Aims and objectives of cooking:

What is cooking?

Cooking is a chemical process where in raw materials are exposed to heat to get a finished product of a certain desired quality with a change in physical state also.

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Aims of Cooking:

Improves the taste and food quality

Cooking improves natural flavour and texture of food. For example roasting groundnuts, frying onions and papads, cooking rice and roasting coffee seeds improve the flavour. Cooking meat with spices, rice with spices in making pulav, frying cashew nuts in ghee, addition of turmeric, curry leaves, pepper in pongal, blend flavour with one another during cooking. Too much of cooking lowers the flavour as flavouring compounds are volatile. Over cooked pulav, does not taste as good as well cooked pulav.

Destruction of microorganisms

Microorganisms are present everywhere and some are useful in making curd, cheese and bread. Some are harmful and cause infections or produce toxins, e.g. clostridium botulism and salmonella. Some moulds produce toxins. Aspergillus flavus produces aflatoxin in groundnuts, cereals and spices. This aflatoxin is a health hazard. One of the most important methods of protection of food against harmful micro organism is by the application of heat. Cooking food to the required temperature for a required length of time can destroy all harmful microorganisms in food e.g. pasteurised milk. Tapeworm or its larvase which infests pork can be killed by proper application of heat. By cooking, food is made safe for consumption.

Improves digestibility

Cooking softens the connective tissue of the meat and the coarse fibres or cereals, pulses and vegetables so that the digestive period is shortened and gastro intestinal tract is less subjected to irritation. Cooking improves the texture hence it becomes more chewable. Cooking also bursts the starch granules of pulses and cereals so that the starch digestion is easier, rapid and complete. When dry heat is applied to starches they are converted to easily digestible dextrins. Cooking increases the access to enzymes and improves digestibility.

Increases variety

By cooking, same food can be made into different dishes. For example rice can be made into plain, pulav, lemon rice, biriyani, or combination with pulses into idli. Wheat can be made into chapatis, puri, paratha or halwa.

Increases consumption of food

Cooking improves the texture and makes the food chewable. Improvement in texture and flavour by cooking increases the consumption of food to meet our nutritional requirement.

Increases availability of food

Raw egg contains avid in which binds biotin making biotin unavailable to the body. By cooking, avid in gets denatured and biotin is available to the body. Trypsin inhibitors present in soya bean and duck egg get denatured on cooking and availability of protein is improved. Toxic substances from kesari dhal can also be removed by boiling it and throwing away the water.

Objective of cooking

1. Retaining the nutritive value of the food.
2. Retaining the original colour of the food.
3. Prevent the clash of colour.
4. Avoid undercooking
5. Avoid overcooking

ATTITUDE AND BEHAVIOUR IN THE KITCHEN

What does it take to be a good food service worker? The emphasis of a food service education is on learning a set of skills. But in many ways, *attitudes* are more important than skills because a good attitude will help you not only learn skills but also persevere and overcome the many difficulties you will face. The successful food service worker follows an unwritten code of behaviour and set of attitudes we call **professionalism**. Let's look at some of the qualities a professional must have.

POSITIVE ATTITUDE TOWARD THE JOB

In order to be a good professional cook, you have to like cooking and want to do it well. Being serious about your work doesn't mean you can't enjoy it. But the enjoyment comes from the satisfaction of doing your job well and making everything run smoothly. Every experienced chef knows the stimulation of the rush. When it's the busiest time of the evening, the orders are coming in so fast you can hardly keep track of them and every split second counts—then, when everyone digs in and works together and everything clicks, there's real excitement in the air. But this excitement comes only when you work for it. A cook with a positive attitude works quickly, efficiently, neatly, and safely. Professionals have pride in their work and want to make sure it is something to be proud of. Pride in your work and in your profession is important, but humility is important too, especially when you are starting out. Sometimes new culinary school graduates arrive on the job thinking they know everything. Remember that learning to cook and learning to manage a kitchen is a lifelong process and that you are not yet qualified to be executive chef. The importance of a professional attitude begins even before you start your first job. The standard advice for a successful job interview applies to cooks as well as to office professionals: Dress and behave not for the group you belong to but for the group you want to join. Arrive neat, clean, appropriately dressed, and on time. Get noticed for the right reasons. Carry this attitude through every day on the job.

STAYING POWER

Food service requires physical and mental stamina, good health, and a willingness to work hard. It is hard work. The pressure can be intense and the hours long and gruelling. You may be working evenings and weekends when everyone else is playing. And the work can be monotonous. You might think it's drudgery to hand-shape two or three dozen dinner rolls for your baking class, but wait until you get that great job in the big hotel and are told to make 3,000 canapés for a party. Overcoming these difficulties requires a sense of responsibility and a dedication to your profession, to your co-workers, and to your customers or clients. Dedication also means staying with a job and not hopping from kitchen to kitchen every few

months. Sticking with a job at least a year or two shows prospective employers you are serious about your work and can be relied on.

ABILITY TO WORK WITH PEOPLE

Few of you will work in an establishment so small that you are the only person on the staff .Food service work is teamwork, and it's essential to be able to work well on a team and to cooperate with your fellow workers. You can't afford to let ego problems, petty jealousy, departmental rivalries, or feelings about other people get in the way of doing the job well. In the old days, many chefs were famous for their temper tantrums. Fortunately, self-control is more valued today.

EAGERNESS TO LEARN

There is more to learn about cooking than you will learn in a lifetime. The greatest chefs in the world are the first to admit they have more to learn, and they keep working, experimenting, and studying. The food service industry is changing so rapidly that it is vital to be open to new ideas. No matter how good your techniques are, you might learn an even better way. Continue to study and read. Seek extra work that gives you the opportunity to learn from people with more experience. For example, if you are working on the hot line in a restaurant, ask the pastry chef if you could come in early, on your own time, to help out and, in the process ,gain new knowledge and experience. Many culinary schools and programs have continuing education programs that can help you add new skills. Professional associations such as the American Culinary Federation (ACF) and the International Association of Culinary Professionals (IACP) provide opportunities for learning as well as for making contacts with other professionals.

A FULL RANGE OF SKILLS

Most people who become professional cooks do so because they like to cook. This is an important motivation, but it is also important to develop and maintain other skills that are necessary for the profession. To be successful, a cook must understand and manage food cost and other financial matters, manage and maintain proper inventories, deal with purveyors, and understand personnel management.

EXPERIENCE

One of our most respected chefs said, "You don't really know how to cook a dish until you have done it a thousand times." There is no substitute for years of experience. Studying

cooking principles in books and in schools can get your career off to a running start. You may learn more about basic cooking theories from your chef instructors than you could in several years of working your way up from washing vegetables. But if you want to become an accomplished cook, you need practice, practice, and more practice. A diploma does not make you a chef.

DEDICATION TO QUALITY

Many people think only a special category of food can be called *gourmet food*. It's hard to say exactly what that is. Apparently, the only thing so-called gourmet foods have in common is high price. The only distinction worth making is between well-prepared food and poorly prepared food. There is good roast duckling à l'orange and there is bad roast duckling à l'orange. There are good hamburgers and French fries, and there are bad hamburgers and French fries. Whether you work in a top restaurant, a fast-food restaurant, a college cafeteria, or a catering house, you can do your job well, or not. The choice is yours. High quality doesn't necessarily mean high price. It costs no more to cook green beans properly than to overcook them. But in order to produce high-quality food, you must want to. It is not enough to simply know how.

GOOD UNDERSTANDING OF THE BASICS

Experimentation and innovation in cooking are the order of the day. Brilliant chefs are breaking old boundaries and inventing dishes that would have been unthinkable years ago. There seems to be no limit to what can be tried. However, the chefs who seem to be most revolutionary are the first to insist on the importance of solid grounding in basic techniques and in the classic methods practiced since Escoffier's day. In order to innovate, you have to know where to begin. For the beginner, knowing the basics will help you take better advantage of your experience. When you watch a practiced cook at work, you will understand better what you are seeing and will know what questions to ask. In order to play great music on the piano, you first have to learn to play scales and exercises. That's what this book is about. It's not a course in French cooking or American cooking or gourmet cooking or coffee shop cooking. It's a course in the basics. When you finish this note, you will not know everything. But you should be ready to take good advantage of the many rewarding years of food service experience ahead of you.

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KNIVES

KNIFE MATERIALS

The metal that a knife blade is made of is an important consideration, as the metal must be able to take and hold a very fine edge.

1. **Carbon steel** was for many years the traditional favourite because it can be honed to an extremely sharp edge. Its disadvantages are that it corrodes and discolours easily, especially when used with acid foods and onions. Also, it discolours some foods (such as hard-cooked eggs) and may leave a metallic taste. Because of these disadvantages, it has given way to high-carbon stainless steel (described in item 3 below), which is now the preferred material for the best knives.

2. **Traditional stainless-steel alloys** will not rust or corrode, but they are much harder to sharpen than carbon steel. Stainless steel is used mostly for low-cost, light weight knives.

3. **High-carbon stainless steel** is a relatively new alloy that combines the best aspects of carbon steel and stainless steel. It takes an edge almost as well as carbon steel, and it will not rust, corrode, or discolour. Knives made of this material are highly prized and relatively expensive.

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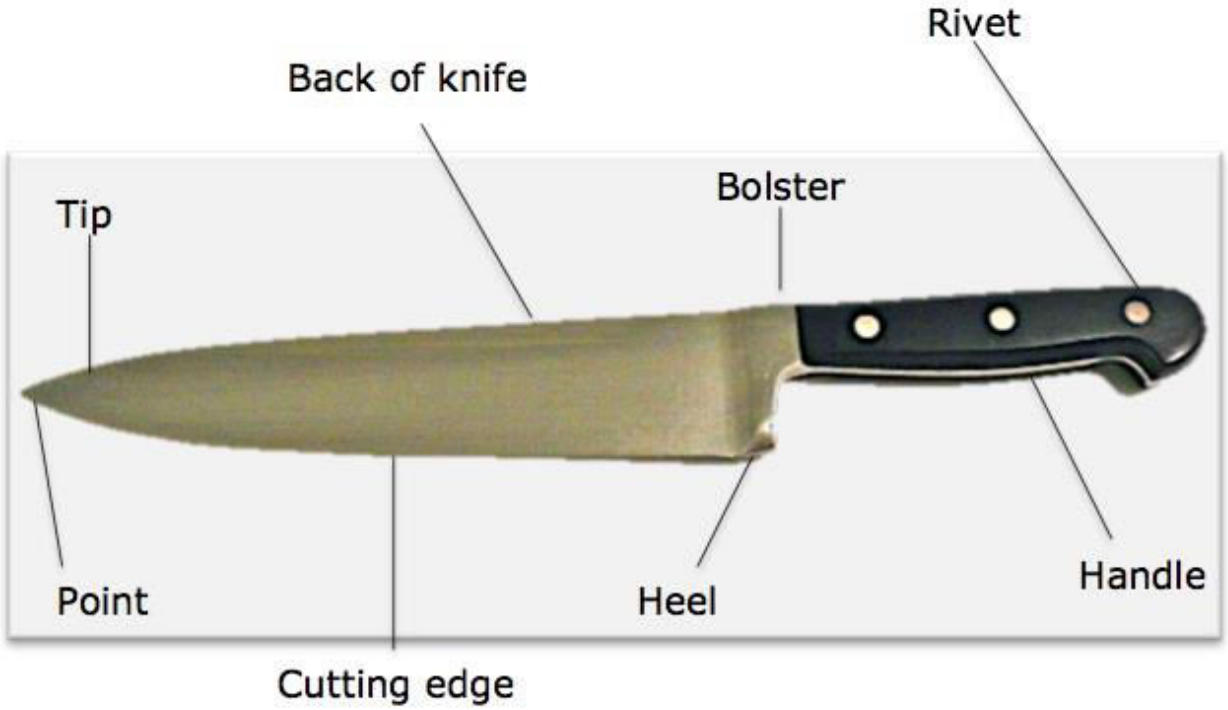
KNIFE HANDLES

The **tang** is the portion of the metal blade that is inside the handle. The highest-quality, most durable knives have a **full tang**, which means that the tang runs the *full length* of the handle.

DIFFERENT PARTS OF KNIFE



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KNIFE AND ITS PARTS

The importance of knives to a chef cannot be overstated. It is the most important piece of equipment in the kitchen. Knives come in various different shapes and sizes and each is meant for a specific use though some knives can be used as multi-purpose knives. Let us now familiarize ourselves with different parts of a knife.

Blade: The blade is usually made up of a metal compound called high carbon stainless steel. It combines the property of carbon of being sharpened easily and non-corrosive properties of steel.

The different parts of a blade are:

- Tip: The tip of the knife is the pointed edge where the knife blade ends. The tip generally is used for scoring patterns and working with meats or carving.

- Spine: The spine of the knife is the topmost, thick edge of the knife, which gives strength to the knife.

- Bolsters: In some knives there is a collar known as a bolster, at the point where the blade meets the handle. It reinforces the structure of a knife.

- Cutting edge: The cutting edge is the most important part of the knife. It should always be kept honed and sharpened.

Handle: The handle of a knife should be easy to grip, non-reactive to most cleaning agents. The different materials used to make handles are wood, plastic, plastic fibre or even metal.

- Tang: The tang is the continuation of the blade and extends into a knife's handle.
- Rivets: These are metal fasteners that hold the handle and the tang together.

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UNDERSTANDING EGG

Eggs are one of the most nutritious and versatile foods in the kitchen are served on their own, used as an ingredient in many dishes starting from soup to desserts. It provides texture, structure, flavour and moisture as well as the nutrition. Eggs can be brown or white; colour has no effect on quality or flavour but depends on the breed of the hen.

NUTRITIONAL VALUE

The nutritional value of eggs varies with their size; it is not an important factor in judging their quality. Larger the eggs, of course have more food value than small ones. A single large egg provides 6.5grm of protein or about 13% of the recommended daily intake for adults, as well as 80 calories and good amount of iron, phosphorus, thiamine and vitamins like A, D,E and K. The disadvantage of egg as a staple diet is their high cholesterol content. The yolk of an egg which is about 50% water,34%lipids,fats and related substances and 16% protein with traces of glucose and minerals. Egg is made up of approximately 11% shell and 89% interior. The composition of the shell is important from the viewpoint of food safety, sanitation, and aesthetics. It contains calcium, carbonate (94%), magnesium carbonate (1%), calcium phosphate (1%), and 4% organic matter. It is important to recognize that there has been considerable information that the hen's diet can impact the composition of the egg.

COMPOSITION

Structure of an Egg

The egg is composed of shell, white and yolk. The egg white forms 2/3rd of the whole egg and the yolk forms 1/3rd.

Shell

It is the outer hard covering of the egg and is made up of Calcium, Magnesium carbonate and Calcium phosphate. The shell gives shape to the egg and holds the inner contents. The shell contains thousands of pores that allow CO2 and moisture to **escape**, as well as air to enter. The shell is covered by a cuticle membrane or Bloom and should not be washed. The bloom acts as protective covering blocking the pores, and prevents moisture loss and bacterial contamination. When eggs are washed before going to the market, the cuticle is removed. To protect the egg, the washed eggs are coated with a thin film of edible oil.

2.Membrane

Beneath the shell, there are two semi permeable membranes - the outer and the inner. These membranes act as a protective layer in case the shell cracks.

3.Aircell On one side of the egg (broader), both these membranes separate to form an air cell. This is formed by contraction of the contents as soon as the egg is laid, due to the difference in the outside temperature.

4. Egg white

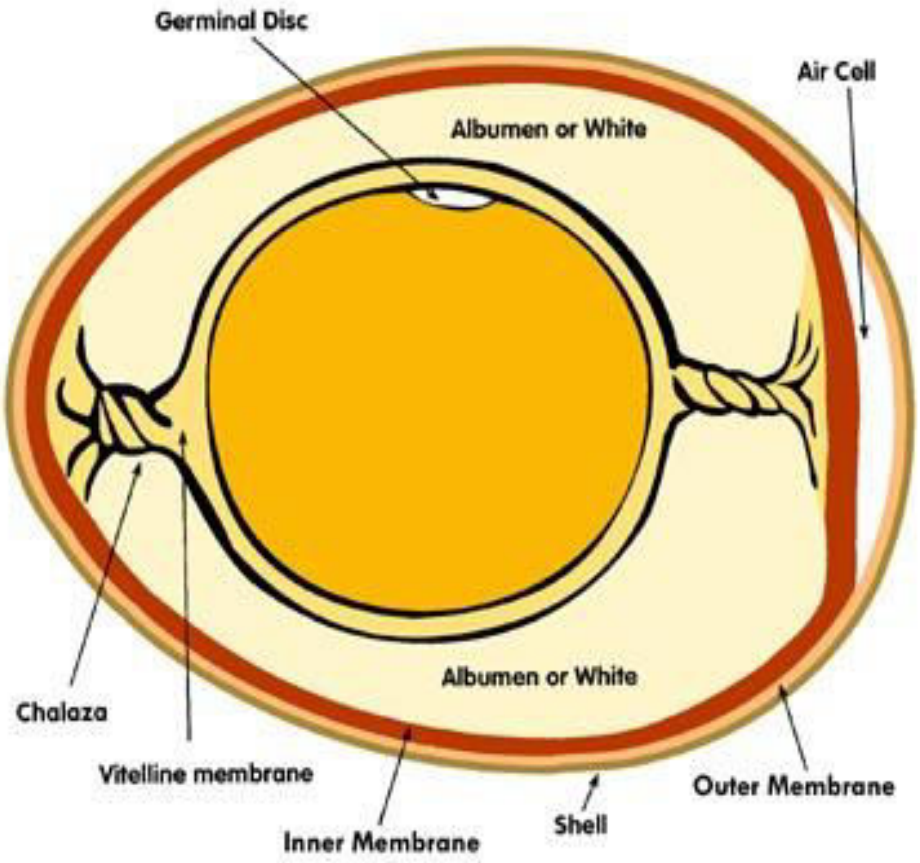
It has 1/8th part of the protein, which is called albumin; the remaining being water. The egg white consists of three parts – the outer thin albumen, the middle thick albumin and the inner thin albumin.

5. Egg yolk

The yolk is separated from the white by a membrane called vitelline membrane. This membrane prevents the mix of both yolk and white. 1/6th parts of the egg yolk contains proteins, 1/3rd fat and the rest water, Vitamins and minerals like Calcium, Phosphorus, Iron etc.

6. Chalaza

The egg is kept in position at the centre of the egg with the help of the chalaza. It has a thick-cord like appearance and is composed of proteins. This chord-like structure may have to be strained while making custards.



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Composition of hen's egg.

Parts of Egg	Total weight (%)	Water (%)	Protein (%)	Fat (%)
Whole egg	100	65	13	11
White	58	88	13	----
Yolk	31	48	18	33

EGG GRADES

The grading of quality, which is not mandatory by law,is independent of the different sizes available.

