the hay is in full or late bloom and the weather is dry and breezy. Third, mow in the morning and rake and house the same day. This method will answer when there is not much succulence in the grass at the time of cutting it; that is to say, when it is somewhat overripe. And when there is a necessity for it timothy may be cut on a large scale and put up into large cocks, in which it may be allowed to stand for several days in good weather. But the safest way is to cut a moderate quantity from time to time and then get it housed and stored away when ready. There can be no question but that the ideal hay, whether timothy or clover, can be best made in the cock. Particularly is this true of clover. And yet it may not be always wise to make it in that way. It takes as long to put hay up in cock where the work is properly done as to pitch it up into a wagon, and when it is put up thus it cannot be loaded with the hay loader. Whether the extra labor involved will be justified must be determined by such conditions as relate to wages, weather and the extent of the crop. But it will usually be found advantageous to cure clover in the cock when cut early, while it will much less frequently pay to go to the labor of curing timothy by so labored a process.—*Professor Thomas Shaw.*

THE PROGRESS OF AGRICULTURE.

TRANSPORTATION, COLD STORAGE, AND THE VALUE OF EXPERIMENTAL WORK.

By Lieut.-Col. O'Brien, President of the East Simcoe Farmers' Institute

Since I last had the honor of addressing you there has been a very decided improvement in the conditions of agriculture. Good crops and better prices have rewarded and encouraged the cultivator of the soil. The stock breeder and the dairyman have each in their respective branches of business had more than average success, and the outlook for the future is as promising as the conditions of the present are satisfactory. The signs of material progress are everywhere visible, and their reality is shown by the increase in the exports, especially of agricultural produce, in the greater purchasing power of the farmer as shown by the increase of imports, and in the fact about which there can be no doubt, that farming land is not only more saleable now than it has been for many years past, but that it is saleable at very much better prices.

Another matter of vital interest to the farmer is the increased attention which is being paid to the promotion of better and cheaper modes of transportation. In this respect the farmer has had much to complain of. He has first been heavily taxed, both in money and in the giving away to railway corporations of fertile soil which should have been free for his occupation; and then he has been compelled to pay to these companies, for the carrying of his produce, not only the cost of transport, and a reasonable profit on the capital invested, but large percentages upon a railway capital purely fictitious. He has thus been compelled to work for the enrichment of a few fortunate individuals, who have realized enormous fortunes, not by the labor of their hands or the legitimate exercise of intellectual power, but by a species of craft, which, stripped of its disguises, could only be regarded as the meanest kind of dishonesty. The time has certainly come, if indeed it had not come many years ago, that the farmer as well as the consumer, and all engaged in legitimate trades, should demand that in the absence of competition the hand of a powerful and effective railway commission should, so far as rates are concerned, control the operations of the great corporations which have a monopoly of inland transportation. The question of transport by water rests upon a different footing. There, happily, there can be no monopoly, for the water is free to all, yet much may be done to reduce freights by water routes, whether on the great lakes or the ocean. The deepening of the canals and the improvement of harbor accommodation, so as to admit of the use of larger vessels, are steps in this direction so far as our inland waters are concerned. But no deepening of canals will avail us unless, when our produce reaches an ocean point, there are vessels to carry it at reasonable rates across the sea, and therein is to be found the reason why, in spite of the advantages of our St. Lawrence route, ninety per cent. of our grain has been going to New York instead of to Montreal or Halifax.

The most effectual means of reducing ocean freight is the promotion of trade with the country that takes our produce, so that the vessels which come for it shall have an inward as well as an outward cargo. A secondary means is the subsidizing of lines of ocean steamers. To just such an extent as will have the effect of bringing vessels of greater carrying capacity to our ports this may be desirable, but what advantage can it be to the farmer, or the public generally, to pay large subsidies for ocean travel, so that first-class passengers can be transported in the shortest possible time from the West to the East, or *vice-versa*, it is hard to understand. A contract recently made for a very moderate sum, with a line of steamers direct to Manchester, which will carry our produce to the very doors of the largest consuming centre of the United Kingdom, may be attended with very useful results. Closely connected with the question of transportation is that of cold storage, by which perishable goods, such as fresh meat, fish and fowls, butter, eggs, fruit, etc., can be carried with safety and despatch with certainty of arriving in as good a condition as at the time of departure. This system begun by the late Minister of Agriculture, Dr. Montague, and carried out by Mr. Fisher, the present Minister, gives to the farmer in all parts of the country the means of sending to distant markets, wherever they can be found, many of what may be called the by-products of agriculture, which, without this system, he could only dispose of in the limited market which his immediate neighborhood afforded him. Full information as to the best methods of raising all these various products, and of packing and sending them to the various markets, is given in the reports and bulletins which are so freely distributed among the members of the Institute.

