

too deep, but a firm under-bottom was best; for peas and oats, a deeper seed-bed was desirable, as the roots of these crops penetrated the soil deeper in search of food. The different classes of soil required different treatment: a light, sandy soil, worked lightly, was preferable to deep cultivation, which would tend to make that class of soil leachy. On the other hand, a deep, clay soil could scarcely be worked too deep for beneficial results. Tillage operations, if carried on at the right time, could scarcely be overdone. They also aided in the even distribution of the manure.

How the Public Highways May be Improved.

Mr. A. W. Campbell, C. E., of St. Thomas, pointed out that a number of men interested in bettering the public highways had met together last year in the City of Toronto, and formed what is known as the "Good Roads Association." He represented that Association on the deputation. He thought that in most parts of the Province this must be a live question, and that there was considerable room for improvement on nearly all our highways. He first showed up many of the defects in the present system of statute labor, such as too little work performed, and much of that performed to no purpose. Often one pathmaster undoes what another had done a year or two before. At one of the meetings one gentleman, a municipal officer, was given the contract of digging a ditch for 300 rods along a roadway, and, coming in contact with a big elm tree, he left the outlet there. That was only a sample of the many blunders made under the present system. He enunciated certain principles to be followed out in road construction, such as digging ditches of uniform depth and flow to carry away the storm water, and, where necessary, underdrains should be laid to carry off the subsoil water. Drainage, in fact, was the most important thing, and if so, it should be seen that the outlets were clear of all impediments. The next principle was the making of the road-bed. This should be at least twenty-two feet wide, and its foundation would depend on the kind of road to be constructed. The grading should be high enough to raise it above the soil level, and slightly curving in the centre, so that all the water would freely flow into the side ditches after a storm. In case of earth roads, where no gravel was to be had, he advised that they should be scraped down level in the spring of the year, and a five-ton roller used to pack the earth solid. He used a road machine to do the ditching and grading, and then followed with the roller. If gravel were convenient, there was no better material for the surface. He liked fine gravel, free from earth or sand, and a good liberal coating—not a dribble for a long stretch, to be lost sight of in one year. He thought the present system could be greatly improved, and thought the boys of to-day should be instructed in the principles of road-making, and become the road commissioners of the future. He advised that some uniform system should be followed up from year to year, until all our roads were so improved that at a very small cost they might be maintained. He claimed that if the statute labor of each township were commuted at seventy-five cents per day, that, with that and what is already spent from the general funds for road improvement, in a very few years the public highways could be so improved, if the work were wisely directed, that after that point they could be maintained in first-class condition with about the amount now used on them from the general funds. He strongly urged the farmers to consider this question, and see if they could not devise some scheme that would be practicable, and give better satisfaction than the present one in vogue in most places.

A Racy Account of the Travels of the Delegation in Division No. VIII.

Deputation consisting of H. L. Hutt, B. S. A. Horticulturist, O. A. C., Guelph, the writer on Dairying, and Mr. J. C. Judd, of Morton, representing the Good Roads Association.

The first meeting held was at Blackstock, in Durham county, four miles north of Burkton Station, on C. P. R. On the drive out from Burkton we passed a number of comfortable homes, judging by the fine buildings and surroundings. There was, however, no evidence of corn having been grown to any extent, a crop for which the land seemed eminently adapted.

The Cheese Factory

here is owned and operated by Mr. Houston, but from what could be learned it is not sufficiently patronized to make a first-class factory, having made only 66,000 pounds of cheese the past season. The whey is handled in a manner somewhat peculiar to managers of factories in Western Ontario. An objection being felt to taking whey back in the same cans in which the milk has been delivered, it is bought by Mr. Houston at about five cents per barrel, and re-sold to a few of the patrons who live near the factory, and who can get it home and feed it without having to put in same cans in which the milk is drawn. A meeting had been advertised for 10.30 a. m., but none was held, as there were not more than two or three persons present. A few more coming in, the first meeting was opened at 1.30 p. m., with an address by the writer on "How Dairying Benefits the Farm," and during the time the address was being delivered, the audience increased to a fair size. In the discussion that followed, a number of enquiries were made as to the advisability of purchasing and the use of hand separators. This is contrary to what might be expected in the neighborhood of a successful cheese factory. The audience also manifested a lively in-

terest in the right management of fruit trees, and road improvement, upon which addresses were given.