GRADE DESCRIPTION

AA **Shell**: clean; unbroken, practically normal

Air cell: 1/8 inch or less in depth; practically regular

White: clear, firm, "upright"

Yolk: well cantered; outline slightly defined; free from defects

A **Shell**: clean; unbroken, practically normal

Air cell: 2/8 inch or less in depth; practically regular

White: clear, may be reasonably firm

Yolk: may be fairly well cantered; outline fairly well defined; practically free from defects

B **Shell**: clean to slightly stained; unbroken, may be slightly abnormal

Air cell: 3/8 inch or less in depth, may be free but not bubbly

White: clear, may be slightly weak

Yolk: may be off centre, outline well defined, may be slightly enlarged and fattened, and may show definite but not serious defects

C **Shell**: clean to moderately stained, unbroken, may be abnormal.

Air cell: may be over 3/8 inch in depth, may be free or bubbly

White: may be weak and watery, small blood clots or spots may be present

Yolk: may be off centre, enlarged and flattened, may show clearly visible germ development but no blood; may show other serious defects; outline may be plainly visible.

In any case, slow deterioration in quality goes as long as eggs are stored, **SO PROMT USE IS THE BEST USE**.

The best grade (AA) has a firm yolk and white that stand up high when broken onto a flat surface and do not spread over a large area. In the shell, the yolk is well cantered,

and the air sac is small. As eggs age, they lose density. The thin part of the white becomes larger, and the egg spreads over a larger area when broken. Also, the air sac becomes larger as the egg loses moisture through the shell.

EGG SIZES

CLASSIFICATION	**MIN Wt./EGG**
JUMBO	70 gm
EXTRA LARGE	63 gm
LARGE	56 gm
MEDIUM	49 gm
SMALL	42 gm
PEE WEE	35 gm

Most commonly used eggs in commercial and home cookery are **Large Eggs.**

Jumbo and Extra Large eggs are sometimes used as B'Fast eggs for poaching and frying

Medium, Small and Pee Wee eggs are rarely used.

Storage of eggs

- **Eggs should be used within a month and stored unwashed, with the pointed end down, in the least cold part of the refrigerator.**
- **Washing the egg makes the shell permeable to smells. So not strong smelling food such as cheese, onions and fish should be stored near the eggs because the egg shells are porous and the egg will absorb strong odours.**
- **A raw egg yolk will keep for 24 hours and raw egg white 6 to 12 hours**
- **Cool place 0-5 C (32-41 F)**

- **Away from possible contaminants such as raw meat.**
- **First in first out**
- **Hands should be washed before and after handling**

Types of Eggs used

Hen, Turkey, Guinea fowls, Ducks, Geese

Market forms Of Eggs

- **Fresh eggs:** - Often used for B'fast cookery
- **Frozen Eggs:** - Includes whole egg, whites, yolks, whole egg with extra yolk etc. It should be pasteurized before freezing. It is used for scrambled eggs, omelettes, French toasts and in baking.
- **Dried eggs**: - Should be pasteurized before drying. Includes whole egg whites & yolks. Moisture is removed through evaporation. They are primarily used for baking.

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GENERAL COOKING PRINCIPLES

The most important rule of egg cookery is simple: Avoid high temperatures and long cooking times. In other words, do not overcook. This should be a familiar rule by now. Overcooking produces tough eggs, causes discoloration, and affects flavour.

Coagulation

Eggs are largely protein, so the principle of coagulation is important to consider.

Eggs coagulate at the following temperatures:

Whole eggs, beaten about	**156°F (69°C)**
Whites	**140° to 149°F (60° to 65°C)**
Yolks	**144° to 158°F (62° to 70°C)**
Custard (whole eggs plus liquid)	**175° to 185°F (79° to 85°C)**

Note that whites coagulate or cook before yolks do. This is why it is possible to cook eggs with firm whites but soft yolks. Note also that when eggs are mixed with a liquid, they become firm at a higher temperature. However, 185°F (85°C) is still much lower than the temperature of a sauté pan or skillet over high heat. As the temperature of coagulation is reached, the eggs change from semiliquid to solid, and they become opaque. If their temperature continues to rise, they become even firmer. An overcooked egg is tough and rubbery. Low temperatures produce the best-cooked eggs. If egg-liquid mixtures such as custards and scrambled eggs are overcooked, the egg solids separate from the liquids, or **curdle (Synerasis)**.This is often seen as tough, watery scrambled eggs.

Sulphur

The familiar green ring you often see in hard-cooked eggs is caused by cooking at high temperatures or cooking too long. The same green colour appears in scrambled eggs that are overcooked or held too long in the steam table. This ring results when the sulphur in the egg whites reacts with the iron in the yolk to form iron sulphide, a compound that has a green colour and a strong odour and flavour. The best way to avoid green eggs is to use low temperatures and short cooking and holding times.

Foams

Beaten egg whites are used to give lightness and rising power to soufflés, puffy omelettes, cakes, some pancakes and waffles, and other products. The following guidelines will help you handle beaten egg whites properly.

1. Fat inhibits foaming.

When separating eggs, be careful not to get any yolk in the whites. Yolks contain fats. Use very clean equipment when beating whites.

2. Mild acids help foaming.

A small amount of lemon juice or cream of tartar gives more volume and stability to beaten egg whites. Use about 2 teaspoons cream of tartar per pound of egg whites (20 mL per kg).

3. Egg whites foam better at room temperature.

Remove them from the cooler 1 hour before beating.

4. Do not overbeat.

Beaten egg whites should look moist and shiny. Overbeaten eggs look dry and curdled and have lost much of their ability to raise soufflés and cakes.

5. Sugar makes foams more stable.

When making sweet puffed omelettes and dessert soufflés, add some of the sugar to the partially beaten whites and continue to beat to proper stiffness.(This will take longer than when no sugar is added.) The soufflé will be more stable before and after baking.

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USES OF EGG IN COOKERY

BINDING AND COATING

Egg used in such food mixtures as meat loaf or croquettes is distributed through the mixture. Upon heating, the proteins coagulate, binding the food into a cohesive mass of a desired form. This is why croquettes, for example, retain their shape during the cooking process. Frequently an outer coating of flour, breadcrumbs, cereal, or butter is added to a food to enhance its appearance, texture or flavour. An egg batter provides a binder for added coatings.

LEAVENINGS

Foam is created when egg white is beaten. The foam is made of bubbles surrounded by a thin, elastic film of egg white. When the foam is incorporated into a mixture, it provides leavening for such products as omelettes, soufflés, sponge cakes and meringues. When these products are heated the air bubbles expand and the egg white film hardens. The volume of egg yolks makes its foaming power considerably lower than that of the egg white.

EGG WHITE FOAM

Egg white foams are used in many foods to make them light and porous. Egg white foam is colloid of bubbles of air surrounded by part of the albumen that has been denatured by the beating of egg white. The denatured albumen is stiff and gives stability of foam. An egg white is beaten, it loses its elasticity but some elasticity is necessary in an egg white foam used in such dishes as soufflés and cakes, so that the

air cells can expand without breaking down the cell walls. This expansion occurs in the heated oven before the albumen becomes rigid.

MERINGUES: Soft meringues are made with 2 tbsp of sugar for each egg white. Topping the fillings while they are still hot and baking the pie at 375 F (190 C) until the meringues reach a light colour yield a stable meringue and reduce the amount of

liquid (called leakage) collecting under the meringue and the tendency to the meringue to slip from the surface of the pie. Hard meringues have a much higher proportion of sugar to the egg white. As much as 1/4 cup of sugar per egg white may be used. Since sugar retards the denaturisation of the egg proteins, a longer whipping time is necessary. Hard meringue can be shaped into such subjects such as baskets, hearts, pie, shells or animal figures. The baking temperature is very long (1 1/2 hrs) and very low (275 F or 135 C)

EMULSIFYING AGENTS

Eggs are used to form stable emulsions, mayonnaise for example Oil and Vinegar separate out unless the oil droplets are coated with the substance that keeps them from running together. Egg yolk is often effective in accomplishing this. Eggs are used as emulsifiers (Lecithin) in ice cream, cakes and cream puffs.

INTERFERING SUBSTANCES

Beaten egg whites will act as an interfering substance immixtures to be frozen, such as "sherbet" . Tiny bubbles of air trapped in air prevent ice crystals from coming together and creating large masses of icy material. Egg whites and at times, egg yolk perform a similar service in the making of candy; an egg white added to certain candies interferes with the formation of large sugar crystals.

CLARIFYING AGENTS

Raw eggs may be added to hot broths and coffee. When the proteins in the egg coagulate, they trap the loose particles in the liquid and clarify it. Custard, Puddings and Pie Fillings: custard may be cooked over hot water and stirred as it is cooked (soft custard) or may be cooked without stirring (baked custard). The coagulation of soft custard takes place at about 160 F (70 C). If in making a soft custard the mixture is held at the coagulation point for too long or if the temperature exceeds this level the protein is over-cooked, the mixture thickens unevenly and the finished product will be curdled .A baked custard is cooked without stirring in an oven at 350 F(176 C).

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How to separate eggs?

The best way to separate the white and yolk is by using the egg shell. Avoid breaking the egg in to one hand and allow the white to run through the finger. The white can absorb grease and odours which will inhibit its beating qualities.

• Have two bowls ready. Crack the egg as close its centre as possible by hitting the shell firmly against the edge of a bowl or the sharp edge of a counter. Using your thumbs, pull shells apart, allowing some of the white to fall into the bowl.

• Pour yolk from the shell to shell, allowing white to dribble into the bowl. Use one side of the shell to detach remaining white from the yolk .Use a shell half to remove .Any bits of yolk which might slip into the bowl.

• Place yolk gently into the second bowl.

Whisking of egg white.

Whisking egg whites are the basis of making meringues and are used to lighten the soufflés and mousses.

• Utensils should be large enough to allow for full increase in volume of foam. However it should not be to large that the beater has no contact with egg whites.

• A rotary beater or wire whip should be used. Thinner the blade or finer the whip, the smaller are the air cells and finer is the foam.

• Egg white whips rapidly at room temperature.

• The whites must be free from any traces of yolks, oil from hands or bowl and even water.

• Use a copper or stainless steel bowl as glass and ceramic bowl seems to repel the whites and separate them.

• Rinse the bowl with vinegar or lemon juice to remove any impurities.

• Salt and cream of tartar are used in egg white .Salt is used for flavour .Lemon juice or cream of tartar makes foam more stable.

• Sugar stabilizes the foam and prevents them from becoming grainy, but must be added after the whites are stiff.

• Addition of water up to 40% of the volume of egg increases volume of foam. It is incorporated towards the end of beating.

Whisking egg yolk

Egg yolks are often whisked separately with or without sugar, some times over the heat. The whisking increases the volume and lightens sauces as Hollandaise or adds air for cakes and batter.

Folding egg whites

It is a method of combining a light mixture and a heavier one without deflating the lighter one. To lighten the heavier or base mixture, add about a quarter of the beaten whites and stir them in thoroughly through cut and fold method. Then spoon in the remaining whites and gently folds in by using a rubber spatula.

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METHODS OF COOKING EGGS

Boiling and shelling hard and medium boiled egg (Oeufs Bouillis)

To make boiled egg there are only two things to be kept in mind---one is the cooking time, which will be determined by the consistency of the white and yolk. The second is the water temperature. Egg should be plunged into the simmering liquid , reboil and simmer for required time. Commence timing once water has reboiled.

The stages of boiling are:

• Soft Boiled (in shell): Oeuf a la Coque – boiling time 3 to 4 minutes.

• Soft Boiled(in shell): Oeuf Mollet – boiling time 5 minutes.

• Hard Boiled: Oeuf Dur – boiling time 8 to 10 minutes served with or without shell.

Key points

• Occasional difficulty encountered when peeling the egg , which is because of PH of egg white and so by the egg's freshness. If the PH is below 8.9 – in a fresh egg it is closer to 8.0- then the inner membrane tends to adhere to the albumen, whereas when the PH is 9.2 after three days of refrigeration, the problem no longer exists.

• The other odd things about the hardboiled egg are the occasional appearance of a **greenish-gray discoloration** on the surface of the yolk. The colour is caused by a harmless compound of iron and sulphur called **ferrous sulphide,** which is formed only when its heated.

• For shelling, crack the egg around its centre, as for separation of egg. Gently roll egg on a work surface until the egg shell is cracked all around the centre. Remove the shells away from the white.

• Store peeled egg in salted water.

SCRAMBLED EGGS (Oeufs Broilles)

In France, good scrambled eggs are considered an art; gently stirred over low heat to a thick creamy puree which is elegantly garnished with truffles, smoked salmon or chopped chieves. These are prepared by thoroughly mixing the eggs, seasoning with salt and pepper, adding tem to a little butter melted in a thick bottomed pan, then cooking slowly stirring with a wooden spoon until set. They may be finished with butter or cream. To hold scrambled eggs on a buffet add one table spoon of water,

milk or cream to one egg(one cup 16 eggs).They are then cooked to a soft stage and then hold between 54 and 60 C (130- 140 F). 54 C (130 f) is the lowest temperature one can use without encouraging bacteria growth. Slightly over heating will cause the liquid to squeeze out and forms a separate puddle. It can be recognized when the liquid collects around the edge of; for example custard or a mould of gelatine products and is termed as SYNERESIS (weeping).

POACHED EGGS (Oeufs Poches)

To poach eggs, fill a deep pan with about two and a half inches of water. Add one tablespoon of salt and one tablespoon of vinegar per gallon of water. The vinegar, an acid, helps to set the egg white and prevents it from spreading. Acid also makes the eggs more tender, whites whiter. Poached egg must be fresh or it will spread even though vinegar is used. Both salt and vinegar help to coagulate the egg as soon as it enters the poaching liquid so that it retains a better shape.

Poaching egg in Bain-Marie (Oeufs Moules)

A cooking vessel with lid is half filled with water to form a bain-marie. Bring the water to boiling point. Prepare the egg moulds with seasonings and knob of butter to flavour and to prevent eggs from sticking to moulds. Break egg in individual moulds and place in the bain-marie with the lid on for a gentle cooking. Cook for 3-5 minutes so that white sets and the yolk remain soft. Turn out and serve hot.

CODDLED EGGS

Eggs are coddled in the shell. They are cooked by pouring boiling water over the edges , one pint of boiling water over an egg. The eggs are then covered and held in a warm place until cooked (six to ten minutes) for firm yokes and pleasantly soft whites.

EN COCOTTE (Oeufs en Cocotte): Similar to poaching except that eggs are poached in porcelain dishes (cocotte). The dishes are buttered, the eggs placed in them and both placed in bain marie for about 2 to 3 min..This dish is served for lunch or dinner and is presented in and eaten from cocotte dish in which it is cooked.

BAKED EGG (Oeufs Frits):

Indicates eggs gently cooked with oil/bacon fat/lard in a shallow frying vessel until white is firm while yolk remains soft. Fried eggs are often served with crispy fried bacon or sausages. The fried egg is the centrepiece of the great British breakfast, surrounded by bacon, sausage, tomatoes, mushrooms, baked beans, black pudding and toasted bread. The ideal temperature range for fried egg is 255 0c to 2800f. Eggs done or cooked only on one side is known as SUNNY SIDE UP. For EASY OVER use a palate knife to flip each egg carefully.

OMELETTES (Les Omelette): Making omelettes is a very simple operation but to achieve a great success a high degree of skill is required. Usually 2-3 eggs are used per portion with proper garnishes or flavourings, which may be added in the following ways:

- Combined with egg before cooking.
- Placed into centre of omelette before it is folded.
- Placed on top of the omelette, in a cavity after folding is complete.

Types of Omelets

1. **Plain Omelette:** is prepared plain only with seasonings.

2. **Flat Omelette:** Add garnish to egg before making the omelette, turn out without folding, coloured side upper most. Spanish **TORTILLAS** and Italian **FRITTATAS** are examples of this open faced pancake style omelette.

3. **Stuffed and folded Omelette**: Place fillings in the centre of omelette before folding.

4. **Folded and stuffed**: Slit the turned out omelette along the centre of top surface, place in the fillings.

5. **Folded Omelette**: Add garnish to egg before cooking and then folded after making it.

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KEY POINTS

• A well-seasoned heavy bottom iron or a steel pan is required. For seasoning pan to get a non-stick effect, add plenty of salt and heating it over a moderate heat. Remove salt and wipe it with a dry cloth. Pour oil into the pan and heat steadily over a period until the pan is smooth. Remove excess of oil and use for making omelettes.

• Never wash the pan, always wipe it with dry kitchen cloth. Apply a film of oil and store.

• The texture of the omelette should be soft, with a firm exterior and a moist centre. This is termed as BAVEUSE Omelettes are generally cooked to order. Making an Omelettes are similar to scrambled eggs except that they form a solid sheet or coagulated eggs, which are moulded and often filled with herbs, jams, mushrooms, ham, cheese and many other ingredients. French omelettes with sweet filling may be dusted with icing sugar and burnt lightly with a hot metal rod. Marks are left similar to grid marks on broiled steak. When new, omelette pans, like new pans and griddles, are seasoned in the manner described for pans, then never washed again (see fried eggs) . Beating the yolks and the whites separately to stiff foam makes a puffy or soufflé omelette. It is started as a regular, but finished in the oven at 163 C (325 F).

SOUFFLES: Soufflés are similar to puffy or foamy omelettes except that they have been thickened with flour, butter and milk. The proportion of an egg is lower than in an omelette. To make a soufflé the eggs are separated and added to the white sauce or starch thickened mixture. The whites are beaten to soft foam before being folded into the rest of the materials. Soufflés are baked at 149 C (300 F) and they should be

Served soon after they are cooked.

CUSTARDS: True custards contain only milk, eggs, sugar and flavouring. No starch agent is added. Baked custards must contain enough eggs to produce a firm mass. Custards should be cooked in a container of water to prevent overheating. For firm

custard heat the milk to about 66 C (150 F) then add this to the mixture of sugar, eggs, and flavouring. An oven temperature of about 177 C (350 F) is used for baking custards, but if the temperature of the custard itself exceeds 85 C (185 F) the custard

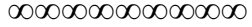
is likely to contain holes, be watery and have a concave top. Once custard is cooked it should be placed in a cool spot for setting in a pan of cold water. At a very high temperature synergetic occurs this is a separation of liquid from the gel, caused by contraction of the proteins.

PUDDINGS AND CREAMS: A thickened mixture of corn flour, milk, sugar and flavouring is called a blancmange or corn flour pudding. If eggs are added to this mixture, the pudding is called a cream pudding. Bavarian Creams (Bavarois):Are corn flour or cream puddings made by light gelatine, whipped cream, beaten eggs and other ingredients for Bavarian creams.1/4 tspn cream of tartar is added for each 5 egg whites. Zabaglione or Sabayon: is a dessert of Italian origin made with egg yolks, sugar and wine (Marsala).Quiches: are custards baked in a pastry case. It contains eggs, milk, cheese, bacon, and onions.

