compared with its other advantages. The new system is as follows : Construct a long trough, about 30 inches wide, and 12 feet long. The width must be made to suit the parchment paper, and the length must be made to suit the premises. If you want greater length, make two or more troughs. Let the sides and ends of this trough be about two inches deep, and it must be made water-tight with paint, or with pitch run into the angles. Good paint, or any good cement, is better than pitch, but the latter will answer. This is to hold the water. Then construct another trough of a smaller size, so as to fit easily into the first, but the bottom of this inner trough must be made with *very* narrow slats, or a network of twine, or wire, the meshes of which must be about an inch square ; the wire should be brass, as it will oxidize less than iron. This is to bear the weight of the thin stratum of syrup. The net-work must be covered with the parchment paper, which must be fastened down so as to be water tight. This may be done with thin strips of wood, nailed down over the edges of the paper, and through to the bottom, or sides of the frame of the inner trough. Water is put in the outer trough, and the inner trough is made to float on the water. You will thus have water on one side of the parchment paper, and syrup on the other side. The water is let into one end of the outer trough, and is made to flow towards the other end, where it is drawn off. The syrup is made to flow on to one end of the parchment paper bottom of the inner trough, and to cover the whole of the parchment paper in a thin stream, and to flow off at the other end, so that the water *very gradually* flows one way and the syrup flows the other way. The current of both liquids, however, is extremely slow. During the passage of the syrup, it parts with the potash and salts through the parchment paper, and into the water, whilst a little water comes through the parchment paper into the syrup. The salts can be recovered from the water by evaporation, where it is worth while, which it will not be on a small scale. After a time, the paper will refuse to pass the salts. It can then be cleaned and renewed by a slight scrubbing with water weakly acidulated with sulphuric acid. Use a corn broom for the scrubbing, but you must, of course, be very careful not to tear the paper.

This is the osmose principle, and when once well understood, the operator can make his "osmogene," as the troughs are called, in any way which will best suit him, or his premises or means allow.

The following is a new method of removing the salts from the syrup. The writer has not yet tried it, but as it forms the subject of an English patent, taken out by Mr. Duncan, of London, England—the great sugar refiner, who has large beet sugar works at Lavenham, Sussex, England—there is no doubt of its being well adapted to the end proposed.

The following is the description taken from the English magazine, "The Sugar Cane :"

NEW METHOD OF REMOVING POTASH FROM SACCHARINE SOLUTIONS.

"The plan now under consideration consists in adding to the cold syrup sulphate of alumina, so as to form an alum with the whole of the potash present. The solution is then well stirred, and after a few hours standing, the alum separates out in the form of small crystals, technically known as "alum meal." The clear liquor is then run off, and immediately neutralized with milk of lime, finishing up with a little chalk, so as to prevent the necessity of removing any excess of lime by carbonatation. It is possible to use chalk only, but the amount of effervescence is then very great, and the chalk should therefore be added little by little.

"In working this alum process, the solutions should be quite cold. It is also advisable to operate as quickly as possible, consistently with a due separation of the alum, as otherwise more or less sugar would become inverted (that is, not crystallizable).

"Every one part of potash in the syrup requires for conversion into alum about 9½ parts of sulphate of alumina, out of which 2½ parts are required to convert the potash into sulphate, and the remaining 7 to combine with the sulphate of potash, so as to form alum. If the liquor contains any sulphuric acid, either free or combined, the 2½ parts of sulphate of alumina required to convert the potash into sulphate, may be partly or entirely dispensed with.

"When once the liquor has been neutralized (with the lime and chalk), it is heated and filtered in the usual way.

" The precipitated alum (or alum meal) is washed free from syrup with three consecutive washings, using one-third of its weight of cold water each time. These washings, after neutralizing with lime and chalk, are used to dissolve up a fresh quantity of the raw beet sugar."

The alum meal is easily dried in a centrifugal machine, or by pressure, or other suitable means.

The sulphate of alumina has the following composition :—

Alumina,.....	15.41
Sulphuric acid,.....	35.99
Water, ...	48.60
	100.00

It should be as free as possible from iron, and should not contain more acid than given in the analysis.

The solution of sulphate of alumina generally used contains one third of its weight of sulphate of alumina, and has a density of about 24° Baumé.

Instead of using a solution, the dry sulphate of alumina, in a finely ground state,