

expensive. The first occurs as Chili saltpetre, the second is a by-product in the manufacture of coal gas. A second source is the nitrogen of the air, which can be assimilated only by leguminous plants like clover and pease. If these are ploughed under while green, a store of nitrogen is laid up for future crops. A third source is the semi-decomposed vegetable matter of muck, leaf-mould and peat. The nitrogen of these is converted into assimilable forms by fermentation, a process which is aided by composting the material with barnyard manure. These mucks and peats are widely distributed through the whole Dominion. Many analyses are given in the reports of the Experimental Farms, the average number of pounds of nitrogen to the ton being thirty-eight.

There is unfortunately no mineral source of potash in Canada. The only available supply is that stored in our forests. Wood ashes, which contain from seven to twelve per cent. of potash, are the mineral constituents which the trees by a life-long process have taken from the soil. As they also contain considerable quantities of lime, phosphoric acid and other inorganic plant food, they are among the most valuable of fertilizers. To continue to export them, as in the past, is suicidal.

Lime may be supplied from several sources. Ground gypsum or landplaster is valuable not only as food, but for liberating potash and absorbing ammonia. The crude gypsum is widely distributed, and in the manufacture of superphosphates calcium sulfate is made as a by-product. Ordinary quick-lime, besides