

FOODCRAFT



2. THE WET PROCESSES

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Series editor: Roy Hayter, Hotel and Catering Training Board

M
MACMILLAN

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First published 1988

Published by
MACMILLAN EDUCATION LTD
Houndmills, Basingstoke, Hampshire RG21 2XS and London
Companies and representatives throughout the world

Produced by Edition, 2a Roman Way, London N7 8XG
Edited by Jill Hollis
Designed by Ian Cameron

Printed in Great Britain by
Scotprint Ltd, Musselburgh

ISBN 0 333 457870



2. THE WET PROCESSES

Hotel and Catering Training Board/Macmillan Education

Mastercraft Series

Foodcraft 1: The Dry Processes

Foodcraft 2: The Wet Processes

Servicecraft: Food and Beverage Service

Servicecraft: Table Service Workbook

Servicecraft: Counter Service Workbook

Barcraft: Bar and Alcoholic Beverage Service

Housecraft: Accommodation Operations

Housecraft: Operations Workbook

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Guestcraft: Front of House Operations

Core Books

Mastercraft 1: Working in the Hotel and
Catering Industry

Mastercraft 2: Health, Hygiene and Safety in the
Hotel and Catering Industry

The publishers and the Hotel and Catering Training Board gratefully acknowledge the contribution made to the text by the following people:

Robert Wright at the South East London Technical College (Introduction), Brian Beesley, Michael Coyle, Helen Eustace, Brenda Waller and Keith Waller at Blackpool and Fylde College (Boiling, Poaching and Steaming), Robert Wood at Norwich City College (Stewing and Braising), Yvonne Johns at Macclesfield College (Microwave), Harry Cracknell and Gianfranco Nobis at Dorset Institute of Higher Education (Cook Chill and Cook Freeze), Daniel R. Stevenson (Practical examples).

The publishers and the Hotel and Catering Training Board are also deeply grateful to the following people for their advice and support: Patricia Scobie for advising on nutritional information in the text; James Jones for advising on food science; Clive Finch, Daniel R. Stevenson and Ivor Hixon for general advice. They would also like to thank the staff of the library of the Hotel, Catering and Institutional Management Association.

The Hotel and Catering Training Board and Macmillan Education would like to thank the following sincerely for their assistance with illustrations:

Barclays Bank, London
Clarkes Restaurant, Kensington, London
Clifton Inns, London
E. Coaney & Co., Birmingham
Cranks Wholefoods, London
Dorset Institute of Higher Education, Poole
Frame Hill School, Camberley, Surrey
Gatwick Hilton International, Sussex
Harrods, London
M.E.L. Philips, Crawley, Surrey
Merrychef Ltd, Guildford, Surrey
Muskaan Ltd, Letchworth, Herts
Olivers Winebar, Mayfair, London
Oxford Polytechnic, Oxford
Royal Lancaster Hotel, Bayswater, London
Safeway Naturally, Safeway, Wood Green, London
Sheraton Park Tower, Knightsbridge, London
South East London Technical College
Travellers Tavern, Victoria, London
White House Restaurant and the Wine Press, London

The Hotel and Catering Training Board and the publishers wish to acknowledge the following illustration sources:

Cover

Transmedia

Introduction

Compass Services (UK), Richard Kirby, David Spears, Chris Browning, Ian Cameron, Keith Turnbull

The Customer

Caterer & Hotelkeeper, Rank Hotels, V.S. Photo Library (Boiling), V.S. Photo Library, Chris Browning (Poaching), Caterer & Hotelkeeper, Fiona Pragoff, Courage Ltd, Keith Turnbull, Ministry of Defence (Stewing), Alexia Cross, Royal Lancaster Hotel, White House Restaurant and the Wine Press – braised beef and stuffed pepper prepared Ian Brown, Head Chef (Braising), J.G. Mason, Barnabys Picture Library, Caterer & Hotelkeeper, V.S. Photo Library (Steaming), Keith Turnbull, Transmedia, Caterer and Hotelkeeper (Microwave), British Rail, British Caledonian Photo Library, Keith Turnbull (Cook Chill), Keith Turnbull, RHM Retail Ltd, Compass Services (UK) Ltd (Cook Freeze)

Insight

David Spears and Richard Kirby briefed by Roy Hayter, Chris Browning, Keith Turnbull (Cook Freeze and Cook Chill), Mike Trier, Ron Hayward & Associates

Food Selection

Chris Browning assisted by David Spears and Richard Kirby, food items chosen and prepared by Daniel R. Stevenson and David Simmons of Oxford Polytechnic assisted by Roy Hayter, Claire Myers and Sarah Vacher

Terms & Equipment

Chris Browning and David Spears assisted and briefed by Gill Verstage, Garland Catering Equipment (Steaming), Stangard/Browns Hotel (Boiling), British Gas North Thames Employee Services Division Food Production Centre, Bromley-by-Bow (Cook Chill), Hobart (Cook Chill), British Rail (Cook Chill)

