different implements for cultivating the soil. Where soil conditions permit, prizes might be given for the best-prepared seed-bed. In many ways, the annual plowing-match could be made an important factor in bringing about better methods in soil cultivation. They could be made the occasion for an address or two on soils and soil cultivation by competent persons. In short, they could be made a field for demonstration work in plowing and soil cultivation generally.

To get the best return from the plowing-match, it should be placed under an organization that would make it effective. Why could it not be taken up by Farmers' Institutes? The superintendent is ever on the alert for some new features. Properly regulated, the plowing-match, widened in scope, as has been suggested, affords an opportunity for increasing the interest of the farmer in his local Institute. Many Institutes have a surplus in the treasury, some of which might be utilized in instituting a series of plowing-matches and demonstration work in soil cultivation at central points in the Institute district. Live stock judging schools are valuable, and we are pleased to know that these will be taken up more in future by Institutes. The plowing-match furnishes an opportunity for doing effective work in another line.

The effective organization now controlling agricultural societies might also be utilized towards resurrecting the plowing-match and making it a potential force in securing better farm crops. The successful field-crop competitions conducted by the superintendent of agricultural societies the past couple of years, could well be backed up by competition in plowing and in preparing the soil for crop production. The two might be handled by the Fairs Department. It is to be hoped that in the near future some branch of the public service interested in better agriculture will take over the plowing-match and see what can be done with it.

"CHRONICLE."

Fertilizers on Muck Soils.

Increased yields from the use of muriate of potash, Thomas' phosphate and lime on muck soils were the results of tests made by F. H. Reed, B.S.A., Agricultural Teacher in the Collegiate Institute, Lindsay, Ont., last summer. The experiments were conducted on the farm of Walter Arksey, Victoria County, on small plots comprising two square rods. Coboconk lime was used. This grade of lime is practically pure calcium oxide, and the freedom from magnesia makes it more desirable as a fertilizer than that from limestone of many sections, because of greater power to neutralize acidity in the muck, and because there is not the tendency to produce wet and sticky soil. It cost 22c. per bushel of 70 lbs. The fertilizers were received from the Ontario Agricultural College. Four plots were treated as follows:

Plot No. 1—No fertilizer. No. 2—Lime, 30 lbs. No. 3—Lime, 30 lbs.; muriate of potash, 2½ lbs. No. 4—Lime, 30 lbs.; muriate of potash, 2½ lbs.; Thomas' phosphate, 5 lbs.

The cost of each fertilizer per acre was: Lime, 2,400 lbs. per acre, at 31.5c. per cwt., $7.56; muriate of potash, 200 lbs. per acre, at $2.50 per cwt., $5.00; Thomas' phosphate, 400 lbs. per acre, at $1.00 per cwt., $4.00; total cost per acre where all were applied, $16.56.

Following are the yields of straw and oats:

Plot No. 1—No fertilizer; total yield, 13 lbs. per 1/80 of an acre, or .52 ton per acre. Grain yield, 4.5 bushels per acre.

Plot No. 2—Lime; straw, 4 ft. long, slightly rusted. Total yield, 34 pounds per 1/80 of an acre, or 1.36 tons per acre. Grain yield, 23.5 bushels per acre.

Plot No. 3—Lime and muriate of potash. Straw, 4 ft. 3 in., and very little rust. Total yield, 36 pounds per 1/80 acre, or 1.44 tons per acre. Grain yield, 27 bushels per acre.

Plot No. 4—Potash and phosphate; brightest straw. Total yield, 38 pounds per 1/80 acre, or 1.52 tons per acre. Grain yield, 29.4 bushels per acre.

On the fertilized plots the heads were very much longer and the grain of much better sample than on the unfertilized plots.

Similar experiments were conducted on Mr. Arksey's farm with fertilizer received from the Potash Syndicate. In these experiments the plots were ⅛ of an acre in size

Fertilizers used and yields were:

Plot No. 1—Unfertilized; total yield, .52 tons per acre; grain yield, 4.5 bushels per acre; straw short; heads very short; crop badly rusted; average length, 15 inches.