OTHER EGG ITEMS:

Crepes are thin pancakes made from flour, sugar, milk and eggs. No baking powder is added to them as in American style pancakes. Crepes are popular as desserts or as entrees. After mixing the pancake batter, it must be allowed to rest in the refrigerator for half an hour. Fondues contain eggs especially that of Geneva, which is made up of egg yolks and cheese. Some fondues are baked custards containing parts of bread, loosely resembling a soufflé. Cheese fondues probably originated in Switzerland. Swiss cheese is melted in white wine. The wooden or earthenware bowl in which it is served is rubbed with garlic and kirsch or cherry brandy just before the fondue is served. It is then picked up on chunks of bread for eating. Dry white wine is an accompaniment. Eggs are also basic to many baked desserts, including all those using sweet dough, puff paste, sponge or genoise. They are also used in mousses. Angel Food Cake: is beaten egg whites, sugar and cake flour. Pastry Cream (Crème Patisserie) is nothing but egg yolks, milk, sugar, flour and corn flour.

IMITATION EGGS: Concern over the high cholesterol of eggs (275mg of cholesterol/egg yolk) has increased the popularity of imitation eggs made from milk solids or Soya proteins. There are two types of egg substitutes in the market. The first is a complete egg substitute made from soymilk or milk proteins, this is gradually being replaced by the second type. The second type is a partial egg substitute, in which only the yolks have been replaced, the egg whites remain. Egg substitutes have about half the fat and calories of natural eggs. There is a distinct flavour difference between imitation eggs and real eggs, which may be masked if they are incorporated into multi-ingredient cooked dishes. Dried egg : 99% water is removed by evaporation.



FATS

Definition:
Fats can be defined as a soft greasy substance found in organic tissue.

The function of fat is to protect the vital organs of the body, to provide heat and energy and certain fats provide vitamins. Fats can be divided into solid fats and oils.

Types of fats:
There are two main groups of fats:

- **Fats of animal origin:** Dripping, butter, suet, lard, cheese, cream, bacon, meat fat and oily fish.
- **Fats of vegetable origin:** Margarine, cooking fats, nuts, Soya- beans etc.,

The food values of the various kinds of fats are similar, although some animal fats contain vitamins A and D.

VARIETIES OF FATS:

- **Butter:** A natural dairy product made from cream salted or can be unsalted.
- **Dripping:** An animal cooking fat, this is the separated fat produced from cooking meat.
- **Lard:** It is melted and clarified pork fat, used for baking and frying.
- **Margarine:** A butter substitute made from animal or vegetable fats.
- **Soft margarine:** This variety is made from sunflower oil and emulsifiers.
- **Suet:** It is the fat surrounding the kidneys of certain animals like beef.
- **Ghee:** A type of clarified butter made by heating ordinary butter to get rid of impurities. Very commonly used in Indian cuisine.

The book of Ingredients: Pages 44 and 274

OILS

Definition: Oil is a fatty substance that is liquid at normal or room temperature. *
There are various kinds of oils like mineral oil, animal oil, vegetable oils etc.,
The oils used in cooking are the vegetable oils, which are extracted from seeds, nuts, fruits or roots.
(Exceptions: Coconut and palm oil) *

History: The Egyptians did the oldest use of oil and they used the sesame oil. In Greece the olive tree was a sacred tree and a symbol of the city Athens. Oil was not only for food but also used as a fuel to provide light and heat for many centuries.

Facts: Pure oils are taken from a single vegetable species.
Whereas the term **vegetable oil** indicates that they are a blend of two or more vegetable oils.

Most oils sold today are refined oils, which means that during processing, their original taste and flavour have been removed. However there are still a few oils, which are processed by cold pressing, and are termed as virgin or natural oils as they still retain the taste of their vegetable origins. (E.g. Olive oil)

Usage:

- Used in marinades for vegetables, meats, seafood, kebabs etc.,
- Preservatives: Used in preserving Indian pickles, also to preserve goats' cheese, meats, fish and herbs.
- Used to make sauce: Mayonnaise, aioli, pesto etc.,
- Used as an ingredient in cold dressings: Vinaigrette.
- Used directly in most of the basic principles of cookery like deep frying, shallow frying, sautéing, braising, searing etc.,

The most commonly used oils:

Groundnut oil, coconut oil, Mustard oil, Soya-bean oil, Sunflower oil, Olive oil, Corn oil, Walnut oil etc.,

Oil varieties are available in different grades and qualities. For example olive oil which is rich and easy to digested is sold under various grades such as:

Virgin olive oil: Mixed with other oils and from the second or third press.

Pure: Mixed virgin and refined oils.

Extra virgin: The purest oil obtained only from the first pressing.

IDENTIFICATION OF VEGETABLES

Leafy Vegetables

Radicchio lettuce
Lollorosso lettuce
Green lettuce
Iceberg lettuce
Rocket lettuce
Spinach
Red radish

Root Vegetables

Beet root
Carrot
White raddish

Tuber Vegetables

Potato
Baby Potato
Sweet Potato

Shoot Vegetables

Fresh Asparagus
Bamboo Shoot
Celery
Fennel

Fruit Vegetables

Red pepper
Yellow pepper
Green pepper
Salad Tomato
Cherry Tomato
Brinjal
Egg plant
Avocado
Green Chilli
Kashmiri/Salan Mirch

Rizomes

Galangal
Ginger
Mango flavoured ginger(aam ada)

Squash vegetables

Asian squash

- Bitter gourd
- White pumpkin
- Red pumpkin
- Chal kumra(ash gourd)
- Jhinga(bottle gourd)

Cucumber
Yellow zucchini
Green zucchini

Bulb vegetables

Spring onion
Chinese onion
Onion
Button onion
Leek
Garlic
Elephant garlic

Pods and seeds

Pencil beans
Haricot beans
Snow peas
Okra
Green peas
Baby corn

Brassica

Pok choy
Red cabbage
Chinese cabbage
Brussel sprouts
White cabbage
Cauliflower
Broccoli

Herbs

Coriander (cilantro)

Parsley
English parsley
Basil
Rosemary
Thyme
Mint
Chives
Lemongrass
Dill leaves

Fungi

Fresh button mushrooms
Portabella
Shitake
Oyster
Cloud ears
Truffle

- French Perigord (Black)
- Italian Piedmont (White)

Citrus vegetables

Lime
Lemon
Gandharaj lemon

Kaffir lime
Tamarind

Fruits

Cooking apples
Table apples
Sweet lime
Pears
Grapes (green)
Grapes (black)
Honey dew melon
Kiwi

KITCHEN STAFF ORGANIZATION

The purpose of kitchen organization is to assign or allocate tasks so they can be done efficiently and properly and so all workers know what their responsibilities are. The way a kitchen is organized depends on several factors.

1. The menu.

The kinds of dishes to be produced obviously determine the jobs that need to be done. The menu is, in fact, the basis of the entire operation. Because of its importance, we devote a whole chapter to a study of the menu.

2. The type of establishment.

The major types of food service establishments are as follows:
- Hotels
- Institutional kitchens
  - Schools
  - Hospitals,nursing homes,and other health-care institutions
  - Employee lunchrooms
  - Airline catering
  - Military food service
  - Correctional institutions

- Catering and banquet services
- Fast-food restaurants
- Carry-out or take-out food facilities
- Full-service restaurants

3. The size of the operation (the number of customers and the volume of food served).

4. The physical facilities, including the equipment in use

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THE CLASSICAL BRIGADE

As you learned earlier in this chapter, one of Escoffier's important achievements was the reorganization of the kitchen. This reorganization divided the kitchen into departments, or stations,based on the kinds of foods produced. A station chef was placed in charge of each department. In a small operation, the station chef may be the only worker in the department. But in a large kitchen, each station chef might have several assistants. This system, with many variations, is still used today, especially in large hotels with traditional kinds of food service.The major positions are as follows

One of the definitions of a business organization is an arrangement of people in job to accomplish the goals of the operation. Similarly, the organizational structure of the Kitchen staff will reflect the needs of the operation, the job functions and the various goals. Food Production organization vary according to the needs of the enterprise's design.
Of the several categories of organization the Kitchen is an example of a **Line Organization**. (A Line Organization is one in which authority and responsibility flows down from the top (Exec. Chef) through the various positions to the last position of the operation). There can be no jump of authority or responsibility. If the top man gives an order it runs down the ranks until it is delegated to the proper level. Every job even the lowest, in a line organization has a certain amount of responsibility.

Naturally, as one goes higher in the line organization the responsibility becomes greater. In a line organization, the top position holds full responsibility for everything that happens in the organization

KITCHEN BRIGADE IN STAR GRADE HOTEL

The **Chef de Cuisine** in the large establishment is much more a departmental manager than a working craftman. He is selected for his organizing and executive abilities than for his culinary skill. Though it is obvious that he should have such skill and a large appreciation of fine cookery. His principle function is to plan, organize and supervise the work of the kitchen.

1. Administrator in charge of the kitchen
2. Plans the kitchen economically and elegantly
3. Recruits the kitchen staff in co-ordination of the management
4. Sees to the welfare of the kitchen staff
5. Supervises and trains his staff
6. Plans the menus and co-ordinates the fixing of its price
7. Controls the quality, quantity and cost of production in the kitchen
8. Checks spoilage and wastage
9. Lays down standards and specifications of ingredients
10. Takes responsibility for correction and criticism
11. Indemnifies his staff
12. Co-ordinates with the other departments of the hotel
13. Informs the staff of the hotel policies
14. Develops standard recipes
15. Takes part in various F&B meetings

Sous Chef or underchef is the principal assistant of the Chef de Cuisine. In large establishments the Sous Chef will have no sectional or partial responsibility but will aid the chef in his general

administration and in particular in supervising the work of preparing food and in overseeing its service at the (Pick up counter). Where a considerable kitchen operation is involved there may be more that one Sous Chef.

SENIOR SOUS CHEF

1. Represents the Exec. Chef in his absence
2. Makes the duty roster of the kitchen staff
3. Responsible for proper staff rotation
4. Acts as a liaison between the Exec. Chef and the staff
5. Ensures smooth flow of dishes from the kitchen
6. Maintains the co-ordination between the different sections of the kitchen
7. Reports to the Exec. Chef

SOUS CHEF

1. Represents the Sr. Sous Chef in his absence
2. Supervises the work in the kitchen
3. Heads a satellite kitchen
4. Takes the position of the Chef de Partie in his absence

Chef de Partie

Partie is a French word meaning "part (of a whole) or section." A Partie system is one in which an operation's space equipment, and jobs are divided up into sections. The Partie system for chefs evolved in the Escoffier era from an analysis of the tasks needed for production and then a grouping of those tasks so as to maximize production speed and efficiently. The original system lasted up to

the 1930s and was designed primarily for large restaurants, especially those in major hotels providing extensive a la carte and table d'hôte menus in the classic French tradition. As the task of the professional kitchen came to involve serving more customers in more and different ways, it organization inevitably became more complex. Highly elaborate dishes required highly specialized experts rather than general chefs who must handle all types of cookery at once.

Chef de partie is a working cook incharge of a clearly defined section of activities within the kitchen. The Chef de Partie particularly of the sauce and Grade Manager may have the status and duties of a Sous Chef in addition to sectional responsibilities.

1. Reports to the Exec. Chef and the Sous Chefs
2. Responsible for food production and control of waste in the area
3. Trains and supervises the personnel in his section
4. Controls usage, eliminates wastage with a view to minimise food cost
5. Maintains high standards of cleanliness in his section
6. Co-ordinates with other sections of the kitchen

Chef Grade Manger

The Chef Grade Manger is incharge of the larder. The larder is not only a place where food is steamed but also a place where the raw materials of cookery are prepared and dressed.

In larger establishments larder work may be broken into sections and in one or two instances, it is possible that the sub-sections may have independence of the Chef Garde Manger, i.e. Boucherie might by directly controlled by the Chef De Cuisine or Sous Chef.

The Chef Grade Manger is normally accommodated adjoining the main kitchen but will have its own cooking facilities. According to the size of the establishment, its sub-section too will be separate to a greater or smaller extent. This also incorporates Hors d'oeuvres section and a salad room, sometimes a fruit room where such items as melons, grapefruit, fruit salad etc. are prepared. There is a great deal of work organization and careful distribution of work to be carried out. Chef Grade Manger caters to such dishes as those commonly found on a cold table, and comprises not only of cold dishes and salads. Sandwiches are his responsibility with the exception of sale of the hot or toasted sandwiches such as club sandwiches (Chef Rotisseur). Mayonnaise, vinaigrette sauce,

and other dressings and sauces for cold food are made by Chef Grade Manger. Various sections looked after by Chef Grade Manger are as follows :

Chef de Nuit (Night Duty Chef)

Night duty cook is a chef whose main duties are to take over when the main kitchen staff leave.

A separate Chef de Nuit may be retained in the Grade Manger but normally one person suffices. Night duty cook does not necessarily remain on duty throughout te night but only until such time, the late meals have ceased.

The duties of Chef de Nuit are sometimes carried out by a Sous Chef. The Sous Chef doing this is present for the service of dinner but not lunch and is responsible for all the work when the normal brigade has gone off duty. This system is used in 75% of places where late service is given. Sous

Chef must make sure that he has all the necessary facilities and that the correct mis-en-place is left by Chef de Partie before they go off duty.

COMMIS

Dependent on the Partie concerned the sectional Chef will be assisted by one or more trained cooks who have not yet reached full chef status. These assistants or commis should have completed their apprenticeship or training but will still be getting experience before taking full Partie responsibility. The first commis as the senior of the assistants is called, should be capable of taking charge, when the Chef de Partie is off, and as second in command takes a considerable responsibility under his chef.

1. Reports to all the chefs in the kitchen
2. Responsible for actual preparation of the food
3. Keeps the work area and the equipment in the kitchen neat and tidy
4. Transferable to any area of the kitchen where a need for more manpower may arise
5. Accountable for proper care and handling of all kitchen items and ingredients

APPRENTICES

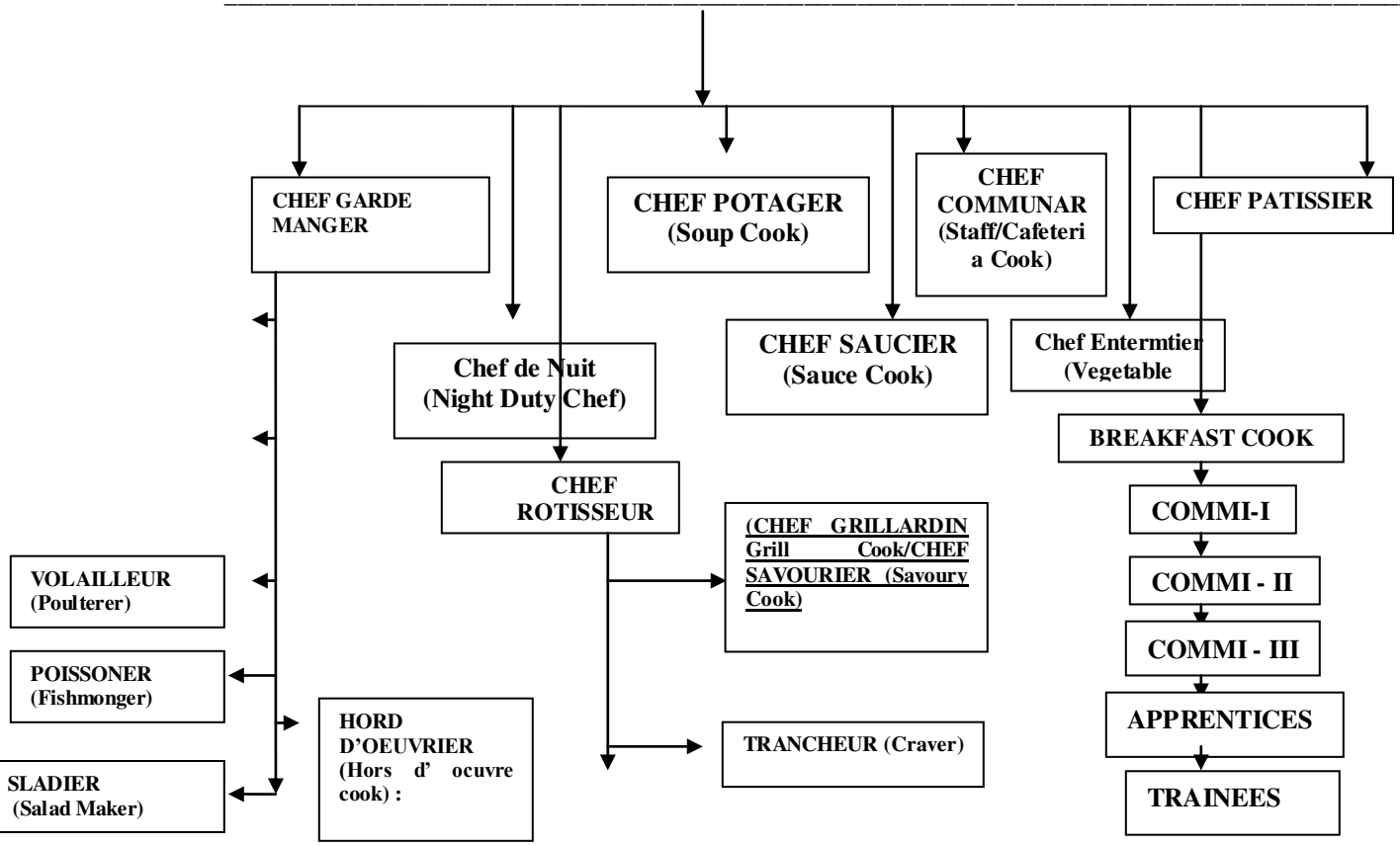
With each Partie there will also be found apprentices or trainees who will be learning by helping in the practical day to day work of food preparation and cookery.

CHEF DE CUISINE

SOUS CHEF

BOUCHERIE (Butcher Shop)

CHACUTIER (Pork Butcher and Sauage maker)



MODERN KITCHEN ORGANIZATION

As you can see,only a large establishment needs a staff like the classical brigade just described. In fact, some large hotels have even larger staffs, with other positions such as separate day and night sous chefs, assistant chef, banquet chef, butcher, baker, and so on. Most modern operations, on the other hand, are smaller than this. The size of the classical brigade may be reduced simply by combining two or more positions where the workload allows it. For example, the **second cook** may combine the duties of the sauce cook, fish cook, soup cook, and vegetable cook. A typical medium-size operation may employ a chef, a second cook, a broiler cook, a pantry cook, and a few cooks'helpers.

A **working chef** is in charge of operations that are not large enough to have an executive chef. In addition to being in charge of the kitchen,the working chef also handles one of the production stations. For example, he or she may handle the sauté station, plate foods during service, and help on other stations when needed. Small kitchens may have only a chef, one or two cooks, and perhaps one or two assistants to handle simple jobs such as washing and peeling vegetables. Cooks who prepare or finish hot à la carte items during service in a restaurant may be known as **line cooks**. Line cooks are said to be on the hot line, or simply on the line.

In many small operations, the **short-order cook** is the backbone of the kitchen during service time. This cook may handle the broiler, deep fryer, griddle, sandwich production, and even some sautéed items. In other words, the short-order cook's responsibility is the preparation of foods that are

quickly prepared to order. By contrast, establishments such as school cafeterias may do no cooking to order at all. Stations and assignments are based on the requirements of quantity preparation rather than cooking to order.

