The prices for butter and cheese are tending upwards, rather bearing out the opinion that I had last month of these articles. I have travelled over a considerable portion of this province and I am sorry to see such luxuriant crops of bad weeds, such as wild daisy, mustard, couch-grass (chien dent) and sweet clover. Many farmers are careless and negligent. In my younger days, there never was allowed to grow on my father's farm such a thing as mustard, daisy, or the common thistle. If the beautiful yellow of the wild mustard were only gold, a good many farmers in the province of Quebec would never need to go to the Klondike. I do not think there is any place that can grow such great crops of sweet clover as around where I am living, Chateauguay. Mustard also seems to do well, while for daisy, Terrebonne, Assomption and perhaps Berthier. The farmers of this country have got to awake from the lethargy which they seem to be in at present, and understand they should grow something useful instead of such trash. Summer fallowing and hoed crops if properly done would clean the soil quickly. Ontario summer-fallows a good deal, and they have also lots of hoed-crops. Keep the soil clean, do not grow too many weeds, practise economy, and you will soon grow prosperous.

Yours truly,

PETER MACFARLANE.

Chateauguay, June 25, 1898.

HOW PLANTS FEED.

In order to grow, a plant must have food at its disposal. More than that, it must be able to avail itself of such food. Hence it is necessary to enquire *how* plants feed.

In the crops of the farm there are two sets of organs of nutrition; the roots and leaves. Each of these is engaged in absorbing materials which can be locked up by the plant into the structures of which it is composed. The roots take material from the soil, the leaves from the air.

Of roots there are two kinds; one is the tap-root; e.g. radish, carrot, parsnip, etc. The second is the fibrous root of which the onion, wheat barley and all grasses afford good examples.

Roots have a *mechanical* duty; that of fixing the plant in the soil. They, moreover, have a physiological duty, that of obtaining food for the plant out of the soil. As the extremely delicate cells at the growing points of a root would be injured by the rough contact of the surrounding earth, they are protected by a thin cap of dead and dying cells which fits on the tip of the root very much like a thimble over the tip of the finger. As the root grows amongst the particles of earth the little root cap is pushed along in front. To bring the root cap into view it is generally necessary to cut a section and place it under a microscope.

It is the root fibres with their delicate hairs, that are chiefly engaged in obtaining plant food from the soil. These are made up of cells through whose walls solid matter cannot pass. As a result therefore all food must enter the plant in a soluble form. It has been proved that the presence of potash, lime, magnesia, iron nitric acid, phosphoric acid and sulphuric acid is *absolutely essential* to the growth of plants. These are held in the form of weak solution in the water contained in the soil. As the solutions of plant food are very weak, it follows that a large quantity of liquid must be taken in by the plant in order that it may obtain the necessary materials essential to its growth. Now any structure consisting, as a plant does largely, of cells would become so turgid by the absorption of an excessive quantity of liquid that it would eventually burst, unless there were some means of relieving the pressure. Such means are afforded by *the leaves*. Usually they are flat extended structures from the surfaces of which water passes off as invisible vapour, in a word, it evaporates.

The dissolved substances that the water carries into the plant from the soil do not evaporate but stay in the plant. Thus an actively growing plant may be regarded as a net-work, through which water is continually flowing and giving up something in its course. The evaporation of moisture from the leaves, in the manner described is known as *transpiration*. The quantity of water which thus passes through a plant from the soil to the atmosphere is very great. A maize plant was observed to give off as much as 36 times its weight of water between May 22 and Sept. 4, a period of 16 weeks. Barley, beans and clover during the 5 months of their growth transpire as much as 200 times their (dry) weight of water. A large oak tree will transpire about 10 to 20 gallons per diem. A sunflower 5 ft. high will transpire a pint to a quart of water during a hot summer day. Land under crops gives up more water per acre than an adjacent bare fallow on account of transpiration.