Passing on east by C. P. R., through Peterboro, the country becomes somewhat rocky and broken, improving, however, in appearance as we approach Tweed, in E. Hastings. We were informed that Dairying is also the chief industry in this section, the cheese factories being at regular distances of four to five miles apart. Upon our arrival at Tweed we found that no Institute meetings had been advertised, and as a consequence, of course none could be held.

Tamworth, in Addington county, being our next place, a fair sized audience was present, and here we met the genial secretary for Addington, Mr. J. B. Ailsworth, father of A. B. Ailsworth, Q. C., of Toronto. After the opening address by the chairman, Prof. Hutt discussed

"The Proper Management of an Orchard,"

emphasizing such points as the thorough level cultivation of orchards without plowing, young orchards never being allowed to run to sod, and old orchards only when there is an excess of growth of wood at the expense of fruit production; liberality in the application of fertilizers. In young orchards the fertilizers used in growing a hoed crop will be found sufficient. One of the best fertilizers for all purposes is wood ashes, to be applied not closely around the trunk of the tree, but over the entire surface of the ground as far as the roots of the trees extend, which is indicated by the spread of the branches above; ashes, having a tendency to produce fruit rather than growth of wood, may be safely applied at all times. Pruning should be done regularly once every year; in young trees, however, light pruning may be done at any time, but the best time for the annual pruning is just after the severe frosts of winter are past, and before growth starts in the spring. Thin out the branches, wherever crowded, sufficiently to admit plenty of air and sunlight to ripen the fruit. Spraying trees in spring for destruction of insects and prevention of fungous diseases: use Bordeaux mixture for fungous diseases, and add three ounces of Paris green to barrel of mixture for destruction of insects; spray twice before blossoms open and twice after. Speaking of small fruits, Prof. Hutt urged the importance of every farmer growing a liberal supply of small fruits. When trees are inclined to over-bear, thin out the fruit when small, and thus secure a crop every year.

Mr. Hutt's address on "Window Gardening" and "Farming as an Occupation" were well received, the former especially by the ladies.

From Tamworth we drove to Centreville and on to Napanee. In this vicinity dairying is the leading branch; and as

The Good Roads Movement

is closely identified with that of delivering milk at cheese factories, the question was fully taken up by Mr. Judd, at Centreville and other places. He gave a synopsis of the agitation for road reform in Europe, the United States, and in Ontario. He referred to the neglect of common roads in contrast with the advancement and assistance hitherto given to Provincial railways. Common roads are the leaders to and the feeders of railways and commercial centres. In referring to the economic side of the question, he showed a large estimated loss to the dairy interests of the Province, and gave individual instances where loss had occurred in drawing milk and whey. He humorously referred to the present system of statute labor, and declared it pernicious, although he does not advise its abolition until we have something better to take its place. He condemned, *in toto*, the system of the appointment of Pathmasters, and recommended the appointment of a Road Supervisor for each township, under whose supervision the roads of the township shall be placed. He called attention to the proper road machinery for the township, viz., an improved road scraper and roller, also a stone-crusher, for the county.

In conclusion, he solicited the attention of every farmer to the subject in order that a uniformity of opinion may be arrived at as to the best system to adopt to secure road reform.

Mr. Judd's addresses were well discussed at all our meetings, and a desire was expressed by the majority of those present for the improvement of our roads.

Milk of Good Quality.

Centreville cheese factory is owned and operated by Mr. William Whelan, who has secured very satisfactory results the past season, in fact, his average of pounds of milk to make a pound of cheese, being rather phenomenal to us Western men, being a little under 10 pounds. His price for the season being about 9.88 cents. The factory at Newburg, on the road to Napanee, owned and operated by Mr. Madden, is now making butter in the winter season; also, the Palace Road factory, near Napanee, owned by Mr. Gerow, who is, however, not paying for milk according to per cent. of fat, but by weight alone.

Travelling Under Difficulties.