BASIC SAUCE

A good sauce is that which makes excellent food still better. To make it, or as it is often a work of art, let us say, create it, calls for precision and knowledge gained from experience exercised with patience and disciplined attention. A keen sense of smell, a delicate sense of taste, a light, strong hand for the blending all must contribute to the perfect sauce.

DEFINITION : Sauce are **liquid** or **semi-liquid** mixtures which are added to meat, poultry, fish, vegetables and desserts to give *moisture* or *richness, to garnish* or to otherwise *enhance the appearance* and in some cases the *nutritional value*, but more importantly *to better the flavor*. The principal purpose of a sauce then is to *add or enhance the flavor of food.*

CLASSIFICATION OF SAUCE

Sauces may be classified by several ways. Here is one system.

1. By serving temperature warm or cold
2. By flavor: blandness or piquancy
3. By acidity
4. By sweetness
5. By color
6. By base: neutral or meat.

In general Sauce can be classified under two major heads as follows:

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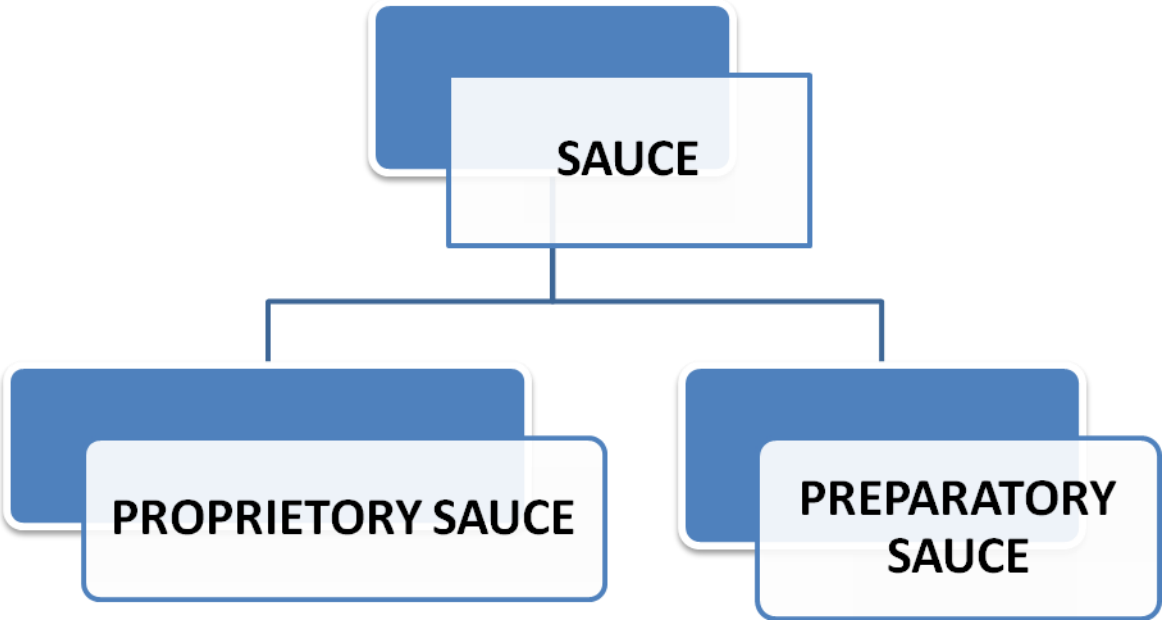


Proprietary Sauces

: Of the owner, or Held in private ownership, or Manufacture and sale of which is restricted by patent.

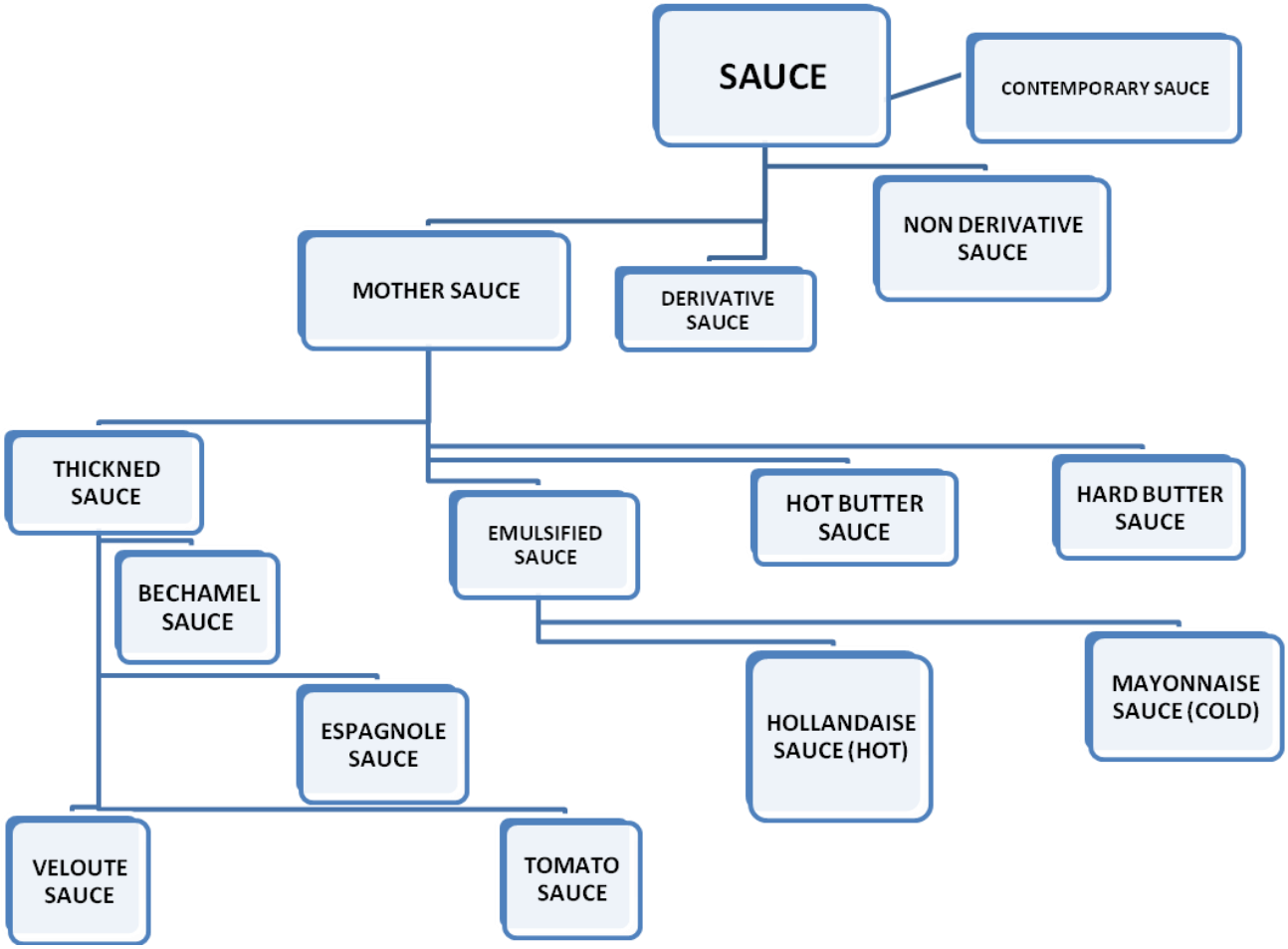
Proprietary Sauces Denotes:

- ✓ Sauces that are not made in the kitchen, but can be purchased from the market.
- ✓ They are imported or procured locally.
- ✓ They have a unique taste which cannot be reproduced by anybody.
- ✓ It has a secret recipe, guarded by patents.
- ✓ They are multipurpose in their use.

The examples are Tomato Ketchup, HP Sauce, Tobasco Sauce, Worcestershire sauce, English Mustard sauce, French Mustard sauce, Chilli sauce etc.

Preparatory Sauce

Very much made in the kitchen by following standard recipe and traditional guidelines. Depending upon the style of making they are classified as follows:



Long ago Grimaude de la Royere, philosopher and gastronome, wrote, *"The sauce is to culinary art what grammar is to language".* Let us coin a phrase today and say - *"What poetry is to prose, the sauce is to food".*

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The functionof the Sauce in Culinary work

- Sometimes sauces are used to add a **contrast in taste** to another food. Apple sauce with fresh roast pork serves the same purpose. Broadly speaking any condiment or mixture of food, which serves to contrast with or compliment another food, can be termed a sauce. In this broad sense a peanut butter and jelly mixture would be a sauce to a piece of bread if they were served together.

- Some sauces are used to add **sharpness** or **tanginess** to a bland food. A remoulade sauce served with shrimp is an example of a piquant sauce.

- Sauces may add to the **appearance** of food, sometimes as a coating which is poured or brushed over the food to give a pleasing appearance to an otherwise uninteresting item. the *chaud-froid sauce* made with a cream or mayonnaise and gelatin is used to coat various food items.

- Sauces such as *barbeque sauce* are used to **modify the original flavor** of a food, blending the sauce flavor with the flavor of the food.

- Some sauces are used to **disguise or mask** the original flavor of the food. As the French use the work **`mask'** in regard to sauces, masking a food with a jelly or sauce is to completely cover it physically hiding its appearance. Masking does not change the true flavor of the food.

- Sauces should never be used to change the flavor of a food material, only to enhance or to compliment the flavor of the food.
- **Salad dressings** such as *French dressing* and *mayonnaise* could also in this sense be considered sauces. However, sauces are usually considered those mixtures served with meats, entrees, desserts and other major foods as a compliment or contrast to their flavor.

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General faults in sauce production

1. **Lumpiness :** This may be caused by the following ……
    - Roux is too dry when liquid is added.
    - Adding liquid too quickly and not stirring continuously.
    - Incorrect temperature of roux and liquid.One should be hot and other should be cold.
    - Formation of the skin when the sauce comes in contact with air and becomes dry.This can be prevented by putting a film of melted butter on the surface of the sauce or by using a greased paper.
    - By allowing sauce to congeal on the the sides of the cooking vessel which later could be stirred into sauce.
2. **Poor gloss :** This is caused by in sufficient cooking of the sauce or using a sauce which has not been passed ,tammied or liquidized. High gloss is achieved by preparing the sauce correctly and aidded by the addition of butter just prior to service,called **'mounting with butter'** or **'monter au beurre'**
3. **Incorrect consistency :** This is the result of in correct formula balance.Over and under cooking is ultimately lead to a incorrect conistency.
4. **Greasiness :** Too much fat in roux or failure to skim off surface grease as it rises.The use of greasy stock may cause this fault.
5. **Poor colour :** Incorrect cooking of the roux in the early stage ,usining dirty cooking vessel or utensils may cause poor colour.
6. **Raw starch flavour :** This causes due to the insufficient cooking of starch.Starch needs to reach to boiling point and simmered it for a further period to avoid for a raw starch flavour.
7. **Bitterness** : This is caused by over browning or burning of the roux.

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White Sauce : Bechamel Sauce.

White sauce or Béchamel sauce is more versatile for its neutral base. It is used to bind soufflés, croquettes, soups, egg dishes and gratins and to coat many foods. The texture should be smooth and rich and the consistency of double cream. The taste should be milky with no hint of raw flavour.

A plain Bechamel Sauce is made with flour .butter and milk in ratio of 1:1:20.Its flavoured with a clove studed onion **(cloute /pique)** which is infused in milk before making the sauce. Sometimes a amount of finely chopped onion, which is sweated in butter added to milk before adding the roux.

For thickening soup or sauce use only 15 grms. Of butter ,15 grms of flour with 225ml of milk and for a very thick Bechamel sauce ,use only 25 grms of butter ,25 grms of flour with 225 ml of milk.

Thickening milk with a white roux and simmering it with aromatics makes this white sauce. It should be creamy, smooth and lustrous.

Recipe

Butter 30 GM
Flour 30 GM
Milk 300 ml
Onion 1, studded with cloves.

Method :

· Boil the milk.
· Melt the butter in a heavy-bottomed pan and the flour and cook do not allow it to color.
· Whisk in the warm milk and bring to the boil whisking constantly to avoid lumps. And the onion.
· Reduce the heat and let it simmer for 10 mins, whisking constantly and scraping the base and sides to prevent the sides from sticking
· Strain.

Note: when cooking a large amount its advisable to cover and cook in a moderate oven (300 degree f) for 30 – 40 minutes, stirring from time to time. Nutmeg is often, classically added as a flavoring).If the sauce is not to be used immediately, DOT it with butter .This butter will melt over the surface and will prevent the sauce from skin formation .Alternatively, press directly the cling flim against the surface to prevent the skin formation.

DERIVATIVES OF BÉCHAMEL SAUCE

Cream sauce

Chopped onions are reduced with white wine and then cream is reduced in the same pan. Now some béchamel sauce is added & whisked in. More cream is added till correct

Consistency is obtained and the sauce is then strained.

Sauce Mornay
Grated Cheddar cheese is added to cream sauce and it is strained.

Sauce Fine herbs
To cream sauce, some chopped tarragon, parsley and chervil are added. In place of chervil we often use thyme.

Chilly mornay
Some bell peppers are lightly sautéed in olive oil, & paprika powder is added to it. Mornay sauce is poured over this till the flavor is obtained & it is then strained out.

Sauce Nantua
To cream sauce, add very fine crayfish butter and small cooked crayfish tails.

BLOND SAUCE : VELOUTE SAUCE

A Veloute sauce is often made from the liquid used in cooking the main ingredient , such as that used in poaching fish and chicken or for veal , as in a **Blanquette.A**dditional liquid is added to the blond roux at the beginning to make a very thin sauce. Simmering for 15 minutes to 1 hour thickens the sauce and intensifies the flavor. The long slow process of cooking gives it a velvety texture and consistency----- hence the name **Veloute or Velvety.** Stir the sauce frequently to prevent scorching and skim from time to time.

Recipe

White Stock …… 350 ml.
(Veal,chicken,fish)

Butter ……. 40grms.

Refined flour… 40 grms.

Double Cream / Cream Fraich … 20 ml.

Lime juice….. ½ tsp.

Seasonings….. to taste.

Method :

1. In a small sauce pan, over a medium heat, bring the stock to boil.
2. Melt butter in a pan, add flour and cook gently off and on the flame the blond roux to a golden straw colour by stirring constantly. Remove the pan from the heat and cool slightly.
3. Whisk in the stock slowly and return the pan to the heat. Bring to boil slowly and stir continuously till the right consistency is achieved.
4. Simmer the sauce gently by stirring from time to time.
5. Add seasonings and finish with egg yolk and cream liaison.

DERIVATIVES OF VELOUTE SAUCE

Sauce Allemande
Quiet simply, this is a veloute thickened with egg yolks and flavored with mushroom
liquor, lemon juice, pepper and nutmeg. (This sauce is also known as sauce Parisienne)

Sauce Supreme
This is a chicken veloute enriched with cream. It should be very white in color and
delicate in flavor. 101

Sauce Ivore

To one-liter sauce supreme, add three-tbs. melted light colored meat glaze, just sufficient to give the acquired ivory tint to the sauce. Suitable for serving with poultry.

Sauce Normande

To fish veloute-add mushroom liquor and cooking liquor from mussels and fish stock, all in equal proportions, a few drops of lemon juice and a thickening of egg yolks with cream. Reduce this to 1/3 of its volume. Pass through a fine strainer and finish with some more cream butter. This can be used for a large numbers. of fish dishes.

Sauce Joinville

Prepare Sauce Normande and finish with equal parts of crayfish butter and shrimp butter instead of cream and butter.

Points to be remembered

When ever the above sauces are served with chicken, veal, fish or shell fishes, they are seasoned to taste with salt and pepper and adjusted for consistency to suit the requirements. Again the above sauces are used for a glazed dish, egg yolk or a sabayon should be added to the sauce just prior to glazing. Once egg yolk has been added do not reboil, other wise the sauce will separate.

SABAYON

Mix yolk of egg with a few drops of water and whisk over bain-mari to ribbon stage.used to enrich sauce and assist when a glazed appearance is required.

BASIC BROWN SAUCE (SPANISH ORIGIN) : ESPAGNOLE

The most famous brown sauce ,Espagnole , is made with a rich brown stock and a gently cooked brown roux.Although rich sauce is robust , yet fine and well flavoured.It is time consuming and requires skills.A brown roux is tricky to make without scorching or separating.The sauce is intensified by adding fine original Spanish ham and tomato puree , which add to the glossy brown colour.Although it can be served by itself.It is also the base of many rich,dark French French sauce as ‘Demi glaze’,Sauce Robert and sauce Madira.

Now a days many chefs use a last moment thickner like arrowroot or potato starch,which produces a lighter sauce.

HOW TO MAKE ?

Mix 11/4kg of brown roux into 20 liters of brown stock, add mirepoix and tomato puree and then cook for 3-4 hours until it reduces by three. quarters, strain and use.

WHAT IS DEMI-GLAZE?

Cook equal quantities of espagnole and brown stock until reduce by half, finished with a little fortified wine ,skim and strain.

DERIVATIVES OF BROWN SAUCE

Sauce Chasseur

Melt. butter in a small pan, add. chopped shallots and sliced mushrooms and sauté. Add white wine, reduced by ½, then add equal parts of tomato sauce and sauce demi-glaze .Add meat glaze, simmer gently and finish with chopped parsley (In some methods of preparing Sauce Chasseur some brandy is also added)

Sauce Bordelaise

Reduce red wine in a small pan with. Finely chopped shallots, a little pepper, bay leaf and a sprig of thyme to ¾ .s .Add Sauce Espagnole and allow it to simmer gently, skimming as necessary. Pass through a fine strainer and finish with. Melted meat glaze, the juice of ¼ lemon and 50 gm. Bone marrow cut into small slices or dices and poached. This sauce is especially suitable for serving with grilled red meats. (Originally this sauce was made with white wine but nowadays-red wine is always used)

Sauce Bourguignonne

Reduce red wine in a pan with sliced shallots, a few parsley stalks, a bay leaf, small sprig of thyme and mushroom trimming ½. . Pass through a fine strainer (u may thicken by adding beurre manie). Finish at the last moment with frozen butter and a little cayenne. This sauce is especially suitable for serving with egg and dishes designated a' la bourguignonne.

Sauce Diable

Place white wine in a pan. Add chopped shallots and reduce by 2/3. Add sauce demi glaze and allow to simmer slightly for a few minutes then season the sauce strongly with cayenne pepper. This sauce is especially suitable for serving with grilled chicken.

NOTE; Vinegar may be used instead of wine and chopped fine herbs and may be included in the reduction.

Sauce Piquante

Place white wine and the same amt of vinegar in a pan with chopped shallot, reduce by ½., Add sauce espagnole, bring to the boil and simmer gently, skimming as necessary for 10 min. Remove from the heat and finish with 2 tbsp. of chopped gherkins, tarragon, chervil and parsley. This sauce is usually served with boiled, roasted or grilled pork.