Method

Chris Browning, David Spears, Keith Turnbull

Practical Examples

Chris Browning assisted by David Spears and Richard Kirby; demonstrator: Daniel R. Stevenson, assisted by David Simmons, Roy Hayter, Claire Myers and Sarah Vacher

Problems, Tips & Tasks

Chris Browning, David Spears, Keith Turnbull, Ian Cameron

Artwork for Insight, Method, Terms & Equipment and Practical Examples sections

Photographic reference: Ian Cameron; demonstrator: Roy Hayter; visualiser: Mike Trier; illustrators: John Woodcock and Ron Hayward & Associates.

The wet processes

About this book	1
INTRODUCTION	2
BOILING	26
POACHING	64
STEWING	88
BRAISING	106
STEAMING	126
MICROWAVE	146
COOK CHILL	166
COOK FREEZE	186
Glossary	204
Index	208

The Foodcraft approach

The successful preparation of food, whether it will form an elaborate meal or a simple snack, depends on a thorough understanding of whichever cookery process is being used. The cooking processes in which 'dry' heat plays a primary role are covered in Foodcraft 1: baking, roasting, grilling, shallow frying and deep frying. Cold preparations and vacuum cooking (also known as sous-vide) are also covered in Foodcraft 1.

Foodcraft 2 covers the 'wet' processes where water, steam, or a liquid such as stock play a primary role: boiling, poaching, stewing, braising and steaming. Microwave cooking, cook chill and cook freeze are also covered in Foodcraft 2.

The structure

For each process the same stages are covered:

The Customer looks at the needs and expectations of the people who will be eating the food and the variety of situations in which it might be served.

Insight investigates what happens to the food in the particular process, covering all stages from purchase to service.

Food Selection examines the foods that can successfully be cooked by the process and how their quality can be judged.

Terms & Equipment covers the terms associated with the cooking process and the main items of equipment which are likely to be used.

Method gives the steps that need to be followed in preparing a dish by the particular process, with guidance notes. The information on these pages will help readers gain the relevant Caterbase module indicated by the Caterbase symbol in the text.

Practical Examples demonstrates the process by providing specific recipes. Basic methods of preparation (e.g. filleting fish) are explained alongside the recipes where necessary. The number of servings have been varied to encourage adaptation of recipes and alternative ingredients are suggested where appropriate.

Problems, Tips & Tasks reviews some of the difficulties that can arise, with indications of what may have gone wrong and hints on how to avoid the problems. Tips are given and so are **Test yourself** questions to help the reader check understanding of the text and to prepare for City and Guilds 706 examinations.

How the book is planned

Each stage is covered in a double page spread (or more than one if the information is extensive), thus providing easy-to-use, self-contained learning blocks. Additional features include general information on nutrition, health, hygiene and safety, dealt with in boxes throughout the text. Many spreads also have a practical activity in a **To do** box. Other points which are relevant to the use of all processes, such as information on working methods, hygiene, safe practices, nutrition and digestion, costing and purchasing, basic equipment, herbs, spices and seasonings and the making of stocks and sauces, are covered in the introduction to each book. A glossary and index are also provided.

Certification

The Foodcraft books and videos form part of the Hotel and Catering Training Board's Mastercraft programme. They are intended to provide support for readers seeking certification in practical food preparation skills under the Caterbase scheme, but are also useful study aids for qualifications administered by City and Guilds and SCOTVEC in the theoretical understanding and knowledge of cookery as well as the joint certification (recognised by the National Council for Vocational Qualifications) which incorporates both practical and theoretical requirements.

The Foodcraft videos

References are given on a number of pages to the Foodcraft videos. Healthy eating is the subject of Video 8, *Catering for Health*. Other videos include demonstration recipes which illustrate the application of a cooking process to a particular commodity.

Video 1 *The Professional Kitchen* – knife skills, making white and brown stocks, kitchen design, equipment, hygiene and safe working practices, uniforms, food storage.

Video 2 *Meat* – stewing, grilling, boiling.

Video 3 *Fish* – poaching, cold preparations, deep frying.

Video 4 *Poultry and Game* – shallow frying, braising, roasting.

Video 5 *Vegetables* – boiling, shallow frying, steaming, roasting, braising.

Video 6 *Cakes*, **Video 7** *Pastries*, **Video 9** *Eggs with dairy products* and **Video 10** *Flour and yeast* all cover baking.

Video 11 *Desserts* – cold preparations, steaming.

1 INTRODUCTION

The need for organising your work

The Foodcraft books are about preparing and cooking food and the skills and knowledge needed to do this well. But perhaps the greatest skill of all is being able to organise working methods so that no matter how many tasks have to be done, they all come together at one crucial service time. It is not much good preparing delicious, nutritious food if it is not ready when it is needed or the wrong quantity has been produced.