I may properly here call attention to the great advantage which the farmers of the present day possess in having freely bestowed upon them the results of the experiments which are being carried on by scientific as well as practical men at the experimental farms at Ottawa and at Guelph, and the teaching which is sent out from those institutions. By these means it is that the great dairy interest has attained its present value to the country; that the most profitable kinds of the various grains are ascertained and distributed; that the best kinds of fruits, suitable to different localities, are found out; that the best means of destroying and preventing the insects that work havoc among our crops and fruit trees are made known, and that in a variety of other ways the interests of the farmer are prompted. As an instance I think it is no exaggeration to say that the entomological researches of Mr Fletcher alone have more than repaid the whole cost of the experimental farm. As to the means of raising and disposing of the various products of the farm, so far as the operations of the farmer are concerned, a few words may be said. The best way of manuring and rotation of crops will be discussed at the coming meetings of the Institute, and in such matters much must be left to the individual judgment of the farmer, who should, to some extent, be guided by local conditions and experience. I think, however, that the general rule may be laid down that in the choice of crops a man had better be guided by what his land will best produce, and by the method of cultivation he best understands, than by the market reports he sees every day. For instance, a man may be tempted by seeing that wheat has risen in price to over a dollar a bushel to put land under that crop which is really better suited for some other; after having done so he sees that, to use a current phrase, the bottom has fallen out of the market, that the war or the combination, which caused the rise, has come to an end, or that countries on the other side of the globe, whose harvest season differs from ours, are already pouring such supplies into the market that all hope of a high price must be given up. Let the farmer cultivate his soil to the best advantage, and leave speculation in prices to the "bulls and bears."

Another rule that may safely be followed is that the more finished the product the greater the profit. In other words, that in general it will pay best to sell oats, barley and peas, or other coarse grain and hay, in the shape of beef, pork and mutton, or butter and cheese, and thus keep on the land all that is taken from it by these crops, together with the elements derived by them from the atmosphere.

A third rule, and one that may be absolutely relied upon, is that in all our dealings "honesty is the best policy." Having determined upon the article we wish to sell, the first thing is to have that article the best we can make it. The second, to find out exactly the form and condition which our customer requires the article to be in, and to follow his idea as closely as possible; and the third is to make sure that in the article we send there is no deception, but that which is in the inside of the parcel is as good as that on the outside.

For want of adherence to this rule in the particulars mentioned, many good markets have been lost to our farmers, and the fair fame of the country for honest dealings has been stained. It must, however, in fairness be stated that in such matters the farmer has not alone been to blame, for the dealer also has had a large share of the responsibility, as well as of the consequent loss.

GOOD ROADS IN BRIEF.

By Provincial Road Inspector Cr[illegible]

Roads that "break up" are bad roads.

Make road improvements in such a way that they will be permanent.

Whether by statute labor or other means undertake roadwork systematically.

Appoint a supervisor who will have charge of all the roadwork.

Make road beats five miles in length, choose the best men as pathmasters, and keep them in office.

Classify the roads according to the nature and extent of the traffic over them.

Specify the width of grade, amount of crown, plan of drainage, kind, width and depth of material to be used, and see that these specifications are carried out.

Purchase gravel by the pit not by the load.

Use clean road material.

Strip the clay and earth from over the gravel pit before the time of performing statute labor.

If screening or crushing is necessary, let this be done before the time of statute labor.

Do not scatter money in making trifling repairs on temporary structures.

Roads, culverts and bridges will always be required, and their construction in the most durable manner, suitable to requirements, is most economical.

If statute labor is to be made successful the work must be systematically planned and some definite end kept in view.

Have the work properly laid out before the day appointed to commence work. Only call out a sufficient number of men and teams to properly carry out the work in hand and notify them of the implements each will be required to bring.

Let no pathmaster return a ratepayers' statute labor, as performed, unless it has been done to his satisfaction.

In justice to others make the statute labor returns clearly; show what work has not been done.

See that the council collects the amount from the delinquent parties and have it expended the next year.

The pathmaster should inspect the roads under his charge after every heavy rain-storm. A few minutes' work in freeing drains from obstructions, filling holes, diverting a current of water, may save several days' work if neglected.

It is impossible to do satisfactory work on clay roads which are very wet, or which have become baked and hardened by heat and drought. The operator of the grading machine should have instructions to commence work on clay roads as soon as the ground has become sufficiently settled in spring—