

SNACK FOOD

Edited by
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Preface

Rather than containing for the most part fairly detailed food science and technology intended for daily use and reference by food scientists and technologists, this book is designed for use by a much wider range of readers concerned with a particular and rapidly expanding area of food production, promotion, marketing, and packaging. A certain amount of basic detail is provided to enable relatively rough estimates of the production methods and packaging facilities necessary to enable new or improved items to be made, but the overall emphasis is on the wide range of food products that can now quite legitimately be regarded as coming within the broad definition of foods used as snacks, as contrasted with main meals.

Thus, we start with the basic requirements to be met in a snack food whatever its nature, and follow with the great variety of items nowadays used as snacks or as adjuvants to snacks, concluding with an assessment of nutritional consequences of the growth of "snacking" or "browsing," and with the special packaging requirements of snack foods.

There are still plenty of marketing niches and slots to be filled in the snack food area and this volume attempts to supply general indications of where they might be found. It therefore can be of interest to a wide range of readers in addition to food scientists and food technologists, such as those involved in food company marketing, advertising, the packaging and food engineering industries, governmental agencies concerned with food standards, health and safety, and others including retailers connected with food promotion and selling. The book can also provide a basis for educational courses dealing with items involved in this relatively new but here-to-stay development of Western feeding

patterns, and forms a bridge and interface between the scientific "why" and the practical "how" of producing a great variety of snack foods.

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Introduction

R. G. Booth

It is arguable that John Montagu, fourth Earl of Sandwich (1718–1792), by calling for a slice of meat between two slices of bread, was the originator of the earliest form of modern-day snack. In any case, the now ubiquitous “sandwich,” named after the Earl, is probably the most universal of all snacks and is made from an enormous range of fillings (or toppings in the case of the open sandwich) contained in or on a very wide range of bases and covers.

This is mentioned at the outset because the term “snack” cannot be confined to traditional style items such as popcorn, expansion-extruded products, potato chips, and similar products, but has a very much wider connotation covering a large proportion of the foods that are (or have been) customarily consumed as a component of or with main meals.

A problem therefore arises in defining or categorizing a “snack” or a “snack food.” It is clearly necessary to try to establish a definition or definitions that approximate to what consensus there is on the subject and that can form a basis—probably a little elastic—within which the subject can be discussed. Definition depends largely on what value is put upon the variety of criteria upon which a snack or snack food description may be based.

One criterion itself is quite difficult to define—that of the size of portion or of the quantity usually offered or eaten. There is no real problem in the case of what might be termed the “minisnack” taken at a traditional time (e.g., mid-morning, late afternoon) or at a work break or interruption to whatever activity is going on—or just to fill a real or imagined physiological or psychological need, or even just to relieve boredom. There is, however, an enormous variety of these minisnacks, ranging from national or ethnic-type snacks to those based on tradition,

climate, location, etc. Not everybody has crackers or cookies plus tea or coffee every mid-morning, nor weisswurst and beer, nor sherry plus cake or a tapas or olives, nor a Mars bar—nor a whole host of other items that may be and are consumed some place and frequently at some fairly regular time of day.

So, while very varied indeed, the mid-morning, mid-afternoon, late evening, or "incidental" snack, usually from its size, nature, and the fact that it is usually taken quite informally and frequently without implements, is fairly well characterized in the regions in which it is consumed and is so clearly defined as a snack.

The problem arises when the "meal replacement" snack is considered. Quantitative nutrient content is not a qualifying factor of major significance in view of the very wide range of requirements of the great variety of types of workers (manual, blue collar, white collar, etc., to use modern U.K. classification parlance). But it becomes of considerable significance in the case of products developed to supply the specific needs of people engaged in particular physical activities, with those to whom needs occur at specific times whether sidereal or circadian, and with those in specific climatic and other environmental stress situations. However, it is also necessary to remember that the snacking pattern may well be seven or eight snacks replacing three main meals.