Sauce Poivrade

Heat oil in a pan, add a mirepoix comprising of. Carrots, onion, little parsley stalks, a pinch of thyme and a crushed bay leaf and cook until lightly colored. Moisten with vinegar, & marinade and reduce by 2/3. Add. sauce espagnole and allow to simmer gently for 45 min. A little before passing the sauce add crushed peppercorns and pass through a sieve then add some of the marinade again. Bring to the boil, skim and carefully simmer for approx. 35 min. so as to reduce the sauce to required quantity. Pass and finish with. butter.

Sauce Madeira

Reduce sauce demi glaze until slightly thickened. Remove from the heat and add Madeira wine Pass through a fine strainer and do not re boil.

Sauce au Porto

This is prepared in the same way as Madeira replacing the Madeira wines with Port wine.

Sauce Robert

Heat butter in a pan, add finely chopped onion and cook without coloring. Moisten with white wine and reduce by 2/3. Add sauce demi glaze and simmer gently for 10-min. Pass the sauce through a fine strainer and finish away from the heat with a pinch of sugar

and some English mustard diluted with a little water. This sauce is usually served to accompany grilled pork.

Sauce Vin rouge

Heat butter, add finely cut mirepoix and cook to a light brown color; moisten with good quality red wine and reduce by ½. Add some crushed garlic and espagnole; skim & simmer carefully for 12-15 mins. Pass through a fine strainer and finish with butter, a little anchovy essence and a little cayenne pepper. This sauce is especially suitable for serving with fish.

Sauce Matelote

Place red wine court – bouillon in a pan with mushroom trimmings. Reduce by two-thirds and then add Espagnole. Simmer gently for a few min and pass through a fine strainer. Finish the sauce with of and lightly season with cayenne pepper.

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EMULSIFIED SAUCE

An emulsion is a colloidal dispersion of tiny droplets of one liquid suspended in another to form a homogeneous mixture.

The emulsified sauce includes ingredients most often egg or egg yolk and a fat such as butter or oil which normally do not form a stable suspension of mixture. By vigorous beating or shaking, the ingredients can be emulsified to form a smooth sauce in stable suspension. The most important emulsified sauce are Hollandaise, a warm sauce and Mauonnaise a cold sauce. Bearnaise is made in the same way as Hollandaise, but is flavoured with a reduction of viniger, shallots and tarragon which gives its characteristic sweet tangy flavour. Quality of all these sauces depend on using the best egg and butter or oil. Emulsified sauce is famous for being difficult because they separate or curdle so easily.

CLARIFYING BUTTER.

Clarified butter is a way of separating the milky fat solids (whey) from the pure butter fat. Once clarified it can be served as a simple sauce, used for frying or to help to stabilize sauce like Hollandaise and Bearnaise. Put the butter in a small pan and melt over a low heat; do not allow the butter to boil. Remove the pan the heat and tilt the pan slightlyUsing a flat spoon .skim off any foam from the surface. Pour into a small bowl leaving the milky solids behind. Cool if recipe directs.

HOLLANDAISE SAUCE : HOT EMULSIFIED SAUCE

Hollandaise and its variations are opaque, but the sauce should have a luster and not appear oily. They should have a smooth texture. A grainy texture indicates over cooking of the egg yolks. It should have light consistency and at times almost appears frothy.

1 table spoon of cold water, few milled pepper corn
Pinch of cayenne
Pinch of salt to season
2 egg yolks
5 ml Viniger / lemon juice
120 ml of clarified butter.

How to make?

1. Prepare a reduction of with vinegar / lemon juice and pepper corns in a pan, reduce to half. Swill the pan with cold water and allow to cool.
2. Place egg yolk and strained reduction into a mixing bowl and whisk to a ribbon stage over a bain marie.
3. Gradually whisk in the melted butter until the reduction is formed.
4. Add salt,caynne and lime juice.

BEARNAISE SAUCE :NOT A MOTHER SAUCE

This sauce is made in much the same way as Hollandaise sauce, but a pungent reduction is made before adding the egg yolks and butter. The reduction should be reduced to about 1 table spoon.

BÉARNAISE SAUCE

(This is not a mother sauce)

A.

Wine vinegar	120 ml
White wine	120 ml
Shallots, finely chopped	6 med
Tarragon finely chopped	1 tbs
Parsley finely chopped	1 tbs
Chervil finely chopped	3 tbs
Crushed pepper	1 tbs
Seasonings	
B	
Egg yolks	6-8 nos.
Clarified butter	500 gm

· Make a reduction of all things n A till 2/3.
· Separate egg yolks, add reduction and a little water and beat slightly to a froth.
· Put on a double boiler and beat till it thickens, over a low heat.
· Remove from heat and beat the clarified butter into it very gradually till it thickens.
· Season.

Points to be remembered

Faults :

1. Scrambled appearance of sauce due to coagulation ,shrinking and hardening of egg protein at around 55^0C (158^0F) ,so care must be taken to :
    a. ensure that egg yolk do not become too hot when whisking to ribbon stage over the double boiler.

b. Prevent the melted butter over heating before adding to the egg yolk.
c. Prevent the sauce from over heating prior to service.

2. Curdled sauce which may be the the result of the following reasons :
   a. insufficient agitation during mixing
   b. too much mechanical agitation which breaks down the the protective layer of emulsifying agent.
   c. Adding melted butter too quickly to the egg mixture.
   d. Using in correct formula.
   e. Using egg yolks which lack sufficient emulsifying agent e.g. stale egg yolks.

To over come the above mentioned points,care must be taken to :

a. ensure that the melted butter is not added too quickly to the to the egg yolks.
b. Whisking briskly when adding the melted butter.
c. Prepare sauce just before the service.
d. Ensure fresh eggs are used.

Rectifications :

a. place a small amount of boiling water into a clean bowl.Gradually whisk the curdled mixture on to the water.
b. Place fresh egg yolks into a clean bowl.Gradually whisk in the curdled mixture on to the yolk ,whisk gently over a bain-marie.

DERIVATIVES OF HOLLANDAISE SAUCE

Sauce Choron

Prepare a Sauce Béarnaise, omitting the final addition of tarragon and chervil and keeping it fairly thick, add upped a quarter of its volume of tomato puree which has been well concentrated or reduced in order that the addition will not alter the consistency of the sauce.

Sauce Foyot

Prepare a Sauce Béarnaise, keeping it fairly thick and finish with melted meat glaze added little at a time.

Sauce Maltaise

Prepare a Sauce Hollandaise and at the last moment add the juice of 2 oranges (reduced) and a good pinch of grated zest,goes well with asparagus.

Sauce Palois

Prepare a Béarnaise but while doing this replace the principle flavoring of tarragon with the same quantity of mint in the reduction of white wine and vinegar and replace the chopped tarragon with chopped mint at the final stage.

Sauce Mousseline(Chantilly)
Prepare Sauce Hollandaise and at the last moment carefully mix in. stiffly whipped cream.

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MAYONNAISE SAUCE : COLD EMULSIFICATION

This delicious sauce is used in salads, sandwiches and as a part of other sauces. It can be varied by using different oils, herbs and other flavourings. Mayonnaise can also be made in a blender, food processer or with an electric mixer. Make sauce that all the ingredients are in room temperature. If making by hand, set the bowl on a towel to stop it sliding around.

Remember, mayonnaise is made with raw egg yolk which can harbor 'Salmonella' bacteria. Pregnant women, children and the elderly should avoid under cooked or raw eggs.

MAYONNAISE SAUCE

This is a cold, emulsified sauce, used extensively in the Garde Manger.

Egg yolks	2
Oil (Olive oil, vegetable oil	
Or half of each)	360 ml
Salt	

Pepper
Mustard (Dijon)
Sugar
White vinegar /Lemon juice 15 ml

· Bring all the ingredients to room temp.
· Combine the yolks and seasoning and beat a little.
· Add the oil very slowly and keep beating till and emulsion is formed.
· Add the vinegar/lime juice and check seasoning.

Points to remembered

Faults :

Unstable emulsion caused due to …..

A .When the ingredients have been at too low a temperature, thus preventing the emulsifying agents from coating the oil successfully.
B .By using stale egg yolks which consequently provide insufficient agent.
C. By inadequate whisking when adding oil to the egg yolks, thus preventing even distribution of oil into egg.
D. By adding oil too quickly in the initial stages of preparations, thus prevent a thorough mixing of yolks and oil resulting in the sauce separations.
E. By using incorrect formula balance.

How to correct a curdled Mayonnaise Sauce?

Mix the unstable emulsion on to a fresh egg yolk or on to a few drops of boiling water. Use a clean bowl and proceed as for making Mayonnaise.

DERIVATIVES OF MAYONNAISE SAUCE.

Sauce Tartare

To mayonnaise sauce add chopped gherkins, capers, shallots, parsley, chives.

Sauce Verte

Blanch rapidly for five minutes spinach and watercress & a mixture of parsley, tarragon and chervil drain well. Refresh quickly and squeeze out all the water. Pound the leaves then squeeze them firmly in a clean cloth so as to obtain a thick herb juice. Add this to well seasoned mayonnaise.

Sauce Mousquetaire

To mayonnaise add finely chopped shallots which have been cooked and completely reduced with white wine, some melted meat glaze and chopped chives. Season the sauce with a touch of cayenne or milled pepper.

Sauce Remoulade

To mayonnaise add and mix in Mustard, chopped gherkins, chopped capers, parsley tarragon and chervil and some anchovy essence.

Sauce Casanova

Add chopped truffle and shallots, sieved hardboiled egg to Mayonnaise.

Sauce Gribiche

Mix together cooked yolks of egg with mustard, salt and pepper and gradually add oil and vinegar as for Mayonnaise. Garnish with chopped Capers, gherkins and fine herbs along with the julienne of hard boiled egg white.

HARD BUTTER SAUCE : BEURRE COMPOSE

These preparations are used to accompany a variety of grilled meat or fish dishes. Also it adds interest and flavour to various products .They are easily prepared in advance and stored refrigerated in readiness for use.

Cream butter until soft, combine with flavourings and seasonings to taste. Roll in dampened grease proof paper to cylindrical shape, approximately 2 ½ cm wide. Store refrigerated but not frozen.

It may be utilized in the following way…

1. add to sauce to enhance flavour.
2. in the preparation of a culinary product e.g. snails in garlic butter.
3. place on a hot food for service e.g. grilled steak.
4. place in a sauce boat of iced water to keep the butter solid in hot atmosphere.

EXAMPLES OF COMPOUND / HARD BUTTER SAUCE

Anchovy Butter: add anchovy essence /paste / pounded to butter.

Garlic Butter : chopped garlic, parsley, pinch of pepper combined with butter.

Basil Butter : add a fine puree of fresh basil leaves and a little lemon juice with butter.

Colbert Butter : mix chopped tarragon and meat glaze in to Maiter d'hotel butter.

Maiter d'hotel Butter: add chopped parsley, seasonings and lime juice to butter.

Ravigote Butter : pound blanched herbs and shallots, pass through a sieve and add to soften butter.

Bercy Butter : reduce chopped shallots in wine; add butter, bone marrow, chopped parsley and lemon juice.

Cray fish Butter: pulverize crayfish debris, add butter and pass through a sieve.

Red wine Butter : reduce shallots in red wine and add to butter with seasonings, lemon juice and chopped parsley.

Nutty Butter : add finely chopped peanuts, the slices of butter may be dipped in chopped nuts.

HOT BUTTER SAUCE : BEURRE CHAUD

Hot butter sauces are often used with vegetables, fish, meat offals and poultry dishes. They can be served to complete a dish or as an accompaniment e.g. Poisson Meuniere, beurre meuniere to complete; beurre fondue to accompany asparagus etc.

EXAMPLES OF HOT BUTTER SAUCE

Beurre Noisette: Heat butter until brown and pour over the food on the dish, if desired a little lemon juice may be added. This butter is frequently used in conjunction with jus lie for shallow fried food.

Beurre Noire: Heat butter until it begins colour brown, add a few drops of vinegar and pour over the food. Capers and chopped parsley may be added at the last moment.

Beurre Blanc: Cook chopped shallots in a little water, gradually adding the juice of lemon as it evaporates. Whisk butter in small pieces at a time, keeping the pan in a bain-marie of water until the lemon sauce become white and frothy. Serve at once and do not allow to become too warm.

Beurre Rouge: Make as Beurre Blanc by using red wine.

Beurre Fondue: Heat butter until warm and just melted, add lemon juice and served immediately.

Beurre Meuniere: As for Beurre Noisette garnish with chopped parsley.

Sauce au Beurre: Add flour to melted butter then boiling salted water to make a smooth sauce. add a liaison of egg yolk, cream and lemon juice, allow to thicken and finish with plenty of butter added in pieces at the last moment. Served with poached fish, asparaguds etc.

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<u>OTHER SAUCES : NONDERIVATIVE SAUCES AND GRAVIES</u>

Except the above mentioned sauces there are many sauces which are prepared independently. They are as follows……..

- Jus lie --------- Thickened gravy.
- Sauce Kari------- Curry sauce.

- Sauce Portugaise------ Sauce Portuguese.
- Sauce Brigade------- Orange flavoured sauce.
- Sauce Homard------- Lobster sauce.
- Sauce Bolognaise------ Sauvory meat sauce.
- Sauce Pommes------- Apple sauce.
- Sauce Pain---------- Bread sauce.
- Sauce Menthe------- Mint sauce.

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Contemporary Sauces

The broad category of contemporary sauces includes beurre blanc, coulis, compound butters and a variety of miscellaneous sauces, such as relishes, salsas and compotes. The primary factors distinguishing contemporary sauces from the grand sauces are the following -

- They usually take less time to prepare.
- They are more likely to be specifically tailored to be a given food or technique.
- They have a lighter color, texture and flavor than some of the grand sauces.
- They are more likely to be thickened and finished using emulsions, modified starches or reduction and less likely to contain roux.

Some of the popular contemporary sauces are:

- Roasted Tomato Coulis.
- Tomatillo Salsa Verde.
- Red Pepper and corn relish.
- Rosemary Oil.
- Basil Oil.
- Chemichurri sauce.
- Red onion marmalade.

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SAUCE AND GRAVY

Sauce is a French word taken from the Latin Salus, meaning salt. No surprise given that salt is used to enhance the flavour of food. There are hundreds of sauces that fall under five main categories. They are béchamel (milk based) example Alfredo sauce, espagnole (brown stock based) example Mushroom sauce, veloute (white stock based) example Lyonnaise sauce, tomato (tomato based) example Marinara sauce and emulsified (hollandaise and mayonnaise) example Béarnaise sauce, tartar sauce. As you can see each of these sauce categories begin with a fundamental base. An all inclusive quality cook book will provide you with the ingredients and methods for which to prepare these sauces.

Behind sauce is a holdover from sautéing -- deglazing. Deglaze is a single word that means to loosen the cooked-on drippings in your roasting pan by adding liquid and boiling it on the highest heat. When meats cook, their drippings leave a "glaze," which appears as stray bits of food that stick to the bottom of the roasting pan. You might think they're burnt, but these particles are the hidden flavor in many sauces -- that is, if you can deglaze (or if you prefer, unglaze) the pan.

You'll be deglazing in the same pan the meat roasted in, so think ahead. Don't roast in glass. Instead use stainless steel, enamel-covered cast iron, graniteware, or other alloyed materials which, after time in the oven can endure the direct heat from a burner.

To make the sauce: Pour anything that moves (liquids and juices) out of the roasting pan into a measuring cup, but don't scrape the bottom of the pan. Refrigerate the cup and put the roasting pan on a burner. In about 5 minutes, take the cup out of the refrigerator and spoon off as much fat as you can -- it's OK if you've still got a little bit. Pour whatever juices remain in the cup into the roasting pan. The pan will hold very little contents at this time. Turn the burner to high. When you see bubbling, add some stock, water, or red or white wine (from 1/2 to 1 cup). Enjoy the show of smoke, a sign that things are going nicely. Use a wooden spatula to scrape the pan clean as the liquid bubbles. Stir and scrape about 30 seconds to 1 minute, until the liquid cleans itself up and about one-third of it has boiled away. Take a taste. If it needs salt or pepper, add now. Turn off the heat. If the sauce still has little pieces of browned bits, and these are annoying to you, pour the sauce through a mini-strainer held over a serving pitcher.

The longer the liquid boils, the more condensed the flavor, and the less sauce you'll have. It is not uncommon to end up with half as much sauce as the original volume of liquid. That's why a sauce of this type is called a "reduction."

Gravy on the other hand takes its characteristic flavour from the fat and juices (drippings) of a roasted piece of meat. Once the roast is done and removed from the pan, skim off the

majority of the fat. Place the roasting pan on the stove on medium heat. Sprinkle or dust with all-purpose flour and mix well to create what is known as roux. Add hot vegetable water or broth and simmer until gravy is smooth in texture and there is no longer an uncooked flour taste. Season with salt and pepper and you have the perfect gravy.

Tip: Today there are many commercially prepared sauce and gravy mixes available in powder and liquid form your local grocer. These will work fine in a pinch, but there is nothing better than preparing your own gravy or sauce derivation.

Gravy is made from pan juices, too, but more importantly, relies on the thickening power of flour or cornstarch. In this method, we'll be using flour.

Gravy can be lean because the pan juices, which contain fat, can be nearly completely de-fatted in a short time. Even if pan juices can be chilled for 5 to 15 minutes in a measuring cup, fat will be quite visible as a yellow layer hanging over the remaining liquid. Depending on what you've roasted, you might end up with more fat than juice, as with duck.

To make gravy: After roasting a turkey or piece of meat, scrape everything that's in the pan into a glass 2-cup measuring cup and refrigerate 5 to 15 minutes. Spoon off the golden layer of fat. A bulb baster will suck it up easily.

After the fat is gone, add tap water until you've got 1 1/2 to 2 cups, and pour it all into a medium-sized pot. Bring to a boil, uncovered. Boil until nearly half of it cooks away. Dissolve 3 tablespoons flour in 3 tablespoons cold water until a smooth paste forms. Slowly pour and stir the flour paste, a little at a time, into the boiling juices until gravy becomes as thick as you like. You may not have to add all of it! Add salt and pepper, and gravy is yours!

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SKILL LEVELS

The preceding discussion is necessarily general because there are so many kinds of kitchen organizations. Titles vary also. The responsibilities of the worker called the *second cook*, for example are not necessarily the same in every establishment. Escoffier's standardized system has evolved in many directions. One title that is often misunderstood and much abused is *chef*. The general public tends to refer to anyone with a white hat as a chef, and people who like to cook for guests in their homes refer to themselves as amateur chefs. Strictly speaking, the term *chef* is reserved for one who is *in charge of a kitchen* or a part of a kitchen. The word *chef* is French for "chief" or "head."Studying this note will not make you a chef. The title must be earned by experience not only in preparing food but also in managing a staff and in planning production. New cooks who want to advance in their careers know they must always use the word *chef* with respect. Skills required of food production personnel vary not only with the job level but also with the establishment and the kind of food prepared. The director of a hospital kitchen and the head chef in a luxury restaurant need different skills. The skills needed by a short-order cook in a coffee shop are not exactly the same as those needed by a production worker in a school cafeteria. Nevertheless, we can group skills into three general categories.

