

AN INVESTIGATION INTO THE OPTIMUM CONDITIONS FOR
THE PREPARATION OF A FOOTING FOR LOW GRADE
MASSECUITES.

1. INTRODUCTION

The common, and by now almost standard, practice in the sugar industry for boiling shipment sugars is some variation of the three or four massecuite systems.

Recently A.L. Webre (1) suggested a new two-massecuite system from which only one grade of shipment sugar was manufactured. This, he claimed, produced a more even and better filtering sugar with lower steam consumption and higher pan loft capacities. The essence of his method is that A molasses of about 60 purity is concentrated to the desired coefficient of supersaturation, and at this point evaporation is stopped, seed added, and the magma stirred until the nuclei have set and grown to some predetermined size. After this more molasses is boiled in the normal way. This gives a strike of purity comparable to an ordinary C strike by the old method, the sugar from which is used to seed the A strikes. The point is that at the critical stage of the process, i.e. just after the addition of the seed, conditions are constant and rigidly controlled. Ryle-Davies' (2) work also emphasised the importance of circulation during grain formation.

Soon after, Gomez (3) in British Guiana, introduced a variation of this system. In this modification the A molasses is shocked and the grain built up to act as a footing for the low grade strike. In this way he avoids using large quantities of seed sugar and the attendant necessity of rigid control of boiling conditions at its introduction.

On the other hand, there is the difficulty of obtaining the correct number of nuclei, and also the possibility and danger of conglomeration which Webre claimed to have avoided. In this Webre is probably mistaken since the sugar dust itself, with which he seeds, contains the nuclei of conglomerates, due to the fact that fragments stick together and will therefore

grow together to form them. However, the main advantage of Gomez's method is that he does not need the expensive equipment with which Webre stirs his massecuite.

This investigation is trying to strike a balance between the merits of both methods, and at the same time produce a footing acceptable to the pan boiler, and on which he can boil a C strike without making an excessive number of cuts. For economic reasons it was desirable to devise some means of duplicating Webre's conditions without having to install the very expensive Webre Pan, and it was decided that after concentration to the desired point the molasses should be struck to some suitable receiver such as a magma mixer and here treated to produce the footing. From here portions of the footing could then be drawn back and boiled up. In this way both constant water content and circulation are maintained either with existing equipment or, at most, with a relatively cheap new installation.