To help you organise your work, the Method pages in this book outline the basic steps for each of the cookery processes described which should help you to judge how much time to allow for the work you need to do.

There are also certain general tasks you will need to do and points to consider whichever process you are using.

▶▶▶ TO DO

List all the equipment and ingredients you would need to make 30 rounds of sandwiches: 10 cheese and tomato, 10 egg mayonnaise and 10 tuna and cucumber. List the stages in preparation to get the sandwiches ready for service. If the service time is 11 am, calculate when you need to start (the object is to serve the sandwiches as fresh as possible).

Draw a sketch of how you would position the ingredients so that you could do the filling for each group of 10 sandwiches in the quickest way.

Before you start

The first step is to think through the dish(es) you will be preparing and cooking. In most catering situations the menu or list of dishes that will be offered to the customers decides what has to be done. In kitchens that have to cater for large numbers the work is usually divided between a number of chefs, often with one person preparing one dish, another a second. When there are a lot of dishes on the menu, the work is often divided into types of preparation and cooking activity, and the layout of the kitchen may be organised around this principle, for example, one chef's responsibility might be to do salads and cold preparation work in a cool area of the kitchen, while another might do sauces and soups, another the vegetables, another the roasts, another the pastries, and so on. This is sometimes called the *partie system* and is the traditional way to organise work in a kitchen.

In most kitchens, the simpler tasks will be done by less experienced chefs, trainees or staff specifically employed to undertake them. Always make quite sure you know which parts of the preparation are your responsibility.

Points to consider in advance

1. How many servings you need to prepare.

You may be told how many portions are needed or you (or your supervisor) may have to make an estimate, for example if customers have a choice between dishes, or when the exact number of customers is not known.

2. The time when the dish should be ready for service.

This may be a precise service time, for example when a soufflé is served as one of the courses in a banquet, or an exact time may not be known, as in the case of a cold sweet that might be kept in the refrigerator for several hours or even a day before service.

The food may have to be cooked in small quantities at several times over the service period, so that it does not lose flavour, or spoil through being held too long, as, for example, for a self-service hot food counter.

If you have to prepare a number of dishes, you will need to work out timings so that they are all ready at the same time. Think through the recipe in case there is some stage you need to allow a specific time for, like chopping vegetables. Remember, as well, that some jobs have to be done in a certain sequence.



3. The method of preparation or cooking to be used.

If this means finding and following a recipe, read the recipe through so you are sure you understand what is involved.

4. Any special service requirements.

These will be necessary if, for example, the food is for a banquet, or if it has to be taken some distance before it is served (as it might be in a hospital), or if cooking is to be completed at the table as part of the presentation, as with crêpes suzette (which are flambéed).

5. Any adjustments to the recipe.

Quantities will have to be increased if you are preparing more servings than the recipe allowed for, or decreased if you are doing fewer. Do this very carefully. If the recipe is based on metric measurements with imperial equivalents (as in the Foodcraft books), but you are using imperial, change the metric quantities first and then convert back to imperial. This is very important when the ratio of one ingredient to another has to be very precise (as in most cake and bread recipes). If you are in doubt about how to do this, ask your supervisor or tutor for help.

Some job titles

Executive chef – chef in overall charge in large kitchen.

Head chef or head cook – chef in charge of a small kitchen.

Sous chef – chef who is second-in-command.

Commis chef – junior chef, working as assistant or apprentice.

Chef tournant or relief chef – chef who fills in temporarily for an absent chef of section.

If the executive chef is absent, the sous chef will take charge. When the chef in charge of a section, for example, the pastry chef (chef pâtissier), sauce chef (chef saucier) or larder chef (chef garde-manger), is absent, the work will be done either by a relief chef or by commis chefs in that section under the supervision of the executive or sous chef.

6. Collecting the equipment.

Whatever equipment is needed should be collected in advance so that once you start, your work is not held up or interrupted. If you are going to need large pieces of equipment that other staff might also want to use, for example, a mixer, deep fryer or steamer, check in advance that the equipment will be available.

The priority will be given to anyone who has to use equipment at a specific or critical time, for example, a deep fryer immediately before service, or a proving oven when the bread dough has been mixed.

7. Collecting the ingredients.

Sometimes you may have to make sure that ingredients have been obtained, either by placing an order with a supplier, or by going to the kitchen stores and collecting them. In some establishments this may involve completing a written order (sometimes called a requisition) and getting it signed by the head chef or a supervisor.

If a particular ingredient is not available, it may be possible to substitute another, for example, by using tinned rather than fresh pineapple in a fruit salad. But some ingredients, such as apples for baked apple, cannot be substituted and an alternative dish would have to be chosen and the menu changed.