This leads to a situation where it is necessary to formulate a broad definition of this type of snack based on a variety of practicalities rather than a precise scientific one.

The rapid rise in the consumption of snacks other than those defined as minisnacks has arisen largely from the breakdown of the long-established pattern of communal domestic feeding—three meals a day of which breakfast and the evening meal were customarily taken "en famille" at home. Because home and workplace are frequently far apart, because of differing work time patterns, of varying leisure pursuits, and so on, it has become impractical to maintain the pattern of joint family meals except on some special occasions, e.g., Sunday lunch or dinner. Thus, individuals in the family become accustomed to snacking or taking food ad hoc and informally at a time and place convenient to the individual and unrelated to the other members of the family. Sometimes this will be a main meal—cold or heated up in a microwave or other oven—but a large part of the time it will be a variety of snacks consumed not necessarily sitting down but *al fresco*, frequently without need for the use of implements, and usually solo or with unrelated friends rather than family. This definition naturally includes traditional snacks (popcorn, peanuts, and suchlike) as well as all the very wide variety of foods used in this context. It also naturally includes snacks taken for special

purposes, e.g., high-sugar snacks for energy in sporting activities and so forth. It accords well with the dictionary definition that refers to a snack as being "a hasty or casual or very light meal," and also with the U.S. snack food definition provided by Frost & Sullivan Inc. and referred to in Chapter 17.

This broad definition of a snack clearly permits some latitude to chapter authors in their approach and coverage but is rightly more permissive than exclusive. It also explains why, however carefully the effort is made to avoid duplication of subject matter in different chapters, some will inevitably occur, particularly in the sort of situations in which, for example, a plain fruit and nut bar will be mentioned in its appropriate chapter and may well also be mentioned in the chocolate confectionery chapter if it could well have a chocolate enrobed alter ego.

It has become very obvious that there is much promise for the food manufacturer who wishes to get into the ever-expanding snack food market. A very recent case will provide an example.

The Scotch egg, popular in the United Kingdom—a hard-boiled, shelled egg encased in a layer of sausage meat, coated in breadcrumbs, and fried—is a snack in its original form though it can also be used as a basis for a main meal. Owing to the development of a new machine it is possible to manufacture at high speed a mini single-bite version of virtually the same article. Hard-boiled egg is chopped and bound with a little mayonnaise to form a marble-sized center that is then automatically thinly coated with sausage meat, breaded, and fried to give a walnut-sized "Scotch egg" that makes an excellent accompaniment to the aperitif. A similar situation exists with the kebab—Shish variety. A full-sized kebab on a metal skewer or a "sword" usually constitutes a main meal. But miniaturized on cocktail sticks or similar it now constitutes a frequent accompaniment to drinks or an attractive solo item.

It is probably noteworthy that, quite deliberately, no provision has been made for chapters concerning eggs and butter (or butter replacements) and on salads and fresh fruit. This is because of what might be termed a universality principle. Eggs are used for such a variety of purposes (whipping, texture stabilization, emulsification, etc.) in the general manufacture of all kinds of snacks, as well as being cooked individually or in small batches to produce such items as omelettes and sandwich fillings, that they will be found referred to in very many chapters as appropriate incidental ingredients. The same is true of butter—a *very* widely used ingredient in a vast range of snacks.

When it comes to salads and fresh fruit the situation becomes impossible—latitude, altitude, rainfall, and season all affect what ingredients are locally available and the nature of the salading and its value

provide economic constraints on whether transport is practicable for many potential items. And so it arises that hundreds of thousands of permutations of ingredients exist to make the overall palette of salads and fruits quite enormous. One thus has to revert to the general principles of Chapter 1 to get some guidance on how salading and fresh fruit ingredients may be combined to best effect and to best support any proteinaceous ingredients added—meat, fish, cheese, nuts, seafood, or whatever.