Plot No. 2—Muriate of Potash, 200 lbs., costing $5.00 per acre; total yield, 1.44 tons per acre; grain yield, 30.5 bushels per acre; straw well matured, fairly strong, but before ripening the whole crop was badly lodged by heavy rains; heads long and well filled; average length, 4 ft. 3 in.

Plot No. 3—Thomas' phosphate, 400 lbs., costing $4.00 per acre; total yield, .6 tons per acre; grain yield, 7.06 bushels per acre; straw short, weak and rusted; lodged early and did not fill well; average length, 4 ft. 5 in.

Plot No. 4—Muriate of potash, 200 lbs., and Thomas' phosphate, 400 lbs., costing $9.00 per acre; total yield, 1.92 tons per acre; grain yield, 40 bushels per acre; straw bright and strong; grain well matured; crop stood up fairly well; heads long and well filled; average length, 4 ft. 5 in.

Comparative cost of fertilizers and value of increased yield of grain follows, with the increased yield of straw neglected:

Plot.	Fertilizer.	Value of Crop. Oats 35c.	Cost of Fertilizer.	Value Increased.
Fertilizers from O. A. C.—				
1.	No Fertilizer	$ 1.57½		
2.	Lime	8.22½	$ 7.56	$ 6.65
3.	Lime and Potash	9.45	12.56	7.87½
4.	Lime, Potash and Phosphate	10.29	16.56	8.71½
Fertilizers from Potash Syndicate—				
1.	No Fertilizer	$ 1.57½		
2.	Potash	10.67½	$ 5.00	$ 9.10
3.	Phosphate	2.47	4.00	.89½
4.	Potash and Phosphate	14.00	9.00	12.42½

While the profits from the use of the various fertilizers is not large, and in some cases a minus quantity, some allowance should be made for the residual effect, which may reasonably be expected to benefit subsequent crops. Finally, readers are cautioned not to place undue reliance on the above results, which are from a single year's experience on one farm. Other seasons and other soils would doubtless give wide diversity of returns. It would have been satisfactory, also, had one plot been treated with ordinary barnyard manure, as the bacteria thus introduced seem to have a very beneficial effect in the liberation of inert fertility in many of these muck soils. Nevertheless, the above figures are interesting, and in a degree instructive as far as they go.

THE DAIRY.

Problems of the Dairy.

By Laura Rose.

CONDITIONS THAT REGULATE THE CHURNING TEMPERATURE.

The percentage of butter made on the farm is constantly diminishing, and that is as it should be.

There are exceptional cases, but usually it is much better to patronize the creamery or cheese factory, if one is available, than to handle the milk on the farm. Many from choice or local conditions are yet making butter, and making it more especially in the winter, when it is harder to produce a first-class product.

Very often a serious trouble is to get the butter to come in a reasonable time. The different seasons of the year bring about changes which have to be studied and considered. To churn an hour or longer one time is excusable, but to keep on doing so churning after churning is wasting both time and patience. Search for the cause, then apply the remedy.

In preparing the cream for the churn, stir it well, and by the use of a thermometer take the temperature. It is likely to be too cold. Many people bring the cream to the heat the night before, so it will be warm by morning; or they set the crock by the stove. These are not good methods. The best way to heat the cream is to stand the can in a vessel of warm water. Stir constantly, and watch the thermometer. When it shows two or three degrees below what is required, lift out the can, and usually the heat in it will bring up the cream to the desired temperature.

The question so often asked is: "At what temperature should you churn?" No wise person states a definite temperature. Conditions have much to do with it.

1st.—The quality of the cream. The poorer the cream in butter-fat the higher the temperature; the richer the cream, the lower the temperature. Cream containing from twenty-three to twenty-six per cent. butter-fat is the most satisfactory for farm churning. This is equal to about three pounds of butter to the gallon.

2nd.—The amount in the churn. The more cream, the higher the temperature; the less cream the lower the temperature. A churn is best to be only one-third full, and never over a half full. Room must be left for the cream to swell and have a good drop.

3rd.—The length of time the cows are milking. The longer in milk, the higher the temperature; the fresher in milk the lower the temperature. The composition and size of the fat globules change as the cow advances in the period of lactation, making it necessary to have the cream warmer. It is a good plan to have a fresh milk cow introduced into the herd occasionally. She not only helps the churnability of the cream, but improves the quality of the butter.