8. Organising equipment and ingredients.

Having collected what you need to prepare and cook the dish or meal, it is important to organise your equipment and ingredients in a logical and hygienic way so that you have space to work in and can see what you are doing. Make sure you have space for the chopping board (if you are using one), and room to keep cooked and raw ingredients separate. It is also important that you can work smoothly from the unprepared food to the prepared, working from left to right (or right to left). Well-organised work goes faster and is less tiring than doing things in a disorganised way.

7 INTRODUCTION

Using the right equipment for the job is essential if food is to be prepared and cooked to a high standard. In the Foodcraft books, each section covers a particular cooking process and the equipment associated with it is described in the Terms & Equipment pages, for example, frying pans are dealt with in Shallow Frying, steamers in Steaming.

Knowing what equipment to use and how to look after it is an extremely important part of the chef's job. Work will only run smoothly if equipment is kept clean, in working order and in the right place.

Cleanliness is very important indeed. Many pieces of equipment, especially those with small holes or spaces that are difficult to clean, such as sieves, graters, mincers and mandolins, make excellent breeding grounds for bacteria and need to be washed and checked carefully.

As soon as possible after use, all dirt, grease or other matter should be removed from equipment with hot water and detergent or some other cleaning agent. It should then be sterilised in scalding water or with a bactericidal cleaning agent, and finally stored in its proper place. Pots and pans, for example, are usually stored after cleaning in a pot rack specially constructed for the purpose (which must also be kept clean). Hand tools such as knives, spoons and ladles should be kept in a box, cupboard or drawer or, if they are used frequently, may be kept hanging on a rack. Chopping boards need special attention (*see box*).

TO DO

Make a list of the equipment in the kitchen where you work or visit a local catering equipment supplier. Select the ten items that you are least familiar with and note what sort of preparation processes each is used for, how it should be cleaned and any special precautions that should be taken.

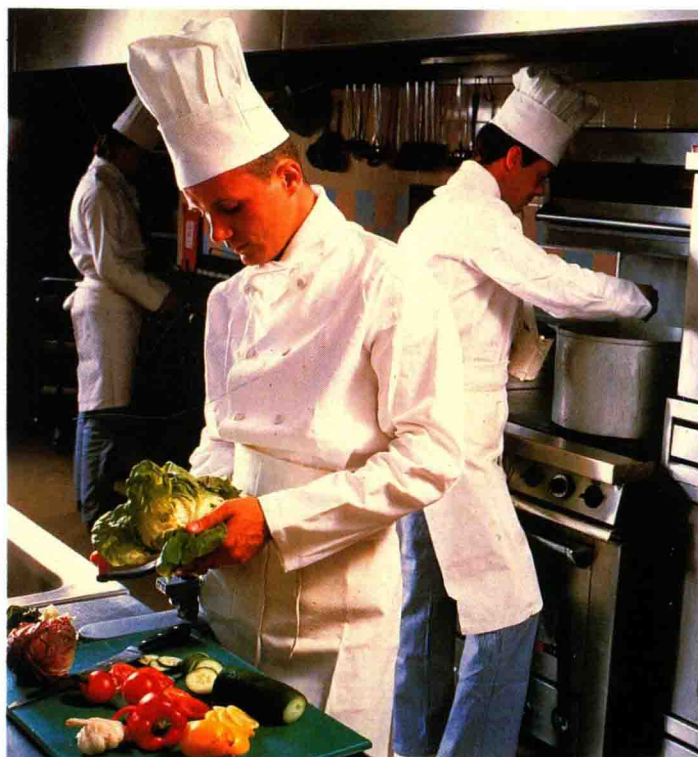
Not all kitchens are as spacious as this one. Sometimes the building, particularly if it is a conversion, simply does not allow enough space. But whatever the size of the kitchen, and especially if it is a bit cramped, the chefs who work in it have a responsibility to help keep it clean and to organise their work in a systematic way. This means collecting the ingredients and equipment needed, but otherwise keeping the workspace clear and uncluttered, and tidying up after completing each job.

Chopping boards

Chopping boards need to be used with great care because of the risk of cross-contamination. This is what happens if food-poisoning bacteria in raw food are transferred to cooked food. So separate boards should always be used for the preparation of raw and cooked food, especially meat.

Wooden chopping boards are easily cut and then absorb liquid (and bacteria) which can contaminate food next time a board is used. They are also very difficult to clean properly, so should not be used. Special boards are available made of hard, durable plastic, which is easily cleaned and resistant to scratching.

Butcher's blocks are the exception. As they are always used for cutting raw meat, there is no problem of cross-contamination. Secondly, butchers need a wooden block for cutting, because a plastic board would tend to slip around when large carcasses are being handled or meat chopped. Butcher's blocks should be cleaned daily, using a wire brush, detergent and chemical sterilant or salt.