In the following pages there will be observed many opportunities for miniaturization of existing “borderline” larger snacks and of creating new savory and sweet mixtures or compounds that constitute attractive and varied snacks: imagination is the major limiting factor because such advanced machinery and techniques are available that few, and normally relatively easily surmountable, problems arise in converting concepts into reality.

The huge variety of snacks of which a large proportion contain or are miniatures of regular food items make it necessary in a book of this type that where information is provided on methods of manufacture, only that with special relevance to such miniature snack forms of the products (where this is possible) is given. Detailed general information is readily available from other sources (see the references in individual chapters) on the manufacture of the regular items. No such limitation applies to items that are universally and exclusively regarded as snacks.

It will immediately be apparent that the definition of snack food adopted here differs very much from the definitions implicit in periodical publications devoted to snack items both in the United States (e.g., *Snack Foods*) and in the United Kingdom (e.g., the Impulse Foods section of the *Food Trade Review*). This is presumably because (1) such publications can normally only deal effectively with products that are branded and on which Nielsen and other agencies can provide appropriate data, and (2) practically all items that can be and are used as main meal items fall outside their remit. For example, neither icecream nor yogurt appear in the U.K. *Snack Foods* market breakdown, which, for 1988, is as follows (percentages of the total \$27.1 billion market):

Candy	29.1%
Cookies/crackers	22.9%
Miscellaneous (see separate list)	14.3%
Potato chips	11.2%
Corn/tortilla chips	5.9%
Snack cakes/pies	5.3%
Snack nut meats	3.9%

Frozen pizza	3.7%
Popcorn	3.7%

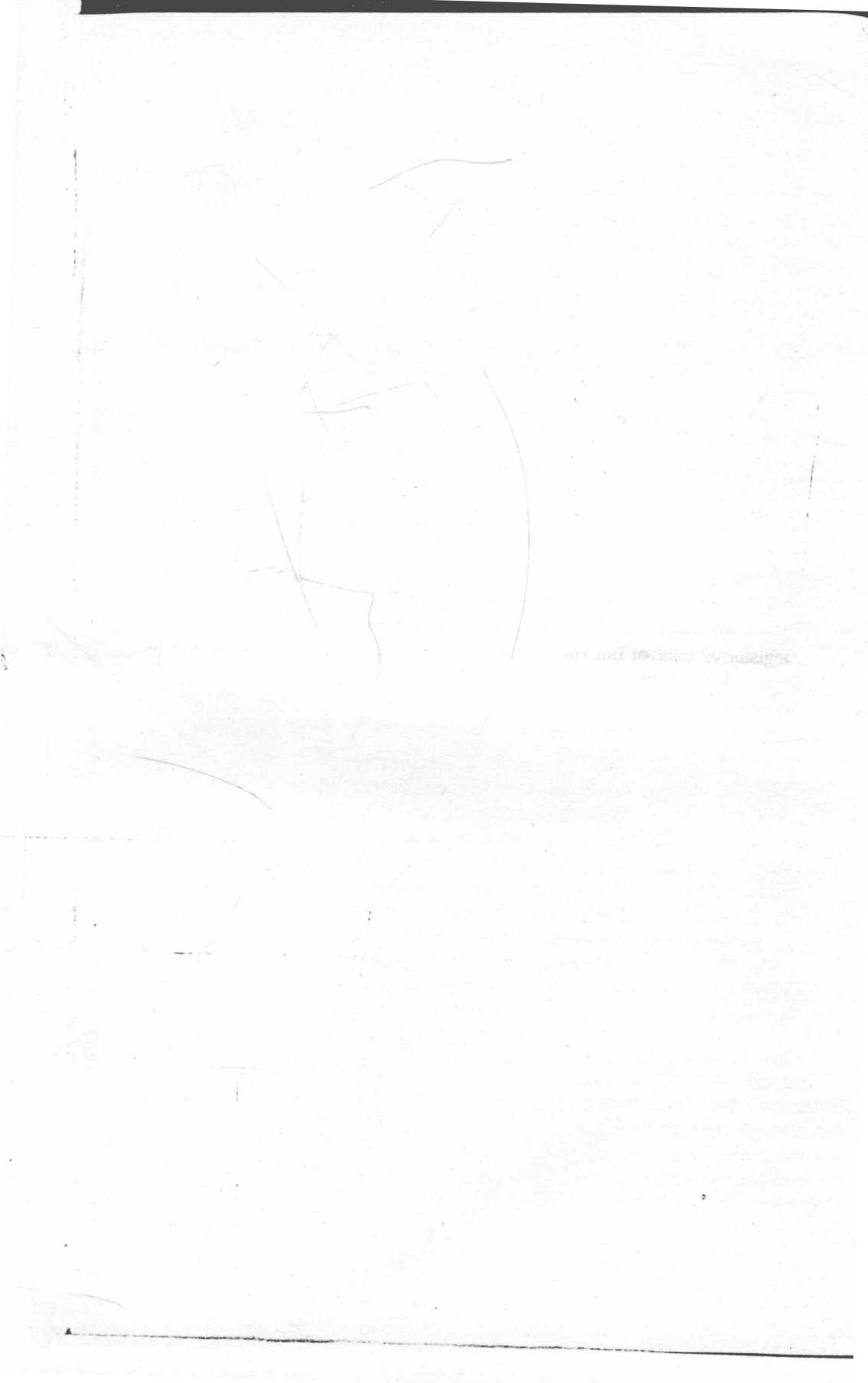
Miscellaneous is composed of:

