

by the suppression of superfluities than by additions. The new part of the process is the fact that by following the instructions hereafter given, twenty-five pounds of beet root may be manufactured into a merchantable sweet, in domestic utensils as readily as two hundred and fifty tons of beet root are ordinarily reduced in one of the monster factories of the European continent.

THE MANUFACTURE OF BEET ROOT SUGAR.

The most important thing the person can do, who is to enter upon this manufacture is to forget all and every thing he has ever known about sugar making, particularly that which is made from the Maple; and he must especially bear this maxim in mind, viz:—

Beet Root Sugar is not, never has been, and, the writer believes, never can be, made into an article of domestic use, until it has been refined by a separate process.

It is an article which is made by the producer to sell to the refiner, and not to use as it is made by the first manufacturer. The crude article is quite equal in value, according to the sugar it contains, to the best brown cane sugar, commonly called muscovado, and far superior (when well made) to the lower grades of sugars, (those with a fine soft grain), which come from tropical climates.

All sugars, except maple sugar, are made at two processes—in the first the juice, whether from the sugar cane or from the beet, is defecated and boiled down to the crystallizing point; it is then set by in cisterns until the crystals have formed, when it is shovelled into barrels, and the molasses is made to drip from the sugar. The sugar is then shipped to England and America and elsewhere, and refined into loaf and into the finer kinds of soft sugar in the great Refineries.

In France and Germany all the great manufacturers produce the sugar first as crude sugar, and then refine it; they are now, however, in many instances working the branches separately.

Cane sugar, even when made at the best season, in the best manner, and from the most favourable growth of cane, contains a large proportion of molasses and uncrystallizable sugar which will not, and does not in its native state, crystallize. The after processes of the refiner, however, finally extract all that portion which will crystallize from that which will not, and the latter is disposed of as treacle, or as the various grades of golden and other syrup.

It is quite true that a considerable portion of the sugar from the sugar cane is used as a domestic sweet in the shape of brown sugar, but even this has been partially refined; but by far the greatest quantity of sugar used is refined in the great English and American Refineries before it reaches the public.

Canadian ideas of the manufacture of sugar are formed from the maple sugar made on the

farm. This is the purest source of sugar which the vegetable kingdom supplies. It has deposited all its woody portions and impurities in the tree, the growth of which it nourishes, and we get it filtered and purified to the greatest possible extent.

Beet sugar must not be looked at for a moment with the same ideas or treated in the same manner.

The beet root contains besides sugar and woody matter, portions of albumen, pectine, and other substances, and also a flavouring matter of a strong beety odour, but chiefly large quantities of potash and salt.

Were it not for the potash and salt, and the strong beety flavour before spoken of, the juice of the beet when defecated would boil down into a pure crystallizable sugar, at once usable as maple sugar is.

It is the beety flavour and the potash and salt which we have difficulty in getting rid of.—Those matters, however, yield at once to the operations of the refiner. The only portions of the extract from the beet root which in the refiner's hands are not made use of is the essential oil which causes the strong flavour, and any other impurities which ought to have been removed before it comes to his hands. The mixture of potash and salt when extracted from the syrup and purified is really worth weight for weight, at least as much as the sugar.

Where people wish to engage in the manufacture of alcohol from the beet root, they can do so to a great profit, as beet root yields to the distiller far more spirit per acre than the best crop of either grain or corn does. The apparatus for distillation is quite simple and comparatively inexpensive.

The following table will show the money value obtained from the entire beet root crop in France alone, in the year 1865-6, and it must be remembered that Germany, Belgium, Holland, Austria, and Russia, all make their own sugar, or at all events the greater portion of it, from the beet root, and in all cases it must also be remembered that the beet root industry is one that has been, and is, constantly increasing.

The beet harvest of 1865-6 in France alone produced

275,000 Tons of raw sugar worth	£6,250,000.
100,000 Pipes of strong spirit—	
each pipe containing	
from 100 to 120 gallons,	
part distilled from the	
root direct, without the	
assistance of the sugar	
manufacturer, and partly	
from the molasses,	
and worth	1,350,000.
20,000 Tons of potash, worth	500,000.
1,600,000 Tons of pulp, worth	1,000,000.
	£9,100,000.

This is what is produced from the entire beet crop—not the value of the produce of the sugar manufactory.

The imports of beet root sugar at the British and Scotch ports for the first eleven

months of 1871 were 134,490 tons, against 56,670 tons for the same period in 1870, and 31,060 for the same period in 1869; this shows the enormous increase of the manufacture.

Now, it is perfectly ridiculous to suppose (in the face of such a statement as the foregoing) that Canadians and the inhabitants of America generally, are going to confess inferiority to the French and Germans, and to allow it to be said, we have not nationally sufficient intelligence to make sugar from beets, when the continental nations are able to assist in supplying the world with that necessity.

Some people have been rash enough to say that our climate and soil are not fitted to produce the root rich enough in sugar to pay. This we most emphatically deny. The extended trials of the American patent office, and the numerous instances of Canadian grown beets which have during the last two years come under the writer's hands, all show beyond question that Canadian beets, where well selected and well grown, are as rich in sugar as the best French and German or continental beets. If any one doubts it, all he has to do is to grow a patch of the best kinds of sugar beet in his field or garden, and following the instructions hereafter given reduce the roots to such a state that the amount of refined sugar they contain is easily proved by the ordinary tables and instruments. Others will say, and they are far the most practical, If it can be done, why has it not been done? In reply, I affirm that it is only because the manufacture has been made a mystery of and has not been understood. The chief trouble of the manufacture has consisted in the uncrystallizable sugar, and this, it is now proved beyond a doubt, has been caused not by the sugar contained in the well grown root being inferior, but by the process adopted being imperfect. If the following instructions are carefully carried out, all difficulties and troubles as to uncrystallizable sugar will cease to be a serious obstacle.

With these few observations, I propose to lay before the readers of this little treatise, full instructions for the growth of the sugar beet and its conversion into such a class of crude sugar as is best fitted for the refiner, and in every way equal for the purposes of refining to the best tropical sugar that is produced.

SUMMARY OF THE PROCESS.

I shall first describe in very few words what is necessary to do, and then more at length the best way to do it.

The roots are washed with great care after being stripped of the leaves, and the crown being cut off, taking care not to break off the small lower end of the roots, which are richest in sugar.

The roots are then rasped down into the finest possible pulp.

The pulp is then pressed so as to get out the juice in the most perfect manner, and clear from all particles of root.