

## CHAPTER 6

# Chocolate crumb

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### 6.1 Introduction and history

Milk chocolate crumb is the name given historically to a co-dried mixture of milk, sugar and cocoa liquor whose lumpy, aerated structure resembles bread crumb (Figure 6.1).

Its invention can be traced back to the 1870s when Daniel Peter first attempted to produce milk chocolate in Vevey, Switzerland (see Chapter 1). His main concern was to remove water from the milk that he was using and keep it from developing mould. In the milk processing factory next door Henri Nestlé had solved the problem by condensing milk in the presence of sugar. Daniel Peter found that by drying his dark chocolate paste with Nestlé's sweetened condensed milk he could achieve his aim. In the process he developed the first crumb-based milk chocolate. Peter was also allied by marriage to Cailler, another Swiss chocolate maker. Between them they were able to create a sizeable market for quality milk chocolate, first in Switzerland and then in the United Kingdom. Cailler today claims to make the only Swiss milk chocolate containing condensed milk in its recipe (Cailler, 2014).

United Kingdom chocolate makers introduced their own milk chocolate bars based on milk powder in the 1890s, but the milk powder was of poor and variable quality and the finished units no match for the Swiss imports. The threat, particularly from Cailler's high milk solids version of milk chocolate, led to the development of a fresh milk process and in 1905 to the launch of the highly successful Cadbury Dairy Milk brand. This product was based solely on crumb produced at milk processing factories first at Knighton, then at Frampton, then finally at Marlbrook in Herefordshire. Rowntree first introduced crumb manufacture into Mallow in the Republic of Ireland in 1946 (Fitzgerald, 1995). Meadow Foods (2014) manufacture milk crumb for third parties at Spalding Moor, Yorkshire.

Hershey in the United States also moved into milk chocolate production via a crumb route in the early 1900s. Milton Hershey chose Derry Church,



**Figure 6.1** Typical appearance of milk crumb.

Pennsylvania, for his factory because of the abundance of fresh milk in the area and made his first crumb-based milk chocolate bars in 1905.

In addition to Switzerland, the United Kingdom and the United States, crumb chocolate processes have also been successfully introduced to the Irish Republic and countries belonging to the old British Commonwealth. Cadbury, Nestlé (Rowntree) and Mars have been the main initiators of this expansion. Kraft/Marabou in Sweden also employ a crumb-making process. In a number of these markets the early introduction of crumb chocolates led to market domination, due to their quite distinctive flavour characteristics.

Since the early days, other types of crumb have been developed without either the non-fat cocoa solids or some of the milk components. White crumb comprising co-dried sugar, milk and cocoa butter is currently used by Mars Inc. A similar material has been manufactured by Coberco in Europe (Bouwman-Timmermans and Siebenga, 1995) In addition manufacture has progressed from the original batch processes into continuous ones.

## 6.2 Benefits of milk crumb

The main benefit of crumb manufacture is still that it offers a unique, fruity, caramelised flavour to milk chocolate that cannot be matched by the use of recipes which add the milk, cocoa and sugar as dry ingredients (Afoakwa, 2010; Stauffer, 2000; Urbanski, 2000). There are also other additional benefits:

- In contrast to dried milk, dried milk crumb can be stored for long periods without fat rancidity or staleness developing. This is because of the presence of polyphenolic antioxidants such as epicatechin in the cocoa.