1. Supervisory.

The head of a food service kitchen, whether called *executive chef*, *head chef*, *working chef*, or *dietary director*, must have management and supervisory skills as well as a thorough knowledge of food production. Leadership positions require an individual who understands organizing and motivating people, planning menus and\ production procedures, controlling costs and managing budgets, and purchasing food supplies and equipment. Even if he or she does no cooking at all, the chef must be an experienced cook in order to schedule production, instruct workers, and control quality. Above all, the chef must be able to work well with people, even *under* extreme pressure.

2. Skilled and technical.

While the chef is the head of an establishment, the cooks are the backbone. These workers carry out the actual food production. Thus, they must have knowledge of and experience in cooking techniques, at least for the dishes made in their own department. In addition, they must be able to function well with

their fellow workers and to coordinate with other departments. Food production is a team activity.

3. Entry level.

Entry-level jobs in food service usually require no particular skills or experience. Workers in these jobs are assigned such work as washing vegetables and preparing salad greens. As their knowledge and experience increase, they may be given more complex tasks and eventually become skilled cooks. Many executive chefs began their careers as pot washers who got a chance to peel potatoes when the pot sink was empty. Beginning in an entry-level position and working one's way up with experience is the traditional method of advancing in a food service career. Today, however, many cooks are graduates of culinary schools and programs. But even with such an education, many new graduates begin at entry-level positions. This is as it should be and certainly should not be seen as discouragement. Schools teach general cooking knowledge, while every food service establishment requires specific skills, according to its own menu and its own procedures. Experience as well as theoretical knowledge is needed to be able to adapt to real-life working situations. However, students who have studied and learned well should be able to work their way up more rapidly than the beginners with no knowledge at all.

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HEAT TRANSFER

The transference of heat is of great importance to the culinarian. It is this movement of heat from one surface, product, etc., to another that is a determining factor in the quality of any product produced. In order to understand how to gain positive effects from the transfer, you need an understanding of what heat is.

Heat

Simply put, heat is a form of energy. When a substance gets hot and absorbs energy, the molecules have more energy than when cold. The molecules then vibrate and bounce off of one another and expand in volume.

Methods of Heat Transfer

The process of cooking requires the transfer of heat energy throughout the food by a combination of conduction, convection and radiation.

Conduction

Heat is transferred through solids by conduction. This takes place in the heating of

1. Solid food

2. Cooking equipment Solid materials such as metals which allow heat energy to spread easily through them are termed good conductors

Convection

Heat is transferred through liquids and air by convection. This takes place in the heating of
1. The cooking medium
2. The air inside ovens.

Radiation

Heat can be transferred by radiation. Radiation involves the transfer of heat by electromagnetic waves such as infra-red waves and microwaves. The waves pass from their source and are absorbed into the food.

COOKING METHODS

DRY HEAT METHODS

- **Grilling**
- **Roasting**
- **Spit roasting**

- **Baking**
- **Deep frying**
- **Shallow frying**
- **Barbecuing**
- **Microwave**

Moist -Heat cooking method

- **Boiling**
- **Blanching**
- **Par boiling**
- **Poaching**
- **Steaming**
- **Pressure cooking**
- **Enpapillote**
- **Sous vide**

Combination cooking method

- **Braising**
- **Stewing**
- **Pot roasting**

➢ ROASTING

The term roasting is given to three different techniques of cooking. In all cases the term refers to a dry method of cooking involving either the addition of fat/oil or the use of foods with a high fat content. The three techniques are: 1. Spit-roasting 2. Pot-Roasting 3. Oven Roasting

1. Spit Roasting

This is the traditional use of the term roasting and is only applicable to cooking meats. It could be more accurately described as slow grilling on it involves cooking by radiated heat, on a spit, over a very fierce glowing fire. The meat is prevented from drying out by the constant rotation of the spit which allows the meat to baste itself with hot fat which oozes from the surface.

2. Pot Roasting (Poêle')

Pot roasting uses a cooking utensil with a fight fitting lid. It is not a true roast because it uses moist heat. i.e. steam trapped under the lid of the closed utensil. The food is cooked with vegetable called matignon and butter (the only type of fat suitable) or mirepoix. Just before it is fully cooked the lid is removed to allow the steam to escape and the dry heat to colour the food. The juices and veg an used to make the accompanying sauce. Pot roasting

is suitable for duck, poultry, game.

Note: Matignon: An edible mirepoix that is often used in Poele'ed dish. Typically, matignon includes two parts of carrot, one part celery, one part leeks. One part onion, one part mushroom and one part ham and bacon.

3. Oven Roasting

Food is cooked in an oven by dry heat at quite high temperatures. A small amount of fat or oil is used to stop the food drying out. Heat transfer Radiation, Convection, Conduction

Advantages

1. Minimal fire risk
2. Meat juices from the meat can be used for gravy which enhance the flavor
3. Gives a variety to the menu

Disadvantages

1. Constant attention is required
2. Losses of nutrients like amino acids

Safety Rules

1. The correct degree of cooking of meats must be accurately measured to protect the consumer from parasitic worms and pathogenic bacteria.
2. Care should be taken when handling oven trays to prevent spillages of hot fat.
3. Safe practices should be observed in operational procedure, clothing and footwear.

➢ BAKING

This is a dry method of cooking in an oven. The texture, surface, volume of baked goods are modified by steam. This is produced by the food as it cooks or can be injected in to the oven if required.

Heat transfer

The heat source in the oven radiates infrared heat energy and also heats the air in the oven cavity directly and also heats the air in the oven cavity directly be producing convection currents. The surface of the food will absorb heat from both sources and also from the hot trays and racks by conduction.

Suitable foods and cooking procedures

The process of baking is usually associated with flour products; egg and milk dishes; fruit; vegetables and fish. The baking of meat usually involves fat and is therefore classified as roasting illustrates the application of the three methods to different foods and shows the cooking procedures for the main groups of baked foods.

Advantages:

1. Flavour and texture are improved.
2. Variety of dishes can be made
3. Uniform and bulk cooking can be achieved e.g. bun and bread.

Disadvantages:
Special equipment and skill are required.

Safety Rules

1. Care is needed in moving heavily loaded trays, into and out of ovens to prevent burns and scalds from the hot and steamy oven atmosphere.
2. The food-handler should take care when removing baked items from trays/bins/moulds.
3. Safe practice should be observed in operational procedure, clothing and footwear.

- **GRILLING_AND_BARBECUING**

Grilling is a fast, dry method of cooking which uses the intense heat radiated by an electrical element, gas flame, or glowing charcoal. The heat sources can be either above or below the food or both.

Barbecue: When the process takes place. Out of doors it is usually referred to as 'Barbecuing'. The heat source in this situation is usually glowing charcoal, a gas flame or an open wood fire, positioned below of the food.

1. **Grilling over the heats:** This is cooking on greased grill bars with the help of fat over direct heat only first class cuts of meat is used to grill in this methods.

2. **Grilling under the heat:** In this method food is put in a tray as dish and kept under heat pans. Salamander is one of the best example for this type of griller.

Advantages

1. Grilling is a quick, easy method of cooking
2. There is little loss of nutrients and less fat is used.
3. Grilled food are tasty and easy to digest

Disadvantages

1. Grilled foods cannot be successfully reheated and are difficult to keep warm without drying and toughening. They need to be served straight away.

2. Only tender cuts of meat, which are generally more expensive, can be used. However other foods such as vegetables, kababas are suitable for grilling.

Safety Rules

1. Do not leave food unattended whilst cooking. It will quickly over cook and burn.

2. Keep floor areas free from spilt grease as this can lead to slippery and dangerous flours.

3. Exercise great care when adjusting grill bars or salamander racks. They an heavy

and contain

4. hot food and oil.

5. Exercise great care when adjusting grill bears or salamander racks. They are heavy and contain hot food and oil.

6. Safe practice should be observed in operational procedures clothing and footwear.

➢ FRYING

Frying is a quick method of cooking food in hot oil or fat, but requires care and attention to produce satisfactory results. Frying gives food a good flavour and colour.

Methods of Frying

1. Shallow Frying : This is a dry method of cooking. Foods to be shallow fried are cooked in a small amount of fat or oil the level of fat can be any where from halfway up the side of a food.

Heat Transfer

The food cooks by direct heat conduction from the metal surface. The frying medium may aid the process if a sufficient depth is used or merely serve as a thin lubricating layer to stop sticking and burning.

2. Deep Frying: Deep frying involves the complete immersion of food in hot fat or oil. It is not in contact with any surface of the frying vessel.

Heat transfer conduction and convection.

a) **Sauteing:** Sauteing is tossing the food in the pan during cooking so that it cooks and browns on all sides. The name comes from the French for 'to jump'. Some times the food is described as sauteed even if it is too big to be tossed in the pan (Sauteed Chicken) this simply means it has been turned so that it is browned all over.

b) **Stir-fry:** A traditional method of Chinese cookery used for fast frying vegetables and thin strips of meat in a specially designed utensil termed a wok. The base of the wok is rounded with high sides so that only a small amount of food is in contact with the heat and there fore, stirring is the only action needed to control browning.

c) **Meuniers:** Literally this term means 'in the style of a miller's wife'. It describes a method of cooking which applies mainly to fish. Fish cooked in this way is seasoned, lightly floured (Presumably the connection with the miller) and shallow fried in butter or oil. The fish is sprinkled with lemon juice, garnished with slice of lemon and finished with beurre noisette and chopped parsley.

Advantages

1. Taste is improved, along with the texture.

2. Increases the calorific value.
3. Fastest method of cooking.
4. In shallow fat frying the amount f oil consumption can be controlled.

Disadvantages

1. Some times the food may become oily or soggy with too much absorption of oil.
2. More attention is required while cooking and care should be taken to avoid accidents.
3. The food becomes very expensive.
4. Fried food takes long time to digest.
5. Repeated use of heated oils may produce harmful substances and reduce the smoking point.

Safety Rules

1. All operators must be trained not only to use the equipment, but also in fire drill procedure.
2. The correct level of frying medium should be used.
3. The fryer must not be overloaded as this may cause hot oil/fat overflow.
4. Drain wet foods and then dry with absorbent paper. This prevents splatters of hot fat reaching the skin of the food handler.
5. Pans must be moved carefully on the stove top to prevent splattering and burns.

- **MICROWAVE_OVENS**

The basic microwave oven:
All microwave ovens consist of the same basic unit. This may incorporate some of the additional facilities. When the machine is turned on, the microwaves are produced by the magnetron. They travel along the wave guide and enter the oven, as shown here. The stirrer fan distributes them evenly throughout the metal cooking cavity. The specially designed safety door prevents any microwave leakage while the oven is in operation. The air vent allows any steam to escape during cooking.

HOW MICROWAVE OVENS WORK
The mechanics of a microwave oven are really very simple. The machine is plugged into the regular domestic electricity supply but converts the electrical energy emitted to electromagnetic waves by passing it through a magnetron vacuum tube.

1.Reflection
Microwaves are reflected by metal; they cannot pass through it. Microwaves bounce off the metal surfaces (walls, ceiling and floor) of the oven cavity in a regular pattern.
2. Transmission
Microwaves are transmitted by other materials, such as glass, ceramics, paper and some plastics. Microwaves can pass through these substances without heating them up.

3. Absorption
Microwaves are absorbed by the moisture molecules in foods. The microwaves can only penetrate to about 5 cm (2 in) but the food then heats through by conduction.

Advantages

1. They cook many foods in about 1/4th of the time necessary on a gas burner. There is no wastage of energy.
2. It saves time in heating frozen foods. Thawing can be done in minutes or seconds
3. Only the food is heated during cooking. The oven or the utensil does not get heated except under prolonged heating periods.
4. Flavour and texture do not change when reheated in a microwave oven.
5. Loss of nutrients is minimised.
6. After cooking in a microwave oven washing dishes is much easier as food does not stick to the sides of the vessels.
7. Food gets cooked uniformly.
8. Preserves the natural colour of vegetables and fruits.

Disadvantages

1. Due to short period of cooking, food does not become brown unless the microwave has a browning unit.
2. It is not possible to make chapati or tandoori rotis in it. It cannot cook soft or hard boiled eggs. Deep frying necessary for puris, jalebis, pakoda, vadas cannot be done in it.
3. The short cooking time may not give a chance of blending of flavours as in conventional methods.
4. The operator should be careful in operating the microwave oven since any exposure to micro wave oven causes physiological abnormalities.
5. If the food is greater than 80 mm the central portion is out of range of the microwave radiation will only heat by the normal slow process of conduction. It will be relatively uncooked while the exterior accessible to microwave is cooked in minutes or seconds.

MOIST METHODS OF COOKING

1. POACHING

This is a moist method of cooking in which food is placed in liquid which is brought to and maintained at, a temperature just under boiling-point (65^0 to 90^0 C). The cooking liquid may be water, milk, stock, wine, or court bouillon.

Heat Transfer
Conduction and Convection

Depth Liquid

1. **Shallow – Poaching:** Most foods are poached by this method. A minimum amount liquid is added and this is later used to make an accompanying sauce. Greased paper or a lid can be used to trap moisture and prevent drying out.
2. **Deep – Poaching:** When poaching some items, more liquid is used than in shallow - poaching. In the case of fruits this is because they have to be completely covered to prevent discolouration. In other cases with eggs, a depth of water is needed to prevent food sticking to the cooking dish (or) other pieces of food during cooking.

Method Poaching

1. Heat the liquid to boiling point, then reduce the temperature that there is no movement.
2. Gently lower the food in to the cooking liquid (The exception is when cooking whole large fish, as it is placed in the cold liquid and drought up to temperature)
3. Allow the food to remain in the liquid until cooked.
4. Remove the food and reserve the liquid if it is used for a sauce.

Advantages

1. The application of heat is gentle, so foods with delicate texture may be cooked without breaking up.
2. Poached foods are easily digested
3. No fat needs to be added to cook the food an advantage for people who want to reduce the amount of fat in their diet.

Disadvantages

1. Poaching is not particularly suitable for large pieces of food
2. There is some flavour and nutrient loss from the food the cooking liquid.
3. There is little development in colour and flavour.

Safety Rules

1. Equipment should be matched to the quantity of food to prevent spillages.
2. Care should be taken in handling dishes which an brought to temperature on the top of the stove and thin transferred to the oven.

2 BOILING:

This is a moist method of cooking in which foods are immersed in liquid which is either at or brought to boiling point. This liquid may be water stock, milk or court bouillon.

Heat Transfer

Heat is conducted through the equipment surfaces to the liquid in contact with them. The liquid transfers this heat to the food by convection currents. Heat is absorbed by the surface of the food and passes through it by conduction and the food cooks.

Techniques associated with boiling

1. Simmering

This is gentle heat treatment which causes small bubbles to rise slowly from the liquid. The food remains whole, with a better texture and more and flavour. The water does not evaporate so quickly and less vigilance is required to maintain the correct level of liquid.

2. Parboiling

Parboiling is the boiling of food until it is only partially cooked. The food is placed in boiling water for a short time from 1 to 5 minutes, or until the outside become soft. The cooking process is then completed using another method. Potatoes for example may be parboiled to reduce roasting time and to help brown them and give a crisper texture.

3. Blanching

Blanching does involve placing food in boiling water. Food is plunged into boiling water for 1 to 2 minutes depending on the size of the food and then removed. It is then immediately refreshed in cold water.

Advantages

1. Tougher, cheaper cuts of meat may be used.
2. Heat transfer is fairly rapid and efficient
3. The food is not likely to burn unless the water is allowed to evaporate completely.
4. The food remains moist and is not likely to dry out and become hard.

Disadvantages

1. Flavour and some colour may be lost from the food into liquid.
2. Loss of nutrients (especially water-soluble vitamins) may be high.

Safety Rules

1. The boiling utensil should be matched with the quantity of food to be cooked. If not enough space is available water will spill as it boils.
2. The food handler should take care when placing foods into or removing items from, boiling liquids.
3. When reducing liquids adequate ventilation should be available to remove steam from the atmosphere. Condensation can cause slippery floors and dampness on electrical appliances.

3.STEAMING

This is a moist method of cooking using steam. The food is surrounded by steam under varying degrees of pressure.

1. **Atmospheric Steamers:** This equipment is vented so that steam can escape and stop pressure building up. This a slow method of cooking but has advantages which are described later.

2. **Convection Steamers:** The steam is forced around the oven at high speed by means of a fan or steam jets. Just as in forced convection ovens, this method increases the heat transfer at the surface of the food and reduces cooking time.

Advantages

1. Healthy - No fats or other additives an needed for cooking.
2. No risk of burning food.
3. Ideal for those with poor digestions

Disadvantages

1. Can be slow
2. Warm-up time of large industrial steamers is slow and not economical unless it is fully filled.
3. Meat and fish juices may be lost (They should be incorporated in to sauces wherever possible).

4.PRESSURE COOKING

Pressure cooking makes use of steam from water boiled in a sealed container. The boiling point of water varies according to air pressure. The higher the pressure the higher the boiling point. Under normal atmospheric conditions at sea level, water boils at 100 C. Inside a pressure cooker the pressure can be increased so that water will boil at 120 C steam from the boiling water is driven through the food, cooking it very quickly.

Procedure for Pressure Cooking

1. Always check that the water level in the base of the steamer is adequate for operation.
2. Ensure that there is a tight seal before applying heat and check that there is a steady flow of steam escaping from the value.
3. Refer to manuals for cooking time.
4. When cooking is completed, always allow the pressure steamer to return to normal atmospheric.

Advantages of Pressure Cooking

1. Fast
2. Energy-Saving
3. Fewer nutrients are lost in cooking water

Disadvantages

1. Easy to over cook (or) Under cook
2. Greater Shrinkage of meat

Safety Rules

1. Before use, check that the water level is correct for self generation equipment.
2. Switch off all steam controls and reduce pressure before opening.
3. Stand behind the door as it opens to strield the body from steam.

5.SOUS – VIDE

Sous – vide is a system of catering where food is vacuum packaged, either before or after cooking, and then rapidly cooled to chilling temperatures (0-3° C). It is then stored/transported at this temperature with subsequent regeneration as required.

Sous-vide production systems

Food is placed in vacuum packs and stored at chill temperatures of 0° C – 3° C until required. This type of vacuum pack, which is to be later heated, is termed a cook pouch. The recommended life of cooked food chilled in a pouch is max 21 days (1989) and therefore adds a considerable extension to normal cook-chill systems. As figure shows the food can be cooked traditionally and then vacuum packed or can be placed raw in the pouches and then cooked. This latter cooking method is termed vacuum cooking and results in a lower weight loss and keeps the food intact during cooking. Some pouches are designed so that after filling they can be dipped in hot water for a few seconds to heat-shrink the loose material and folds of the package to form a ‘second skin’. This is particularly useful for meat cookery.

To make sure temperatures are correct for serving and cooking, small temperature probes are used. A single probe is used to monitor the temperature of one item in a batch of similar

dishes.

Foods prepared in this way are handled with the same equipment and care as for cook-chill. Government guidelines for hygiene are applicable. Below is therefore only an account of the packaging of the sous vide product and its uses.

