

take care that you do not have the leaves cut or injured—as some persons will use them for cattle feed. The more beets you have on the ground, the sweeter they are, and the more sugar you will have. All kinds of beet produce sugar, and the sugar of one kind is as good as the sugar of the best, the only difference is that their is *more* sugar in some sorts than in others, even the “mangel wurtzel” will produce sugar, but the “white Silesian beet,” the “Vilmorin beet” “Carter’s nursery sugar beet” are the best. At present all the best sugar beet seed is produced in France and Germany. When the cultivation of the root becomes a regular crop in Canada, we shall of course produce the seed ourselves—at present it must be imported.

Beet Sugar is obtained from the root by two processes, the one by grating or rasping the root and expressing the juice, which is then treated as hereafter described—the other by “diffusion,” which consists in steeping the root in a divided state in water, and is also hereafter described. The first is the process by which the great bulk of the beet sugar made in the world has hitherto been obtained, the latter is a more modern invention and is alleged to be a far cheaper and equally efficient method of obtaining the same end. I shall describe both methods, leaving it to the reader to adopt whichever is the best suited to his means and ideas. No work of this kind would be complete without a description of both processes.

#### THE GRATING OR RASPING PROCESS.

To prepare the roots for sugar making they must be washed in a rolling wooden cage, and grated or rasped as finely as possible into pulp, the more absolutely and the quicker this is done the better, and the more success you will have. The pulp must be pressed in cloths or in anyway so as to obtain it as clear as possible. It must run from the press into the boiler, or if circumstances should prevent this, a little lime water must be added. Neither the pulp or the juice must be allowed to stand about, it begins to ferment immediately the root is ground, and then the sugar is destroyed. Nothing will stop the fermentation but lime water. The following are the particulars of these processes.

#### WASHING THE ROOTS.

The roots before being submitted to the rasp, must be thoroughly washed in a rolling cage, great pains must be taken that no dirt shall be allowed to remain on the roots when they come to the rasp, and the heads of the roots and leaf stems must be carefully cut off; and if cattle are kept to consume the portions of the root which come from the press, so that waste would not occur, the whole head of the root ought to be cut off, and fed to the cattle. It has been proved time and again that the extremity of the root end of the plant is the richest in sugar, whilst the portion which is grown above the ground is the part which contains the largest

proportion of potash and salt, hence in the continental countries of Europe where the government excise duty is charged on the roots consumed; the entire portion of the root which grows above the ground is cut off and rejected for sugar purposes. Any plan which will insure perfect cleanliness in the roots, is that best adapted to the work, and the roots should be allowed to drain off all superfluous water, before they come to the rasp.

#### THE RASPING THE ROOTS.

The roots should be presented to the rasp endwise, and the rasp (however constructed) should reduce the root to the finest possible pulp. The pulp, should then be passed through rollers working together, which are of sufficient surface to receive and crush the pulp as it comes from the rasp. The rollers will thus reduce the pulp to a perfectly smooth paste, and burst all the cells of which the root is formed, and which cells contain the sugar.

One form of the rasp which will do a great deal of work and is very cheap, is made of a sheet of punched zinc fixed around a cylinder of wood, and turned by a winch by hand or by power; another form of rasp (and the best) is made of saw blades let into a wooden cylinder lengthwise, about an inch and a half apart, and fastened into the slits in the cylinder with wedges, this admits of the saws being sharpened with a file in the ordinary manner, the cylinder is then turned by hand or power, and the pulped roots caught in a proper receptacle. The roots on a small scale are presented to the rasp by hand, on a larger scale they are pressed against the rasp either by their own weight or by machinery. On a large scale the rasp is made to revolve with considerable speed. For a large manufactory the cylinder will be made of iron turned in a lathe.

#### PRESSING THE PULP.

The following is the old fashioned plan. There have been, and will be many improvements. The pulp must be placed by small parcels at a time, (according to the size and power of the press), on strong canvas cloths, each cloth being laid over a frame about 2 inches deep, and the size that will go into the press; the cloths must be much larger than the frames. When the frame is full, fold over the cloth first from side to side, then the ends over; then place the cushion of pulp so formed in the press; there must be a strong board, larger than the cushion of pulp, and it must rest on one board while another covers it; one board going one way of the grain, the next above crossing it, and so on, parcels of pulp and boards until you have the press full. Then put on the power very gradually, so that the juice can escape readily from the cloths, without bursting them; press to the full power of the screw, and take care to catch all the juice.

The juice should run from the press at once into the kettles, where the heat should