Our meeting at Napanee on Tuesday, following the municipal elections, was poorly attended, and at night an informal talk with the few present was all that was done. The deputation started early Wednesday morning for Stella, on Amherst Island. Driving as far as Bath, opposite the Island, we were informed that a thin ice covered the Bay, and it would be impossible to cross. However, it takes something to dampen the ardor of an Islander, and shortly after we received a message by telephone

from the President on the Island, that they were coming for us. Just at noon they arrived, having crossed opposite Millhaven, two miles farther down the Bay, where, by carefully picking their way with a small, flat boat with runners on the bottom to run on the ice, they had crossed, being the first persons crossing on the ice this winter. It being a clear day, we picked our way around open water and newly-formed ice, back to the Island, a distance of about three miles, and landed in safety. We were rewarded for our efforts by three splendid meetings, the evening being a "rouser." Addresses from resident ministers and good music enlivened the meeting, and cheered the deputation and everyone present.

In re-crossing the ice we were not so fortunate, the day being stormy and the wind blowing a gale. We added a sail to our craft and thought we might be able to all ride. The wind was too strong, however, and a runner on the leeward side was broken. We then proceeded as the day before, some walking and some pushing the boat. Not being able to see ahead but a very short distance, we ran upon a stretch of newly-formed ice, not being more than 1½ inches thick, and it was only by the utmost exertion in keeping the boat moving rapidly along for a distance of about 20 rods that we avoided going through. Speaking especially for myself, I think we all breathed with relief when we struck thicker ice and took a rest. Mr. Judd, who carries an averdupois of 230 pounds, says he will "go around by Jerusalem" rather than consent to cross any more ice.

Dairying.

At Shannonville we had clearly an audience of live dairymen, a number to whom the writer talked keeping 30 to 40 cows each. Cheese factories here are well patronized, and the whey returned in the same cans that deliver the milk. Only one factory near Deseronto has commenced the manufacture of butter, and is also making skimmed cheese, a portion of which the manager states he has sold at 7c. per pound. This looks like a profitable business, as the cheese was made from skimmed milk after going through a separator. As at the other meetings, the writer dealt with dairying, emphasizing the importance of selecting cows with great care, keeping only those we are certain will give a clear profit over the cost of feeding and caring for them. From having tested the milk from a large number of cows of common herds, he had proven that 100% was not an uncommon difference in the value of cows in the same herd. He took the ground that any cow giving from 30 to 40 pounds of milk testing from 4 to 5 per cent. of fat was worth double another giving from 20 to 30 pounds of milk testing from 3 to 4 per cent. of fat, and this difference was very common in the same herd. One would sell for almost as much as the other, at almost any auction sale, but the one would consume as much as the other, and for every dollar you could get from the one, you could get two from the other. This was no guess work. Hence the importance of purchasing cows only when giving milk, so that we can be sure of the quantity and then test and be sure of the quality also, this being more important than hitherto, as butter was now being made in many factories as well as cheese. By milking the cows a longer season, we would increase the yield, and thus cheapen the cost of production. Select cows also with good constitutions, which can be determined to a great extent by general appearance. He gave as his opinion that a great mistake was made by dairymen, especially those keeping a small number of cows, in using bulls that had no dairy breeding, having been bred for generations for their beef qualities alone. He believed that the profits of future dairying depended to a great extent upon winter dairying and corn production. He urged the importance of closer co-operation and confidence between factory managers (whether private or joint stock) and the patrons. He urged whey tanks clean, sterilizing the whey where it was returned in the milk cans, and emptying the cans as soon as returned to the stand. He gave particulars of co-operative buttermaking in cheese factories, and ventured the opinion that to make all butter first-class, meant doubling the consumption in Canada. He laid stress upon the losses that occurred in treating cows with unkindness, and in creaming milk improperly.

The hearty manner in which these different points were received and discussed showed that there were many good dairymen in every audience. Passing the beautiful county of Prince Edward, noted for the production of very fine apples, we met live officers, and plenty of intelligent dairymen also, and in our drive from Wellington to Picton we thought it one of the finest spots in the Province. Thus it was to the end of our work at Grafton.

I. W. STEINHOFF.

Preparation for Spring Building.

In view of the growing popularity of cement-concrete for walls, floors, silos, hog-pens, troughs, structures will be built this coming season. We would say to those intending to build, it would be well to lose no time in preparing for going at it as soon as possible in the spring by securing the necessary sand, gravel and stone while the sleighing is still going on. For silo building the walls can be made much stronger and earlier in the season than if made in the spring, because the cement sets much more rapidly in the strongest form.