Professional kitchens use a wide range of small items of equipment, ranging from spoons and slices for handling and serving food to ovenproof china containers made for cooking specific dishes: 1) and 2) Perforated spoons for draining food. 3) and 4) Metal spoons for portioning or serving. 5) Measuring jug – essential for accuracy. 6) Sieve, with many uses including removing lumps in flours or liquids, draining liquids off foods and puréeing soups and sauces. 7) Salt box – useful in a busy kitchen, where a small dispenser might easily get knocked over. 8) Grater with different sizes of serrated holes, the larger ones for hard vegetables like raw carrots, the smaller for finer jobs like grating lemon zest. 9) Ramekin made of ovenproof china, used for cooking and serving individual dishes like individual soufflés and crème brûlée. 10) Soufflé dish, made from ovenproof china (various sizes are available). 11) Funnel – for pouring liquids into jars and other containers with small openings. 12) *Sur le plat* dish – for cooking *oeufs sur le plat* (eggs baked in the oven). 13) Oval pie dish – for cooking and serving sweet and savoury pies. 14) Fish slice – for handling small solid or semi-solid food items (not just fish). 15) Sauce ladle, with a lip for accurate pouring. 16) Spider – for scooping food out of a deep-fat fryer or vegetables out of boiling water (as long as they are not so tender that they could be damaged by the thin wire). 17) Poultry secateurs for cutting through (tender) bones/joints. 18) Egg slicer, shaped to hold an egg and fitted with fine wires that will cleanly cut through hard-boiled egg to produce undamaged, whole slices. 19) Cocotte dish used for *oeuf en cocotte* (an egg dish that is baked in the oven). 20) Large spoon made of heat-resistant, durable, plastic; this is better than a wooden spoon which might absorb and transfer food flavours and bacteria. Best for stirring food in aluminium saucepans (metal spoons can cause discoloration). 21) Ladle – for

handling liquids, testing pouring consistency, skimming impurities and fats off surfaces of liquids. 22) Perforated ladle for handling small foods or finely cut items which need to be lifted clear of the cooking liquid. 23) Balloon whisk for beating air into liquids such as cream and egg whites, or for thoroughly blending two or more liquids. 24) Colander for draining foods, e.g. vegetables that have been boiled or salad vegetables after washing. 25) This type of stainless steel bowl is available in a wide range of sizes and is useful for mixing and storing food. 26) Wooden mushroom – for pounding purées, crushing brittle foods and forcing semi-liquids through sieves (a liquidiser is easier!). 27) Conical strainer – for removing solids/lumps from liquids. 28) Small measuring/weighing scales. Scales are essential in any recipe where the success of the dish depends on accurate weighing of ingredients. 29) Masher for puréeing cooked potatoes, turnips, apples. 30) Corer for removing the centre (including the pips) from apples and similar fruit. 31) Round scoop (also known as a parisienne cutter) for cutting balls out of melons, potatoes, carrots and similar items. Scoops of this kind come in different sizes and can also be oval in shape. 32) Peeler – for removing skin from vegetables and hard fruit like pears. 33) Zester – for removing the thin outer skin (not the pith) of lemons and other citrus fruits. 34) Kitchen scissors for general purpose use. 35) Chopper with double blades (some have three or four blades) for chopping parsley (using a rocking action). 36) Mandolin for slicing (one blade produces a plain cut, the other a serrated cut). 37) Chopping board holder, colour-coded and labelled to indicate where particular boards should be kept, and what they should be used for. 38), 39) and 40) Colour-coded boards, blue for raw fish, white for dairy products and the thicker, turnip-coloured board for chopping vegetables. Red boards (not shown) are for raw meats.

INTRODUCTION

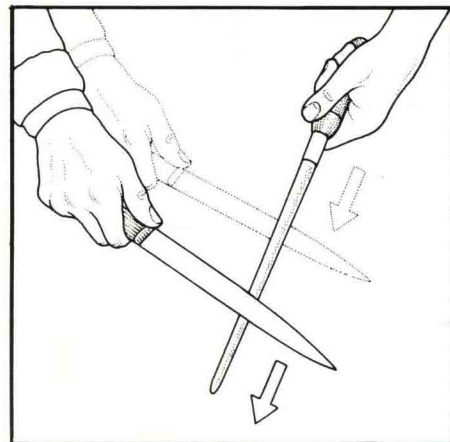
Using knives

One of the most important skills that a chef has to learn is the care and use of knives. It is essential to know exactly which knife to use for which job: dicing, shredding, boning, etc. Once you have understood the basic movements involved in particular uses of knives, it is a matter of practising until you have got to the kind of standard needed in any professional kitchen. Speed and accuracy are very important and can only be achieved by:

- selecting the correct knife for the job
- making sure it is clean and sharp
- taking care that only the tools and equipment needed are laid out and the rest of the work area is uncluttered
- working methodically, for example, keeping unprepared and prepared food quite separate.