Advantages:
1. Ability to produce mealsin advance means better deployment of ataff and skills.
2. Vaccum packed food can be mixed in cold store without the risk of gross contamination.
3. Reduced labour costs at point of service.
4. Full flavour and texture is returned as food cooks in its own juices.
5. Economics on Ing.

Disadvantages
1. Extra cost of vaccum pouches and vaccum paking machine.
2. All portions ina batch must be identcally sized to ensure even results.
3. Extremely tight management and hygieneic controls an dimparative.

6.EN PAPILLOTE

Cooking Foods en Papillote :

The term "en papillote" comes from the french word for papillote because the parchment traditionally used for wrapping up the food somewhat butterfly In this variation of steaming, the main item and accompanying ingredients are encased in parchment paper and cooked in a hot oven. The main item rests on a bed of herbs, vegetables, or sauce and the combination of these ingredients and their natural juices serves as the sauce. The steam created by the food's natural juices cooks the food. As the steam volume increases, the paper puffs up.

Mise en Place

Assemble all ingredients and preparations for en papillote:
- Main item(s)
- Broth or sauce
- Additional or optional flavouring, seasoning, or garnishing items
-

In addition to the preparation techniques for steaming, there is an optional first step. Sear thicker meat cuts in advance to ensure that they will be adequately cooked during the relatively short cooking times associated with his technique as well s to provide additional color and flavor.

Vegetables can be included to provide moisture for steam. They also add color, flavor, and texture. Cut the vegetables into a fine julienne or dice. Sweat or blanch the vegetables, if necessary, to ensure that they will cook in the same amount of time as the main item.

Prepare herbs and spices according to type. Some herbs may be left in springs; others are cut into a chiffonade or minced. Have a prepared sauce, reduced heavy cream, wine, or citrus juices on hand if your recipe calls for them.

Assemble all equipment necessary for cooking and serving*;*

- Parchment paper
- Sizzler platters or baking sheets
- Serving pieces

Method

Assemble the packages

The method for cutting the parchment and making the individual packages. Cut the parchment into a heat shape large enough to allow the food and any additional ingredients to fit comfortably without overcrowding. The paper needs to have enough "give" to expand during cooking. Oil or butter the paper on both sides to prevent it from burning.

Place a bed of aromatics, vegetables, or sauce on one half of the heart and top it with the main item.

Fold the empty half of the heart over the main item and fold and crimp the edges of the paper to form a tight seal.

Place the bag on a preheated sizzler platter and put it in a very hot oven

The hot oven temperature may need to be carefully monitored, since delicate foods such as fish fillets can be overcooked quickly at a high temperature. A thicker cut may be best if cooked slowly at a moderate temperature and "puffed" in a very hot oven.

Foods prepared en papillote should be cooked until they are just done. This is difficult to gauge without experience, since you cannot apply the senses of sight and touch in determining doneness. If the item has been cut to the correct size or if it has been partially cooked before being placed en papillote, it should be done when the bag is very puffy and the paper is brown.

COMBINATION METHODS OF COOKING

1. BRAISING

Description of the Process

This is a moist method of cooking using a tightly lidded cooking dish. The commodity is

usually placed on a bed of root vegetable and herbs with an appropriate quantity of liquid or sauce.

Braising represents a combination of the following processes
1. Stewing - Less liquid involved
2. Pot-roasting - Water, not fat, main ingredient in cooking liquid.
3. Steaming - Water Vapour trapped under lid.

Heat Transfer
Conduction and convection

Method of Braising
- Braised dishes are classed on either white or brown. Brown braising involves the colouring of meat in hot fat (searing) before cooking.
- For brown braising Espagnole is diluted with an equal quantity of stock and used on the cooking liquor (e.g. braised beef)
- White braising involves white stock and natural Ingredients.
- Marinating: Some meats are soaked in flavoured alcohol or acid to tenderise and improve flavour and colour, prior to cooking.
- Glazing: Some of meat dishes are glazed towards the end of cooking period. The lid is taken off the braising pot and the cooking liquor is spooned over the commodity at regular internals. The procedure called "MASKING". The water present in the liquid evaporates from the surface of the food leaving behind a gelatinous satiny glaze.

Advantages
1. Tougher, Cheaper cuts of meat may be used.
2. Less amount of fat is used in the cooking.
3. There is little loss of nutrients.

Disadvantages
1. Cooking time is long and slow
2. Over cooking will produce discolouration and disintegration of the product.

Safety
1. Hot liquids and utensils can be the cause of serious burns.
2. Equipment should be matched to the quantity of food to prevent spillages.
3. Care should be taken when removing the lid of braising pans to avoid scalds from escaping steam.
4. Safety practice should be observed in operational procedure, clothing and footwear.

2.STEWING

This is a long, slow, moist method of cooking in which small pieces of food are simmered in a minimum amount of liquid. The liquid which may be water, stock or prepared sauce, is always served with the food. The stew is cooked in a dish with tightly fitted lid, either on top of the stove or inside the oven.

Heat Transfer
Heat is conducted through the cooking utensil and to the surfaces of the food in contact with

it. It is carried to all areas of the cooking liquid by convection currents, heat reaching the surface of the food then passes through it by conduction the food then cooks.

Types of Stew

1. ***Blanquette:*** A stew cooked in stocks from which for sauce is made.
2. ***Fricassee:*** A stew in which the meat, poultry or firm is cooked in the sauce.
3. ***Navarin:***. Refers to the rich dark lamb stew.
4. ***Ragout:*** Stew brown beef stew.
5. ***Bouillabuisse :*** A heavily fish are shell fish with safforn. A traditional specially of France

Advantages

1. Stewing is economical as cheaper cuts of meat may be used.
2. There is little loss of nutrients or moisture as any juices which escape from the meat or vegetable become part of the sauce.

Disadvantages

1. Stews must be cooked for a long period to ensure tenderness and full flavour.
2. Some stews lack 'bite' and contrast in texture.

Safety Rules

1. Equipment should be matched to the quantity of food and liquid to prevent spillages.
2. It is important to avoid scalds from steam when removing lids to check consistency.
3. Safe practice should be observed in operational procedure, clothing and footwear.

A HISTORY OF MODERN FOOD SERVICE

The value of history is that it helps us understand the present and the future. In food service, knowledge of our professional heritage helps us see why we do things as we do, how our cooking techniques have been developed and refined, and how we can continue to develop and innovate in the years ahead. An important lesson of history is that the way we cook now is the result of the work done by countless chefs over hundreds of years. Cooking is as much science as it is art. Cooking techniques are not based on arbitrary rules that some chefs made up long ago. Rather, they are based on an understanding of how different foods react when heated in various ways, when combined in various proportions, and so on. The chefs who have come before us have already done much of this work so we don't have to. This doesn't mean there is no room for innovation and experimentation or that we should never challenge old ideas. But it does mean a lot of knowledge has been collected over the years, and we would be smart to take advantage of what has already been learned. Furthermore, how can we challenge old ideas unless we know what those old ideas are? Knowledge is the best starting point for innovation.

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THE ORIGINS OF CLASSICAL AND MODERN CUISINE

Quantity cookery has existed for thousands of years, as long as there have been large groups of people to feed, such as armies. But modern food service is said to have begun shortly after the middle of the eighteenth century. At this time, food production in France was controlled by guilds. Caterers, pastry makers, roasters, and pork butchers held licenses to prepare specific items. An innkeeper, in order to serve a meal to guests, had to buy the various menu items from those operations that were licensed to provide them. Guests had little or no choice and simply ate what was available for that meal.

In 1765, a Parisian named Boulanger began advertising on his shop sign that he served soups, which he called *restaurants* or *restoratives*. (Literally, the word means "fortifying.") According to the story, one of the dishes he served was sheep's feet in a cream sauce.The guild of stew makers challenged him in court,but Boulanger won by claiming he didn't stew the feet *in* the sauce but served them *with* the sauce. In challenging the rules of the guilds, Boulanger unwittingly changed the course of food service history.

The new developments in food service received a great stimulus as a result of the French Revolution,beginning in 1789.Before this time,the great chefs were employed in the houses of the French nobility. With the revolution and the end of the monarchy, many chefs, suddenly out of work, opened restaurants in and around Paris to support themselves. Furthermore, the revolutionary government abolished the guilds. Restaurants and inns could serve dinners reflecting the talent and creativity of their own chefs, rather than being forced to rely on licensed caterers to supply their food. At the start of the French Revolution, there were about 50 restaurants in Paris. Ten years later therewere about 500.

Another important invention that changed the organization of kitchens in the eighteenth century was the stove, or *potager*, which gave cooks a more practical and controllable heat source than an open fire. Soon commercial kitchens became divided into three departments: the rotisserie, under the control of the meat chef or *rôtisseur*, the oven,under the control of the pastry chef or *pâtissier*, and the stove, run by the cook or *cuisinier*. The meat chef and pastry chef reported to the cuisinier, who was also known as *chef de cuisine*, which means "head of the kitchen."

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CARÊME

All the changes that took place in the world of cooking during the 1700s led to,for the first time, a difference between home cooking and professional cooking. One way we can try to understand this difference is to look at the work of the greatest chef of the pe-riod following the French Revolution, **Marie-Antoine Carême** (1784–1833). As a young man, Carême learned all the branches of cooking quickly, and he dedicated his career to refining and organizing culinary techniques.His many books contain the first systematic account of cooking principles, recipes,and menu making.

At a time when the interesting advances in cooking were happening in restaurants, Carême worked as a chef to wealthy patrons, kings, and heads of state. He was perhaps the first real celebrity chef, and he became famous as the creator of elaborate, elegant display pieces and pastries, the ancestors of our modern wedding cakes, sugar sculptures, and ice and tallow carvings. But it was Carême's practical and theoretical work as an author and an inventor of recipes that was responsible, to a large extent, for bringing cooking out of the Middle Ages and into the modern period.

Carême emphasized procedure and order. His goal was to create more lightness and simplicity. The complex cuisine of the aristocracy—called *Grande Cuisine*—was still not much different from that of the Middle Ages and was anything but simple and light. Carême's efforts were a great step toward modern simplicity. The methods explained in his books were complex, but his aim was pure results. He added seasonings and other ingredients

not so much to add new flavors but to highlight the flavors of the main ingredients. His sauces were designed to enhance, not cover up, the food being sauced. Carême was a thoughtful chef, and, whenever he changed a classic recipe, he was careful to explain his reasons for doing so.

Beginning with Carême, a style of cooking developed that can truly be called international, because the same principles are still used by professional cooks around the world. Older styles of cooking, as well as much of today's home cooking, are based on tradition. In other words, a cook makes a dish a certain way because that is how it always has been done. On the other hand, in Carême's *Grande Cuisine*, and in professional cooking ever since, a cook makes a dish a certain way because the principles and methods of cooking show it is the best way to get the desired results. For example, for hundreds of years, cooks boiled meats before roasting them on a rotisserie in front of the fire. But when chefs began thinking and experimenting rather than just accepting the tradition of boiling meat before roasting, they realized that either braising the meat or roasting it from the raw state were better options.

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ESCOFFIER

Georges-Auguste Escoffier (1847–1935), the greatest chef of his time, is still today revered by chefs and gourmets as the father of twentieth-century cookery.His two main contributions were (1) the simplification of classical cuisine and the classical menu, and the reorganization of the kitchen. Escoffier rejected what he called the "general confusion" of the old menus, in which sheer quantity seemed to be the most important factor.Instead,he called for order and diversity and emphasized the careful selection of one or two dishes per course, dishes that followed one another harmoniously and delighted the taste with their delicacy and simplicity. Escoffier's books and recipes are still important reference works for professional chefs.The basic cooking methods and preparations we study today are based on Escoffier's work.His book *Le Guide Culinaire*, which is still widely used, arranges recipes in a simple system based on main ingredient and cooking method, greatly simplifying the more complex system handed down from Carême. Learning classical cooking, according to Escoffier, begins with learning a relatively few basic procedures and understanding basic ingredients.

Escoffier's second major achievement, the reorganization of the kitchen, resulted in a streamlined workplace that was better suited to turning out the simplified dishes and menus he instituted. The system of organization he established is still in use today, especially in large hotels and full-service restaurants.

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MODERN TECHNOLOGY

Today's kitchens look much different from those of Escoffier's day, even though our basic cooking principles are the same. Also, the dishes we eat have gradually changed due to the innovations and creativity of modern chefs. The process of simplification and refinement, to which Carême and Escoffier made monumental contributions, is still ongoing, adapting classical cooking to modern conditions and tastes.

Before we discuss the changes in cooking styles that took place in the twentieth century, let's look at some of the developments in technology that affected cooking.

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Development of New Equipment

We take for granted such basic equipment as gas and electric ranges and ovens and electric refrigerators. But even these essential tools did not exist until fairly recently. The easily controlled heat of modern cooking equipment, as well as motorized food cutters, mixers, and other processing equipment, has greatly simplified food production. Research and technology continue to produce sophisticated tools for the kitchen. Some of these products, such as tilting skillets and steam-jacketed kettles, can do many jobs and are popular in many kitchens. Others can perform specialized tasks rapidly and efficiently, but their usefulness depends on volume because they are designed to do only a few jobs. Modern equipment has enabled many food service operations to change their production methods. With sophisticated cooling, freezing, and heating equipment,it is possible to prepare some foods further in advance and in larger quantities. Some large multiunit operations prepare food for all their units in a central commissary. The food is prepared in quantity, packaged, chilled or frozen,then heated or cooked to order in the individual units.

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COOKING IN THE TWENTIETH AND TWENTY-FIRST CENTURIES

All these developments have helped change cooking styles, menus, and eating habits. The evolution of cuisine that has been going on for hundreds of years continues. Changes occur not only because of technological developments, such as those just described, but also because of our reactions to culinary traditions. Two opposing forces can be seen at work throughout the history of cooking. One is the urge to simplify, to eliminate complexity and ornamentation, and instead to emphasize the plain, natural tastes of basic, fresh ingredients. The other is the urge to invent, to highlight the creativity of the chef, with an accent on fancier, more complicated presentations and procedures. Both these forces are valid and

healthy; they continually refresh and renew the art of cooking. A generation after Escoffier, the most influential chef in the middle of the twentieth century was Fernand Point (1897–1955).Working quietly and steadily in his restaurant, La Pyramide,in Vienne,France,Point simplified and lightened classical cuisine.He was a perfectionist who sometimes worked on a dish for years before he felt it was good enough to put on his menu.“I am not hard to please,”he said.“I’m satisfied with the very best.”Point insisted that every meal should be “a little marvel.” Point’s influence extended well beyond his own life.Many of his apprentices,such as Paul Bocuse,Jean and Pierre Troisgros,and Alain Chapel,went on to become some of the greatest stars of modern cooking.They, along with other chefs in their generation, became best known in the 1960s and early 1970s for a style of cooking called **nouvelle cuisine**. Reacting to what they saw as a heavy,stodgy,overly complicated classical cuisine, these chefs took Point’s lighter approach even further.They rejected many traditional principles, such as a dependence on flour to thicken sauces, and instead urged simpler,more natural flavors and preparations, with lighter sauces and seasonings and shorter cooking times. In traditional classical cuisine,many dishes were plated in the dining room by waiters.Nouvelle cuisine,however, placed a great deal of emphasis on artful plating presentations done by the chef in the kitchen.

Very quickly, however, this “simpler ”style became extravagant and complicated, famous for strange combinations of foods and fussy, ornate arrangements and designs. By the 1980s,nouvelle cuisine was the subject of jokes. Still, the best achievements of nouvelle cuisine have taken a permanent place in the classical tradition. Meanwhile, many of its excesses have been forgotten. It is probably fair to say that most of the best new ideas and the lasting accomplishments were those of classically trained chefs with a solid grounding in the basics.

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New Emphasis on Ingredients

Advances in agriculture and food preservation have had disadvantages as well as advantages. Everyone is familiar with hard, tasteless fruits and vegetables that were developed to ship well and last long, without regard for eating quality. Many people, including chefs, began to question not only the flavor but also the health value and the environmental effects of genetically engineered foods, of produce raised with chemical pesticides and fertilizers, and of animals raised with antibiotics and other drugs and hormones.

The public has benefited greatly from these efforts. Today, in supermarkets as well as in restaurants, a much greater variety of high-quality foods is available than there was 40 or 50 years ago. Many chefs have modified their cooking styles to highlight the natural flavors and textures of their ingredients, and their menus are often simpler now for this reason.

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International Influences

After the middle of the twentieth century, as travel became easier and as immigrants arrived in Europe and North America from around the world, awareness of and taste for regional dishes grew. Chefs became more knowledgeable not only about the traditional cuisines of other parts of Europe but about those of Asia, Latin America, and elsewhere.

Many of the most creative chefs have been inspired by these cuisines and use some of their techniques and ingredients. For example, many North American and French chefs, looking for ways to make their cooking lighter and more elegant, have found ideas in the cuisine of Japan. In the south western United States, a number of chefs have transformed Mexican influences into an elegant and original cooking style. Throughout North America, traditional dishes and regional specialties combine the cooking traditions of immigrant settlers and the

indigenous ingredients of a bountiful land. For many years, critics often argued that menus in most North American restaurants offered the

same monotonous, mediocre food .In recent decades, however, American and Canadian cooks have rediscovered traditional North American dishes. The use of ingredients and techniques from more than one regional, or international, cuisine in a single dish is known as **fusion cuisine**. Early attempts to prepare fusion

cuisine often produced poor results because the dishes were not true to any one culture and were too mixed up. This was especially true in the 1980s, when the idea of fusion cuisine was new. Cooks often combined ingredients and techniques without a good feeling for how they would work together. The result was sometimes a jumbled

mess. But chefs who have taken the time to study in depth the cuisines and cultures they borrow from have brought new excitement to cooking and to restaurant menus. Today chefs make good use of all the ingredients and techniques available to them. It is almost second nature to give extra depth to the braising liquid for a beef pot roast by adding Mexican ancho peppers, for example, or to include Thai basil and lemon grass in a seafood salad. In the recipe sections of this book, classic dishes from many regions of the world are included among more familiar recipes from home. To help you understand these recipes and the cuisines they come from, background information accompanies

many of them. Cooking and cooking styles continue to change. Technology continues to make rapid advances in our industry, and men and women are needed who can adapt to these changes and respond to new challenges. Although automation and convenience foods will no doubt grow in importance, imaginative chefs who can create new dishes and develop new techniques and styles will always be needed, as will skilled cooks who can apply both old and new techniques to produce high-quality foods in all kinds of facilities, from restaurants and hotels to schools and hospitals.

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[11] Adapted by Bonophool Banerjee

Source: Professional Cookery

INTRODUCTION TO PERSONAL HYGIENE

Rules of personal hygiene and sanitary food handling were not invented just to make your life difficult. There are good reasons for all of them. The information presented here is practical as well as theoretical. It should not merely be learned but should be put to use systematically. One effective system food service establishments can use to ensure food safety is the **Hazard Analysis Critical Control Point (HACCP)** system. This practical program identifies possible danger points and sets up procedures for corrective action. Preventing food-borne illness is one of the most important challenges facing every food service worker. In order to prevent illness, a food worker must understand the sources

of food-borne disease.