Imported items	2.4%
Dried fruit	2.1%
Extruded snacks	2.1%
Hot snacks	1.9%
Meat snacks	1.7%
Pretzels	1.2%
Fabricated chips	1.1%
Granola snacks	1.0%
Toaster pastries	0.8%

It will have been obvious to all readers that very major changes have taken place in eating habits over the past 25 years and that these changes are progressive. For that reason this book is by way of an interim report. By the year 2000 it is inevitable that snacks will have progressed further. The principal worries about this advance are nutritional adequacy and the maintenance of acceptability. The first of these is susceptible to some legislative control but the second, comprising taste, appearance, aroma, and texture, provides grounds for concern about whether, overall, these can and will be maintained. Food is a necessity of life and *should* be one of its pleasures and satisfaction givers. If it fails in this then one element of our civilization is being eroded in the name of progress—or is this inevitable in view of the ever-increasing population and food needs of planet Earth?

RECOMMENDED READING

Ranken, M.D. (ed.) 1988. *Food Industries Manual*, 22d ed. Blackie, London and Glasgow, and Van Nostrand Reinhold, New York.



Ingredients: Their Attributes and Functions

R. G. Booth

FLAVOR

There are numerous criteria for the classification of ingredients for snacks but it is probably most helpful to start with a fundamental one—snacks almost by definition are expected to be flavorsome. This criterion amounts to a basic essential attribute in the snack context. Here we divide up the palette of flavors into several principal categories.

(1) *Neutral* and relatively poorly distinguishable in terms of flavor contribution except when present in large proportion and when in a mainly unprocessed form. This category includes most cereals; a number of roots and vegetables (e.g., potatoes, cassava); milk; some meat products, particularly gelatin, tripe, glands, and similar items; a few fishy items (particularly the squid and octopus kinds); a great variety of oils and fats; and a variety of miscellaneous items such as gums, leaves, stems, etc., with the latest addition of some fungal and algal bulk sources of protein. These can be generally regarded as “fillers” or substrates for snacks, but can usually be persuaded to develop significant flavor characteristics given appropriate processing.

(2) *Acidic*. Most acidic raw materials have other flavors present—e.g., essential oils and other natural flavoring compounds that characterize them beyond the acidity per se. The organic acid involved in the flavor of these ingredients is also usually characteristic of the raw material and can range for a given pH value from the relatively bland acidity of lactic and butyric through fumaric, tartaric, malic, and citric to the quite sharp acetic. A further complication in the matter of acidity is the extent to