Always keep knives in a safe place when they are not in use, and take special care *not* to leave them:

- lying around blade upwards. The blade should always lie flat against the work surface.
- near the edge of a table or chopping board where they could easily be knocked off
- hidden in washing-up water
- hidden in a pile of partly prepared food.



To sharpen a knife using a steel, hold the steel steady in one hand, pointing away from the body and upwards at a slight angle. Then, holding the knife with the sharp edge of the blade pointing away from you, sweep it along the steel, starting from the base of the steel and the end of the blade nearest the knife handle, and moving the blade diagonally across the steel until you reach the tip. Repeat, using alternate sides of the steel, until the blade feels sharp.

Some chefs like to move the knife blade towards the body. Others prefer to use a knife-sharpening machine or special block made of carborundum stone.

To test that the blade is sharp, run your thumb crosswise over the blade. If it is sharp, you will feel a distinctive rasping sensation. Take great care not to run your thumb in the same direction as the blade because you will then cut yourself.

Choosing knives

The most hygienic knives have waterproof handles that can be sterilised. The handle is made of two pieces riveted together through the metal that forms the knife blade. In less expensive knives, the blade is attached to the end of the handle and may snap off with heavy use.

Knife blades are made either of carbon steel or stainless steel. Stainless steel knives do not rust or stain and they will not colour foods, unlike carbon steel which can stain certain foods such as onions and hard-boiled eggs. But stainless steel is more difficult to keep sharp.

The safest way of carrying knives around the kitchen is in the special case, wallet or box that most chefs have to keep them in. If it is necessary to walk a short distance with a knife, hold it close to one side of the body, pointing downwards, with the blunt edge facing in the direction you are walking.



A good collection of well-kept knives is probably the chef's most prized possession. A very wide range is available from specialist catering equipment suppliers. Although good knives are expensive, there is little point in trying to save money by buying knives intended for home cooks, because they will not last long in a professional kitchen and will not perform the job nearly as efficiently. This picture shows:



1) Steel to sharpen knives – note the safety guard near the handle. 2) Zester for removing the fine outer skin from oranges, lemons, limes, etc. 3) Peeler for peeling potatoes and other vegetables and fruit with a firm but thin skin. The sharp point is used for cutting out eyes from potatoes and small blemishes from other vegetables. 4) Paring knife, with a thin, sharp and slightly flexible blade, useful for hand-held work, for example cutting an apple into segments, and for trimming sinew off meat. 5), 6) and 7) Cook's knives (sometimes called French cook's knives or professional cook's knives) of varying sizes. With firm blades and sharp points their uses include slicing, shredding or chopping vegetables, trimming and cutting meat. 8) Filleting knife with a thin, very flexible blade that makes it ideal for drawing closely along the backbone of a fish. 9) Large (and heavy) cook's knife used for chopping large items and also for tasks like chopping parsley when a rocking motion is used (the end of the knife is held down on the board with the outstretched palm of one hand, while the other hand moves the knife in a rapid up-and-down motion, moving backwards and forwards over the pile of parsley). The wide blade is also useful for crushing garlic cloves. 10) Butcher's steak knife, an example of a knife developed for a very specific use. The firm blade with its curved end makes it useful for slicing raw meat quickly. 11) Carving knife. The long, thin, flexible blade makes it possible to slice meat thinly. Some carving knives have a serrated blade (like a bread knife, *see* 13). 12) Deep-freeze knife with a serrated blade specially developed to cut through frozen meat. This knife is strictly for use when frozen meat has to be used at short notice and there is no time for defrosting to take place, but it is not a particularly practical tool in a catering kitchen. 13) Bread knife, with a long thin blade and a serrated cutting edge. 14) Boning knife which, when held like a dagger, can cut close to the bone in meat joints. Because it has a strong, firm blade it will not bend or break under the considerable force that may have to be used. But this means that great care

must be taken, because if the knife slips it could cause serious injury. 15), 16) and 17) Palette knives of varying lengths and widths to shape smooth mixtures, or lift firm foods such as a chicken suprême. The blade is flexible, has a rounded end instead of point and is not sharp. 18) Oyster knife. Used to force open the shell of a fresh oyster, it has a short firm blade and a safety guard. 19) Cutlet bat for flattening pieces of raw meat, for example, escalopes, minute steaks, chicken suprêmes. 20) Poultry secateurs for cutting through poultry bones (some chefs prefer to use a knife to do this). 21) Cook's fork: a particularly dangerous item with its long, sharp points. It is used for lifting roasted meats, although this needs to be done with great care to avoid piercing the meat, which would allow the juices to escape. In the case of a chicken or duck, for example, you should insert the fork into the chest cavity and then lift. 22) Carving fork with a guard to protect the fingers from slipping into the way of the carving knife and short prongs to hold the meat firmly in place. Wherever possible, avoid piercing hot joints repeatedly with a fork. Some joints can be safely held by the bone, when the meat has been scraped off the bone before cooking, e.g. leg of lamb. 23) Cleaver or chopper, found mainly in the butchery section of kitchens and used for chopping through large bones. The back of the chopper blade is used for cracking bones. 24) Kitchen scissors for cutting the fins and tails of fish (some chefs prefer to use a cook's knife for this job) and for more general tasks like cutting the string or the paper for a steamed pudding.

