hours' time and a few cents' expense, a drag can be made that will so greatly improve the roads, there will be no excuse for failing to utilize it. The split-log drag will not make asphalt pavements, ideal stone roads, or gravel roads of the most substantial character, but it has a duty to perform that cannot be discounted, if we are to equip ourselves to make roads in the best possible manner, maintain them as they should be maintained, and utilize money and labor to the best advantage.

WHAT WE HAVE SPENT ON ROADS.

Probably no State in the Union has expended more money and labor on roads than has Ontario. In the last ten years, ten million days' labor and nearly $11,000,000 in cash have been spent, much of it innocently, if not in an ignorant and shiftless way, and consequently it has produced some discouraging results. It may be that much of this disappointment has been owing to imperfect equipment. It isn't necessary to raise more money or spend more time to make ideal roads. The expenditure of the past ten years, properly applied, should suffice to macadamize every rod of road.

THE FUNDAMENTAL PRINCIPLE IS DRAINAGE.

However, we have been making progress. One hundred and fifty-three townships have done away with statute labor, a system which, though it accomplished an enormous amount of good in the pioneer stage, was unable to finish the work of roadmaking. Proper results in roadmaking require shrewd ability in direction and adherence to fundamental principles. And, after all, the whole problem is a question of drainage, by which we secure a firm foundation to carry the load. To insure drainage, the road must be crowned, and the crown kept scraped or smooth. Where the roads are heavily travelled, they must have metal surface to resist the action of traffic. Make the bottom ; see that it is tile-drained, if necessary; then make the ditches, and then have a uniform drop to the ditch.

TILE-DRAINING.

The question of treating "spouty" hills had been raised during the previous address. With regard to these places, Mr. Campbell remarked that, no matter how much gravel is piled on them, the whole mass will simply quiver, moving up and down under traffic, especially in the spring, and finally breaking all up. In treating such, it is necessary either to have a very high crown, or, better still, to tile-drain. Run a row of ordinary farm tile down each side of the road, dig the trench narrow, lay the tile carefully, and fill in with gravel, broken stone or sand, which will then stand as a filter bed. Having been thus drained, a coat of gravel on the crown will secure that piece for all time to come as a good road.

WIDTH OF ROADS.

Leading roads should be 24 feet wide between ditches ; for others, 20 feet is sufficient, while back concessions and division lines need not be more than 18 feet. The crown should be an inch to the foot from center to side ; that is, a road 24 feet wide should have a drop of one foot each way.

AIMING AT PERMANENT RESULTS.

In Ontario we are aiming at durable roads. Nearly 3,000 miles are now being improved as county roads, from which main township roads lead off. Back of these, again, are the concessions and side lines, many of which will, for a long time to come, remain earth-surfaced. Here is the place for the split-log drag. Having ditched these roads, and crowned them by whatever means may be deemed best, we come to the most important stage, which is maintenance. For putting up the road in the first place, Mr Campbell likes the grading machine. It is a good implement in capable hands, and has been of immense service in roadmaking. It is a fact, however, that many miles of road have been injured or destroyed by its misuse. Its use must be studied intelligently. Many townships would be better off if they never had a grader within their limits. In many municipalities its operation is a howling farce. For all that, it is a very serviceable machine if intelligently used.

THE PLACE OF THE SPLIT-LOG DRAG.

After the crown has been constructed by the grader, the split-log drag, or whatever means you choose, then keep the ruts out. The object and effort should be to use the split-log drag, and use it as often as may be needed for this purpose. Decide that it is necessary in spring after the frost has gone out, as soon as it is dry enough; then again a little later, rain or not. Then, throughout the summer and fall, use it after every rain.

During the past summer, through the enterprise of "The Farmer's Advocate," which, ever since he has known it, has been devoting a great deal of space and intelligent attention to the question of roadmaking and maintenance, he has had an excellent opportunity of studying the work of the split-log drag in the split-log-drag competition, which, by permission of the Minister, Hon. Dr. Reaume, he had undertaken to judge. The 63 competitors who entered in the contest were only a small proportion of those who have been sufficiently interested to make and use the drag. The contestants displayed a marvellous interest in the work of the drag, and the idea of the prize was entirely subordinated to the desire to improve the roads. In most cases the drag was used on earth roads, and in the majority of instances the road had been at some time previous shaped with the grader. In other instances the drag was made to do the crowning, and its feasibility for this purpose was amply demonstrated, although it requires the expenditure of considerable energy to crown a flat road with the drag. The sixty-three men were nearly all convinced that the drag is one of the most serviceable implements that could be employed by a municipality.

MAY BE USED TO ADVANTAGE ON GRAVELLED ROADS.

Not only is it useful on earth roads, but it is good to shape a freshly-gravelled road. On an old gravelled road, it would probably be found best to reverse the drag, using it to scrape the mud and dirt off the gravelled portion, thus completing the convexity without covering the metal with dirt. By using the grader in its proper place as an implement of construction, and then having the drag used when required on every beat, he believed that in ten years a transformation will be made in the condition of the roads.

UNITED STATES CROPS IN 1907.

