abundance of food for a continuous and rapid develop- and sells at \$22 per ton. A farmer unacquainted with ment of the plant. Any delay in the growth of a the value of the guarantee might be inclined to purchase radish or of lettuce is largely responsible for the sharp taste and pungent flavor of the former, and the bitterness and toughened fibre of the latter. A reasonable excess of all the essential fertilizer constituents is required for all garden crops, and where succulency is specially required nitrogen may predominate.

There are now on the market a great number of brands of complete fertilizers which are specially recommended for certain crops which may or may not suit the conditions, and the tendency is for the farmer to buy these mixtures according to name, without sufficient knowledge regarding the nature and value of the component parts. As they understand more fully the true principles of fertilization, the tendency in the purchase of fertilizers will undoubtedly be towards the procuring of fertilizing materials containing a single constituentas nitrate of soda, muriate of potash, superphosphate, etc.-to supply the needs of certain soils or crops; or to buy high-grade special mixtures made from materials of the last type, rather than "standard brands"; or, possibly, to buy materials of a known quality and prepare their own mixtures.

Space will not allow of a full discussion of the meaning of high-grade and low-grade fertilizers and highgrade and low-grade mixtures, but it may be briefly stated that any material containing a high percentage of one or more of the essential fertilizing constituents in a form available to plants is termed high-grade. For instance, a mixture may be made from high-grade materials, as

Nitrate of soda, 500 pounds; furnishing 80 pounds of N. Superphosphate, 1,100 pounds; furnishing 180 pounds of available P2 05.

Muriate of potash, 400 pounds; furnishing 200 pounds of potash.

With a guaranteed composition of-

Nitrogen Phosphoric acid (available)..... 9 per cent. . 10 per cent. Potash

This is a high-grade product, both in respect to quality of plant food and concentration; but if it is diluted with, say, half its weight of make-weight substances, thus reducing the percentage amount of the fertilizing constituents by one-half, it will be a lowgrade mixture in so far as concentration is concerned. Again, we may have a mixture made from materials which do not contain their constituents in such available or desirable form, as:

Tankage, 600 pounds; furnishing \ 30 pounds nitrogen. 90 lbs. phosphoric acid. Kainite, 400 pounds; furnishing 50 pounds potash. Make-weight, 1,000 pounds.

With a guaranteed composition of-

Nitrogen 1.5 per cent. Potash 2.5 per cent.

The second formula illustrates a low-grade fertilizer, in the sense that it contains the poorer forms of the constituents, and furnishes a comparatively small amount of plant food. It would require more than two and one-half tons of this mixture to furnish as much total plant food as would be contained in one ton of the first, besides the disadvantage of the lower quality of the constituents.

The Government of Canada has done what it can to protect the farmer against a dishonest manufacturer or agent, for years ago it enacted a law, whereby every manufacturer or importer of fertilizers shall, before offering them for sale, transmit to the Minister of Instatement setting forth the nature of the materials which enter into its composition, and the manufacturer's certificate of analysis of such fertilizer. This sample is submitted to the chief analyst for analysis, and is preserved by the Department for the purpose of comparison with any samples of the fertilizers of that brand which may be collected during the next 12 months. If the fertilizer is put up in packages, every package shall have the certificate of analysis placed upon or attached to it; if it is sold in bulk, such certificate shall be produced and a copy given to every purchaser. Every certificate shall also contain a statement of the nature of the materials entering into the composition of the fertilizer. In this way the Government compels the seller to stamp the percentage composition on his goods, and seeks to see to it that the goods are kept up to standard.

However, laws alone cannot fully protect the farmer. He must not only know whether the materials used in the fertilizer are of good quality, but he must also be able to determine from the analysis whether there is a proper relation between the guaranteed composition and the selling price. Two brands of fertilizers may be made up from the same kind and quality of materials one is guaranteed to contain :

Nitrogen	1	per	cent.
Phosphoric acid	6	per	cent.
Potash	1	per	cent.
and is offered at \$20 per ton; a second	is	gu	iarantee

Nitrogen 4 per cent. Phosphoric acid 8 per cent. 2 per cent.

the fertilizer which could be got for the least money. If, however, we value the nitrogen at 15 cents, and the potash and phosphoric acid at 5 cents per pound, which is about the current market price, we find that the first fertilizer would be worth \$10 per ton and the second \$22 per ton.

It may often occur that home mixtures of fertilizers can be made which will better meet the requirement of the particular soils and crops under cultivation than any mixture that can be procured on the market. Reliable authorities have estimated that the charges of the manufacturers and dealers are, on the average, \$8.50 per ton. It is evident that this, together with the extra freight on and cost of handling the make-weight substances commonly added, would leave a fair margin to pay for labor involved in making the mixture at The offal from our pork-packing houses, if properly ground, could well be used as the basis of many of such mixtures. As it is, practically all of this valuable fertilizer is shipped out of the country, where it is ground, mixed with other substances, rebagged, and much of it finds its way back into this country under the name of many special brands of fertilizers.