▶▶▶ TO DO

Choose three recipes from the Practical Examples sections of this book and list the most suitable knives and small equipment you would need to collect before you started work.

INTRODUCTION

Purchasing

Each catering establishment obtains its food in a slightly different way. Larger ones, for example, may buy whole carcasses of meat, direct from the market or wholesale butcher and employ their own butcher(s) to prepare the meat as required. Others will buy in pre-prepared food, ready for cooking, which will exactly match requirements as to quality, size and weight that have been set out in a purchase specification in advance.

How far in advance of use the food is ordered will depend on many factors, including:

- how long it will keep
- what storage facilities are available
- whether larger quantities will bring a price advantage
- any delivery restrictions
- what number of people have to be catered for
- when the food is required on the menu plan.

Costing and stock control

While preparing food is the most important job a catering unit does, in the end the establishment will not be able to work properly unless accurate records are kept of what is used in relation to the number of meals served and how much it has cost.

This control over the use of both food and non-food items (such as fuel and cleaning materials) is important whether the establishment is a commercial one like a restaurant, which needs to make a profit, or a non-commercial one like a college or school dining room operation, which has to operate within a specific budget laid down by the authorities.

Working out how much it costs to buy the food for meals involves keeping careful stock records and details of how much items have cost. The calculation is usually done weekly by adding together the costs of purchases made on a day-to-day basis, and the cost of issues from stores and freezers of products bought in bulk, and subtracting the value of the stocks remaining at the end of the week. Minor fluctuations from the norm would usually be acceptable, but major differences would be examined carefully because if the establishment is spending too much on producing too few meals it could get into financial difficulties and in the end have to close.

Storage

This information will help you gain the Caterbase qualification in *Storing of Goods*.

Flours, herbs, seasonings, dried fruits, pasta, rice, bottled and tinned foods and other items that do not require refrigerated conditions are usually kept in a 'dry store'. This may be only a small cupboard, or a large room with special shelving (as shown in the photograph below) and a desk area for the storesperson to process and file the different paperwork involved in whatever control system is being used.

A dry store room or cupboard should:

- have good ventilation
- not be below 15°C (60°F) or above 21°C (70°F)
- be dry
- be secure from insects or vermin
- be open only to authorised staff
- be organised so that both incoming and outgoing orders can be easily checked, weighed or counted.

Food items should be:

- stored away from the floor (on shelves or in bins)
- kept in secure packages, boxes or containers
- clearly labelled
- stored so that the oldest items are used first (first in, first out)
- stacked safely with no danger of tins rolling off shelves or piles collapsing
- stored on the lower levels if they are particularly heavy to make handling easier
- stacked so that stock counting is quick and straightforward (no part-filled boxes, no hidden items, all like-items together).



Food costing example

1. During a week, a total worked out from invoices and/or delivery notes for fresh foods bought daily, e.g. meat, fish, vegetables, fruit, comes to £300.

2. The cost of items issued from stores comes to £25. This is worked out by looking at the records of what stock was issued to the kitchen and calculating its value at the purchase prices.

3. There was also £90 worth of frozen goods used. This can be worked out from the records kept of what was issued from the frozen food stores, then its value is calculated at current prices. If no issue records are kept, and the frozen goods are simply used as and when they are required, then the calculation would be done from stock and purchase records. In this example the value of the stock at the beginning of the week was £650. Purchases of frozen foods during the week came to a further £400. The value of the stock at the end of the week was found to be £960, so £90 of goods had been used:

opening stock	£650
plus purchases	£400
minus closing stock	£960
	£90

4. The value of the food in the kitchen at the end of the week is £15. This is calculated by counting/weighing the food left in cupboards and refrigerators and multiplying this by the unit cost which will be on the invoices. For example: 2 kg of stewing beef at a purchase price of £1.50 per kg = £3 stock value.