The final estimates of the Crop-reporting Board of the Bureau of Statistics of the Department of Agriculture (in which certain necessary corrections have been made in the earlier preliminary estimates), based on the reports of the correspondents and agents of the Bureau, supplemented by information derived from other sources, indicate the acreage, production, and value, in 1907, of the farm crops of the United States named in the following table to have been as stated therein :

CROPS.	Acreage. Acres.	Production. Bushels.	Farm Value, December 1, 1907.	Value Per Bushel. Cents.
Corn	99,981,000	2,592,320,000	$1,340,446,000	51.7
Winter wheat	28,182,000	409,442,000	361,217,000	88.2
Spring wheat	17,079,000	224,645,000	193,220,000	86.0
Oats	31,887,000	754,448,000	334,568,000	44.8
Barley	6,448,000	153,317,000	102,058,000	66.6
Rye	1,926,000	31,566,000	23,068,000	78.1
Buckwheat	800,000	14,290,000	9,975,000	69.8
Flaxseed	2,865,000	25,851,000	24,713,000	95.6
Rice	627,300	18,738,000	16,081,000	85.8
Potatoes	3,124,000	297,942,000	183,880,000	61.7
Hay	44,028,000	*63,677,000	*743,507,000	$11.68*
Tobacco	821,000	+698,126,000	76,284,000	+10.9*

* Tons. + Pounds. * Prices of cigar types nominal.

The average weight, per bushel, is shown by reports received by the Bureau to be 56.9 pounds for spring wheat, 58.9 pounds for winter wheat, and 29.4 pounds for oats.

PROUD OF IT.

The Christmas number of your paper has just reached us, and we are proud such a high-class magaizine is published in our country. We find this number is quite up to your usual high standard, and, wishing you continued success, we remain, WM. RENNIE CO., LTD.

Toronto, Ont.

I would not like to be without your paper. I get a lot of valuable information in it, as I think every one that reads it does. We think more of "The Farmer's Advocate" than all the rest of the papers we get put together.

Simcoe Co., Ont. CHAS. F. BILTON.

THE DAIRY.

ARE THE COW-TESTING ASSOCIATIONS WORTH WHILE ?

OPINIONS FROM SOME OF THE MEMBERS.

At the dairy session of the Ontario Winter Fair this year a feature was made of the testimony of practical farmers who have had experience with the cow-testing associations organized in various parts of Canada by the Dairy Branch of the Dominion Department of Agriculture.

FIVE COW-TESTING ASSOCIATIONS IN PETERBOROUGH.

The first speaker was E. Hawthorne, of Warsaw, Ont., who stated that there are five cow-testing associations in Peterborough County. As is now pretty well known, the conditions imposed by the Dairy Branch are that there must be at least twenty members in each association, who will agree to weigh and sample each cow's milk morning and evening of three days a month. From the data thus obtained, the Government expert calculates the monthly yield of milk and butter-fat of each cow in every herd, and the results, in tabulated form, are supplied to each member. The figures reveal some striking differences in the yields of individual cows in the same herds. Valuing the butter-fat at 26 cents a pound, there was found to be a difference of $25 or $26 per annum between the yields of different cows. The work of cow-testing is a good thing, and it is right that the Government should take the lead. He cited the benefit of the travelling dairy, which was a Government enterprise. It is true the work of cow-testing redounds to the advantage of the individual, but we often have to coax people to do what is good for them. It has required a vast deal of persuasion to get people to build silos, and—he said it with all reverence—they even have to be coaxed to save their own souls.

TIME TRIFLING—BENEFITS LARGE.

A. Dunn, of Ingersoll, secretary of his local cow-testing association, was sure that the great majority of dairymen had an exaggerated idea of the amount of time required to weigh the milk, and failed to realize the benefits. The time is a mere trifle. From actual timing, he was able to report that, in one large herd, it required an average of 20 seconds per cow to weigh and sample the milk, and in another it took 21 seconds. Still another said he could weigh and sample the milk of three cows in a minute. But, to put it at one minute per milking (which would be very slow and dilatory work), it would take one hour, all told, to weigh and sample the milk three days a month throughout a ten-month milking period. Surely that is very little time to take to find out the standing of the cows.

As to the benefits, supposing you had money to let out on notes of hand, would you feel satisfied if on one hundred dollars you drew one or two per cent. interest, whereas on another hundred you received ten per cent ? Would you not insist on a reasonable return from each hundred-dollar note ? So with the cows ; are we to be content to have some that make a profit and others that do not ? Are we not justified in looking for a profit from each cow ?

There are some people who claim that weighing is unnecessary. They think they can guess the weight nearly enough. He was prepared to tell them, on the authority of every member of his association, that it is impossible to compare the yields of cows at all accurately without weighing and testing the milk, and then adding up the records at the end of the year. He told of two cows in his own herd which milked about equally well when fresh, and appeared about equally good but when it came to totalling up, they found that one of them gave 5,652 pounds of milk in 11 months, the other 11,155 pounds of milk in 12 months. Again, he had one cow which he thought would have to go, as she did not appear likely to come up to his standard of 6,000 lbs. of milk, but he was surprised to find that she gave over 7,000 pounds. Had he not kept a record of this cow, he would have made the mistake of selling her for about $20, as large numbers of the poorer class of cows are sold annually from this district, "to go to some locality where the people are better off," and able to keep poor cows. Innumerable instances could be cited to show that the man who depends on guesswork in culling his cows, is almost sure to fool himself. It pays to weigh the milk, and it pays to test. One man, who had been weighing his cows' milk for years, and by means of it had raised his average milk yield from three or four up to eight thousand pounds a year, brought it to the association last year in order to have it tested for butter-fat. The time it takes to weigh milk is trifling, and the longer you are at it, the less consideration you will attach to it. The dairyman above mentioned, after first starting to weigh, dropped the practice, but resumed it the next season, and has done it consecutively ever since. The question was raised whether weighing and