From the few points mentioned in connection with the subject of fertilizers, it is evident that a man must have an intimate knowledge of the requirements of his soil and crops and the various kinds of fertilizers on the markets before he can hope to use commercial fertilizers economically. They have a place in agriculture, but it is as an adjunct, and should only be used after every care has been taken to get the best results from the farmyard manure, and in conjunction with the most thorough cultivation.



In recent years the prices for potatoes have been advancing, owing to varied causes, until the average price for the past ten years is such as should create a desire to realize upon this crop. Properly managed, there is no crop, if we bar small fruits, which can be made at present prices to bring in such a large revenue per acre as the potato field. Apart from the general rise in values for farm products, there have been special causes at work to enhance the price of potatoes. To give my method of combating the enemies to the successful culture of potatoes is the object of this article.

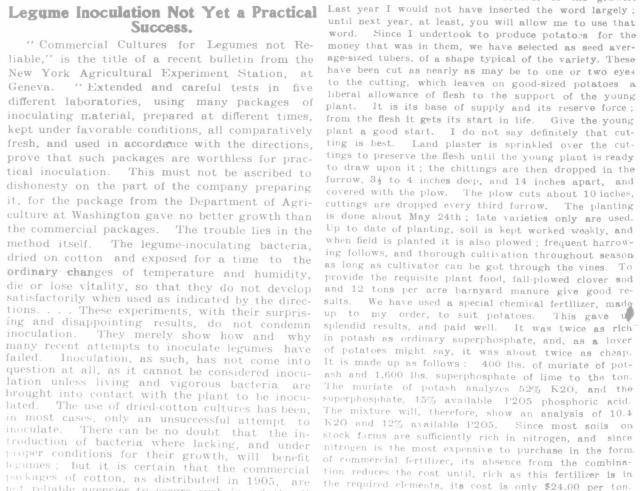
The practice so commonly followed of selecting for seed from year to year those tubers that were worthless for sale, has resulted in loss of vitality in all of the older varieties, except in individual cases, where special care has been taken; thus we hear neighbors talk of changing seed to secure larger crops, and, as a rule, the "seed" exchanged should have been used to produce bacon. But because seed is used that is on the decline, we who grow potatoes on the good soil of Ontario can show no better average than 116 bushels per acre for 1904, and during recent years the average for Ontario has frequently fallen below 100 bushels per acre.

Our first word, then, is against poor seed. Next, we would say that too little attention has been paid to the chemical condition of the soil planted to potatoes. Last fall I was interested to notice in Algoma and in Manitoulin Island the beautiful crops of potatoes. They were of nice size, and when cooked were worth eatingdry, sparkling with starch, and fine flavored. The fact that the land was of recent breaking, having its balance

of fertility still undisturbed, explains the difference between these and the soggy, dullcolored and tasteless potatoes sampled on the hotel tables in older Ontario last winter. Study the needs of the soil, that it may supply the needs of crop.

Then potato blight has added its influence in favor of decreased yields. Inherent weakness always leaves the subject of attack more susceptible to disease, so the blight found yearly an easier prey in the poor potato endeavoring to grow from unwisely - selected seed and on land which felt the need of potash.

From these three evils there is a way of escape, for they are evils largely under the control of the grower.



I commenced to spray on June 30th, and sprayed lumbo of impracticability. Moral.-When you see was not allowed to pass without an application being an agricultural idea lauded sky-high in literary made. In preparing the mixture, I use 6 pounds copper magazines, he on your guard, and keep a gun sulphate. Cu SO4, to 40 gallons water. My work. owing to a faulty horse-power machine, was not suffi-



Making Railroad in Queen's County, N. S.

Note the headyoke on oxen, and a strap around forehead, commonly used in the Maritime Provinces, particularly Nova Scotia. Those who have tried both ways say the headyoke enables the oxen to pull bigger loads than the neckyoke, and work with more comfort.

Legume Inoculation Not Yet a Practical Last year I would not have inserted the word largely; Success.

liable," is the title of a recent bulletin from the New York Agricultural Experiment Station, at Geneva. "Extended and careful tests in five fresh, and used in accordance with the directions, prove that such packages are worthless for practical inoculation. This must not be ascribed to dishonesty on the part of the company preparing it, for the package from the Department of Agriculture at Washington gave no better growth than the commercial packages. The trouble lies in the method itself. The legume-inoculating bacteria, dried on cotton and exposed for a time to the ordinary changes of temperature and humidity, satisfactorily when used as indicated by the direc-These experiments, with their surprispackages of cotton, as distributed in 1905, are the required elements, its cost is only \$24.00 per ton. not reliable agencies to secure such inoculation."

Another magazine-boomed fad consigned to the six times, at no definite period, except that two weeks