5. From this information the cost of the food used can be worked out:

fresh food purchases	£300
plus issues from stores	£25
plus issues from freezers	£90
	£415
less closing stock value	£15
cost of food used	£400

To be useful this information has to be related to the number of meals served (in an establishment like a canteen where no money changes hands) or the income from sale of meals in a commercial establishment. Alternatively, or in addition, the information can be related to the budget for the week. The formula for this is:

$$\frac{\text{food cost} \times 100}{\text{food sales}}$$

If sales of food in the restaurant (excluding sales of wines and cigars, value added tax, service charge, etc.) amount to £800, then the percentage food cost is:

$$\frac{400 \times 100}{800} = 50\%$$

Other non-food costs should also be taken into account in order to help keep a check on profitability. In the example these include:

wage costs (plus related costs such as the employer's contribution to national insurance)	£295
electricity, gas and telephone	£15
rent	£50
cleaning materials	£10
	£370

This means the restaurant has made more than it has spent, in other words, it has made a profit:

sales	£800
less food cost	£400
	£400
less other costs (as above)	£370
profit	£30

This profit of £30 is called the net profit. To work out what percentage of sales it makes, you need to do the following calculation:

$$\frac{30 \times 100}{800} = 3.75\%$$

Low profits can result from many factors, but the most common cause is that the restaurant is using too much food to prepare the number of meals served. This might be the result of:

- over-estimating how much food needed to be prepared and having to throw away large quantities of uneaten meals
- incorrect storage of food so that it spoiled before it could be used
- poor control of the issue of foods
- not following recipe quantities accurately
- preparing over-size portions.

Another obvious reason could be that the restaurant needed to serve more meals to cover the costs of paying staff and still make a profit. In other words, the sales revenue was not high enough.

TO DO

Using the figures given in this box, work out

1. the cost of food used
2. the cost of food as a percentage of sales
3. non-food costs
4. profit or loss
5. profit or loss as a percentage of sales

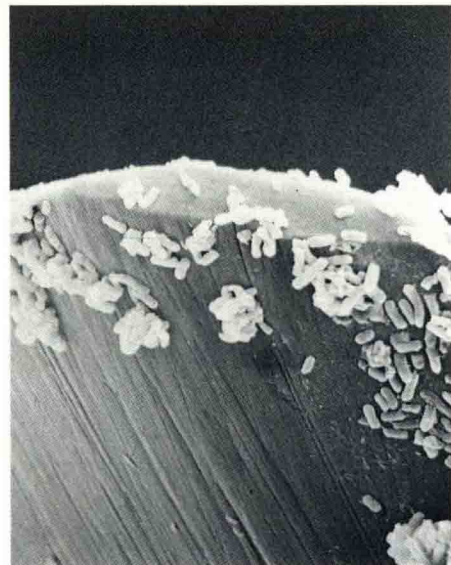
fresh food purchases	£350
issues from stores	£35
issues from freezers	£120
closing stock value	£20
sales of food	£1,200
wage costs	£295
electricity, gas and telephone	£20
rent	£50
cleaning materials	£15

How can food be dangerous?

Food can be dangerous to eat for a variety of reasons:

- It may contain natural poisons, for example, potatoes that have turned green or undercooked kidney beans.
- Certain metals may have got into it during growth or processing, such as lead or copper.
- Pesticides or weed-killers may be present on it.
- Parasites may be in it, for example, the Trichinosis worm which is sometimes found in pork.

But by far the most common type of food contamination is bacteria. There are many ways in which the growth of bacteria can make food unsafe to eat if it is not handled properly and if safe practices are not followed. So it is extremely important for anyone in catering to understand what causes food to spoil and become harmful, especially because some of the most dangerous bacteria do not change the appearance of food at all and can only be seen under a microscope.



This knife blade looked clean, but under the microscope the bacteria still clinging to its surface are all too obvious.

Useful, harmless and dangerous bacteria

Some bacteria are not only harmless, they are actually useful and are necessary in the manufacture of cheese and yogurt, for example.

Other bacteria help digestion and live in the intestines where they produce nutrients and fight off harmful bacteria.

There are also types of bacteria that are not particularly dangerous, but which spoil the appearance of food – giving it, say, a slimy, sticky surface – and make it smell bad. These are so obvious that the food is very unlikely to be eaten.

But certain kinds of bacteria are very dangerous and can cause illness or even death. These are called pathogenic bacteria. Unfortunately they cannot be seen (without a microscope) and they cannot be smelt or tasted. They can contaminate food at almost any point in its handling, including harvesting, butchery, storage, preparation, cooking and service, so the only way to make sure that food is safe is for strict practices to be followed at every stage.

To multiply to dangerous numbers, bacteria need:

- food (especially those containing a reasonable amount of protein, e.g. meat and meat products, poultry, fish, eggs, milk and milk products)

- moisture (they tend not to develop on dried or salted foods)
- time (under ideal conditions it is possible for some bacteria to double in numbers every 10 to 20 minutes)
- warm conditions – between 10° and 63°C (50°-145°F). Above 63°C, bacteria will die. The higher the temperature the faster bacteria will be destroyed.

Most bacteria also need oxygen and therefore air, but one particularly dangerous kind which causes botulism grows only if there is no air (for example, in a tin).



This photograph was taken only a few hours after an apparently clean hand was placed on the glass plate, and shows how much bacteria was transferred from the hand.