Most food-borne illness is the result of eating food that has been **contaminated.** To say that a food is contaminated means it contains harmful substances that were not present originally in the food. In other words, contaminated food is food that is not pure.

Any substance in food that can cause illness or injury is called a **hazard**. Food hazards are of three types:

1. Biological hazards

2. Chemical hazards

3. Physical hazards

Notice it was said that *most* food-borne illness is caused by eating food that has been contaminated with foreign substances. Some illness is caused not by contaminants but by substances that occur naturally in foods. These include plant toxins (*toxin* means "poison") that occur naturally in some foods, such as the chemicals in poisonous mushrooms, and also certain natural food components to which some people are allergic

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PERSONAL HYGIENE

Earlier, we said that most food-borne disease is caused by bacteria. Now we change that statement slightly to say that ***most food-borne disease is caused by bacteria spread by food workers*.** At the beginning of this chapter, we defined *contamination* as harmful substances not present originally in the food. Some contamination occurs before we receive the food, which means that proper purchasing and receiving procedures are important parts of a sanitation program. But most food contamination occurs as a result of **crosscontamination**,

which may be defined as the transferring of hazardous substances, mainly microorganisms, to a food from another food or another surface, such as equipment, worktables, or hands. Some examples of situations in which cross-contamination can occur include the following:

• Mixing contaminated leftovers with a freshly cooked batch of food.

• Handling ready-to-eat foods with unclean hands. Handling several types of foods without washing hands in between.

• Cutting raw chicken, and then using the same cutting board, unsanitized, to cut vegetables.

• Placing ready-to-eat foods on a lower refrigerator shelf and allowing juices from raw fish or meat to drip onto them from an upper shelf.

• Wiping down work surfaces with a soiled cloth. For the food worker, the first step in preventing food-borne disease is good personal hygiene. Even when we are healthy, we have bacteria all over our skin and in our nose and mouth. Some of these bacteria, if given the chance to grow in food, will make people ill.

POINTS TO BE REMEMBERED

1. Do not work with food if you have any communicable disease or infection.

2. Bathe or shower daily.

3. Wear clean uniforms and aprons.

4. Keep hair neat and clean. Always wear a hat or hairnet.

5. Keep moustaches and beards trimmed and clean. Better yet, be clean-shaven.

6. Wash hands and exposed parts of arms before work and as often as necessary during Work, including:

• After eating, drinking, or smoking.

• After using the toilet.

• After touching or handling anything that may be contaminated with bacteria.

7. Cover coughs and sneezes, and then wash hands.

8. Keep your hands away from your face, eyes, hair, and arms.

9. Keep fingernails clean and short. Do not wear nail polish.

10. Do not smoke or chew gum while on duty.

11. Cover cuts or sores with clean bandages.

12. Do not sit on worktables.

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HAZARDS FROM FOOD HANDLERS

Staphylococcus aureus is often found

- On the hands (10%)
- In the nose (40%) mouth
- Spots, cuts and grazes.
- Cross contamination if hands are not washed correctly

HANDS

- One of the most common routes by which food poisoning bacteria gain access to food
- They should be washed:
  - Frequently
  - After WC
  - On entering food room and after a break .Before handling food or food equipment .After handling raw food
  - After combing or touching hair
  - After eating, smoking, coughing, or blowing nose
  - After handling waste or refuse
  - After handling cleaning chemicals or cleaning

- The correct hand washing procedure is essential.

This ideally requires:

- Designated wash hand basin
- Non hand operated taps
- Hot and cold or warm water (45-49°C) .Liquid soap (Good lather required) Fingertips, under nails, in between fingers, wrists
- Thorough rinsing in running water to remove lather (contains dirt/bacteria)
- Thorough drying (paper towels preferred)

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RULES IN FOOD ROOMS

DO NOT	**DO**
Blow into bags/glasses	Keep hands clean
Smoke	Keep nails short
Spit	Keep nails clean
Eat (sweets/gum)	Wear perfume sparingly
Wear excessive jewellery	Wear waterproof dressings
Wear false nails	Replace when loose
Wear nail varnish	Use tasting spoons only once
Wear watches	Change soiled overclothing
Touch mouth/lick fingers	
Use disposable gloves inappropriately	

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REASONS FOR FOOD HANDLERS NOT SMOKING

- Bacteria from lips to food
- Cigarette ends may contaminate work surfaces

- It encourages coughing
- Unpleasant for other people
- Ash, matches, cigarette ends may contaminate food
- Presents a poor image

CUTS, BOILS SEPTIC SPOTS AND SKIN INFECTIONS

- Exclude food handlers with open boils and septic lesions from food area
- Staphylococcus aurous is the main problem.
- Waterproof dressings (preferably blue) must cover cuts etc
- Loose dressings replaced immediately
- Consider waterproof fingerstalls and gloves

FIRST AID

.Suitable and sufficient supply of first aid materials

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PROTECTIVE CLOTHING

- Worn primarily to protect food from the wearers clothing
- Clean and washable
- Light Coloured and in good repair
- No external pockets
- No buttons
- Press studs or velcro fastenings preferred .Laundered in house
- Cover ordinary clothing likely to contact food .Wear head covering and/or hairnet where appropriate
- It should protect food from the risk of contamination
- Not worn out of the food room or complex .
- Better if removed prior to entering canteen or toilet .Colour coding is recommended to aid distinction between "Raw" staff and "Cooked" staff

Correct procedures when putting on or taking off i.e.:

On

- ✓ put on hairnet/hat
- ✓ put on overall

- ✓ put on boots

Off

- ✓ remove overall
- ✓ remove hat/hairnet
- ✓ take off boots

Some protective clothing is also used for health & safety reasons:

- Thick overall (protect against cold)
- Loose clothing (in case of boiling water spillage)
- Stout, non-slip shoes
- Waterproof aprons
- Protective head covering (Factory environment)

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ASSIGNMENTS

1. **What is HACCP? Explain it short?**
2. Define Hazard? Explain it.
3. Explain the importance of good personal hygiene. What are points to be remembered?
4. Explain the correct hand washing procedure.
5. List and explain the DOS AND DON'TS in the kitchen to achieve the highest order Of hygiene.
6. List down the importance of protective clothing in the food production area.

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SAFETY PROCEDURE IN HANDLING EQUIPMENT

Thorough knowledge of equipment is essential for success in the kitchen. Few food service operations depend on nothing more than a range and an oven, an assortment of pots and pans, and knives and other hand tools. Modern technology continues to develop more and more specialized and technically advanced tools to reduce kitchen labour. Much of this equipment is so complex or so sophisticated that only firsthand instruction and practice will teach you how to operate it effectively and safely. Other items, especially hand tools, are simple and need no explanation but require much practice to develop good manual skills.

Modern cooking and food processing equipment has an extraordinary capacity to burn, cut, smash, mangle, and amputate parts of the tender human body. This may sound like a harsh way to begin a chapter, but the intent is not to intimidate you or scare you but to inspire a healthy respect for the importance of proper safety and operating procedures

Points to be kept in mind.

1. Do not use any equipment unless you understand its operation.
2. Use all guards and safety devices on equipment. Set slicing machines at zero (blade closed) when not in use.
3. Don't touch or remove food from any kind of equipment while it is running, not even with a spoon or spatula.
4. Unplug electric equipment before disassembling or cleaning.
5. Make sure the switch is off before plugging in equipment.
6. Do not touch or handle electric equipment, including switches, if your hands are wet or if you are standing in water.
7. Wear properly fitting clothing and tuck in apron strings to avoid getting them caught in machinery.
8. Use equipment only for the purpose intended.
9. Stack pots and other equipment properly on pot racks so they are stable and not likely to fall.

RANGETOPS

The range is still the most important piece of cooking equipment in the kitchen, even though many of its functions have been taken over by other tools such as steamers, steam kettles, tilting skillets, and ovens.

Do's and Don'ts

1. Make sure gas pilots are lit before turning on burners. If burners do not light, turn off gas and allow the gas to ventilate before trying again to light pilots or burners.
2. Adjust air intake so gas flames are blue with a white tip for maximum heat.
3. Do not keep flat-top ranges on high heat unless items are being cooked over them. Damage to tops could result

OVENS

The oven and the range top are the two workhorses of the traditional kitchen, which is why they are so often found in the same unit. Ovens are enclosed spaces in which food is heated, usually by hot air or, in some newer kinds of ovens, by microwaves or infrared radiation.

Conventional Ovens

Conventional ovens operate simply by heating air in an enclosed space. The most common ovens are part of the range unit, although separate oven units or ovens as part of a broiler unit are also available. **Stack ovens** are units that consist of individual shelves or decks arranged one above the other. Pans are placed directly on the oven deck rather than on wire shelves. Temperatures are adjustable for each deck

Do's and Don'ts

Many of these points apply to other types of ovens as well.

1. Preheat ovens thoroughly, but no longer than necessary, to avoid excess energy use.
2. To avoid high energy loss and interruption of cooking, do not open the door more often than necessary.
3. Space items well to allow for heat circulation.
4. Be sure the pilot light is on before turning on gas ovens.

Convection Ovens

Convection ovens contain fans that circulate the air and distribute the heat rapidly throughout the interior. Because of the forced air, foods cook more

quickly at lower temperatures. Also, shelves can be placed closer together than in conventional ovens without blocking the heat flow.

Do's and Don'ts

1. For most products, set the temperature 25°F to 50°F (15°C to 30°C) lower than you would a conventional oven. Check manufacturer's recommendations.
2. Watch cooking times closely. The forced heat cooks foods more quickly and tends to dry out some foods excessively if they are overcooked. Roasts shrink more than they do in conventional ovens.
3. Many convection oven models should not be operated with the blower switch off, as the motor may burn out.
4. The forced air of a convection oven may deform soft items. Cake batters, for example, develop ripples. Check manufacturer's recommendations.

BROILERS AND SALAMANDERS

Broilers are sometimes called **overhead broilers** to avoid confusing them with grills. Overhead broilers generate heat from above, and food items are placed on a grate beneath the heat source. Broiling is a favourite way of preparing steaks, chops, chicken, and many other items. *Heavy-duty broilers* produce very high heat and consume vast quantities of energy. Some broilers are said to go as high as 2,000°F (1,100°C) at the burner. Foods must be watched closely to avoid burning. Cooking temperature is adjusted\ by raising or lowering the grate that holds the food.

Salamanders are small broilers used primarily for browning or glazing the tops of some items. They may also be used for broiling small quantities during off-peak hours. Salamanders are usually mounted above the range.

GRILLS

Grills are used for the same cooking operations as broilers, except the heat source is below the grid that holds the food rather than above it. Many people like grilled foods because of their charcoal taste, which is created by smoke from meat fats that drip into the heat source. Although smoke from meat fats creates the taste people associate with grilled foods, actual wood-smoke flavours such as hickory or mesquite can be added to foods if those woods are burned in the grill under the food. In order to do this, you must use a grill designed to burn such fuels.

Types

Many grill models are in use. The major differences in operation among them are due to the difference in heat source—gas, electricity, or charcoal. To operate, set areas of the grill to different temperatures and place foods in the areas with the appropriate cooking temperature. Keep grills clean, as the high temperatures can easily start grease fires.

GRIDDLES

Griddles are flat, smooth, heated surfaces on which food is cooked directly. Pancakes, French toast, hamburgers and other meats, eggs, and potato items are the foods most frequently cooked on a griddle. Griddles are available as separate units or as part of a range top. *Clean griddle surfaces after every use* so they will cook at peak efficiency. Polish with a griddle stone or griddle cloth until the surface shines. Follow the grain of the metal to avoid scratching. *Condition griddles after each cleaning* or before each use to create a non stick surface and to prevent rusting. Procedure: Spread a thin film of oil over the surface and heat to 400°F (200°C).Wipe clean and repeat until griddle has a smooth, non stick finish

DEEP FRYERS

A deep fryer has only one use: to cook foods in hot fat. Yet because of the popularity of fried foods, this function is an important one.

Standard deep fryers are powered by either gas or electricity and have thermostatic controls that maintain fat at preset temperatures.

Automatic fryers remove food from the fat automatically after a preset time.

Pressure fryers are covered fry kettles that fry foods under pressure. Foods cook faster, even at a lower fat temperature

Do's and Don'ts

Frying procedures and the care of frying fat are discussed in detail in Chapter 4.The following points relate to the operation of the equipment.

1. When filling kettles with solid fats, set the thermostat at 250°F (120°C) until the fat has melted enough to cover the heating elements.

2. Keep kettles filled to the fill line.

3. Make sure the drain valve is shut before adding fat to the empty kettle.

4. Check the accuracy of the thermostat regularly by reading the fat temperature with a thermometer.

TILTING SKILLET

The tilting skillet, also known as the **tilting brazier** and **tilting fry pan**, is a versatile and efficient piece of equipment. It can be used as a griddle, fry pan, brazier, stew pot, stockpot, steamer, and bain-marie or steam table. The tilting skillet is a large, shallow, flat-bottomed pot. To look at it another way, it is a griddle with 6-inch-high sides and a cover. It has a tilting mechanism that enables liquids to be poured out of it. Power may be gas or electric. Clean the skillet immediately after each use, before food has time to dry on. Add water, turn on the skillet to heat it, and scrub thoroughly

MIXERS

Vertical mixers are important and versatile tools for many kinds of food mixing and processing jobs, both in the bakeshop and in the kitchen.

Types

Bench-model mixers range in capacity from 5 to 20 quarts (5 to 20 L).Floor models are available as large as 140 quarts (133 L).Adaptor rings enable several bowl sizes to be used on one machine. Most mixers have three operating speeds.

Agitator Attachments

There are three main mixing attachments, plus some specialized ones. The **paddle** is a flat blade used for general mixing. The **wire whip** is used for such tasks as beating cream and eggs and making mayonnaise. The **dough arm** is used for mixing and kneading yeast doughs.

Do's and Don'ts

1. Make sure the bowl and the mixing attachment are firmly in place before turning on the machine.
2. Make sure you are using the right size attachment for the bowl. Using a 40-quart paddle with a 30-quart bowl, for example, could cause serious damage. Sizes in quarts are marked on the sides of large bowls and on the tops of attachments.
3. Turn off the machine before scraping down the bowl or inserting a spoon, scraper, or hand into the bowl. Mixer motors are powerful and can cause serious injury.
4. Turn off the machine before changing speeds.

FOOD CUTTER

The food cutter or food chopper, familiarly known as the **buffalo chopper**, is a common piece of equipment used for general food chopping. A variety of attachments make it a versatile tool.

General Operation

Food is placed in a rotating bowl, which carries the food to a pair of knives that are spinning rapidly under a cover. The fineness of the cut depends on how long the food is left in the machine.

Do's and Don'ts

1. Always make sure the machine is completely assembled before use.
2. Close the cover lock knob, or the machine will not turn on.
3. Never reach under the bowl cover while the machine is running.
4. For uniform chopping, place the food in the bowl all at one time.
5. Keep the knives sharp. Dull knives will bruise food rather than cut it cleanly.

SLICER

The slicer is a valuable machine because it slices foods more evenly and uniformly than can be done by hand. Thus it is valuable for portion control and for reducing cutting loss.

Types

Most modern slicers have blades set at an angle. Slices fall away from these blades with less breaking and folding than from vertical blades. With manual machines, the operator must move the carriage back and forth to slice the food. Automatic machines move the carriage with an electric motor.

Do's and Don'ts

1. Be sure the machine is properly assembled before using.
2. Always use the end weight to press the food against the blade. This protects the hand from serious cuts and provides a more even pressure on the food, resulting in more uniform slices.
3. Set the thickness control knob at zero when the machine is not in use or is being cleaned.
4. Always unplug the machine before dismantling and cleaning.

5. Keep the blade sharp with the sharpening stones provided with the slicer

VERTICAL CUTTER/MIXER

The vertical cutter/mixer (VCM) is like a large,powerful,high-speed blender. It is used to chop and mix large quantities of foods rapidly. It can also be used for puréeing (soups,for example) and for mixing liquids.

Types

VCMs range in size from 15 to 80 quarts (liters).The small models have a hand-operated mixing baffle,which moves the foods into the blades. Larger machines have automatic baffles.

Do's and Don'ts

1. Watch processing times closely. Chopping times are so short that an extra second can make cabbage soup out of coleslaw.
2. Make sure the machine is properly assembled before use.
3. After turning the machine off, allow the blades to come to a full stop before opening the cover.
4. Keep the blades sharp. Dull blades bruise food

HOT FOOD HOLDING EQUIPMENT

Several types of equipment are used to keep food hot for service. This equipment is designed to hold foods above 135°F (57°C) in order to prevent the growth of bacteria that can cause disease. Because food continues to cook at these temperatures, it should be held for as short a time as possible

Steam tables are standard holding equipment for serving lines. Standard-size counter pans or hotel pans are used as inserts to hold the foods. Flat or domed covers may be used to cover the foods. Check water levels in steam tables periodically to make sure they don't go dry. Electrically heated counters that operate dry—without steam—are also available.

2. A **bain-marie** is a hot-water bath. Containers of foods are set on a rack in a shallow container of water, which is heated by electricity, gas, or steam.The bain-marie is used more in the production area, while the steam table is used in the service area.

3. Overhead infrared lamps are used in service areas to keep plated food warm before it is picked up by the service staff.They are also used for keeping large roasts warm. Foods dry out quickly under holding lamps.This is a disadvantage for almost all foods except French fries and other deep-fried foods,which lose their crispness if
they are kept moist.

COLD FOOD STORAGE EQUIPMENT

The quality of the food you serve depends to a great degree on refrigeration equipment. By keeping foods cold, usually below 41°F (5°C),the refrigerator (known in the trade as the *cooler* or the *box*) guards against spoilage and bacterial growth.

Freezers are used to hold foods for longer times, or to store foods purchased in frozen form. There are so many sizes, models, and designs of refrigeration equipment that it would be futile to try to describe them all here. To enable refrigerators and freezers to work at top efficiency, observe the following rules:

1. Place items far enough apart and away from the inside walls of refrigerators so cold air can circulate. Freezers, on the other hand, work most efficiently when they are full.

2. Keep the door closed as much as possible. When storing or removing an item, do it quickly and shut the door.
3. Keep stored foods well wrapped or covered to prevent drying and transfer of odours. Meats are an exception to this rule.
4. Keep refrigerators spotlessly clean.

Soups : Les Potages

A Soups are a common feature offered on many types of menu in a wide variety of catering establishments. Such units range from fast food operations to the more traditionally based luxury catering systems.

What is Soup ?

A liquid food served in the beginning of a meal or for lunch ,a snack etc made up of fish, poultry, games, shellfish, meat, vegetables by the addition of of stock of any variety and with or without any thickening agent.

Poultry

The domesticted birds which are rared in a farmhouse especially for meat or eggs mainly chicken, ducks and geese.

Games

The birds which are generally hunted for their meat mainly Squale ,Partridge ,Quail etc.

Composition of soups.

From the above explanation it is evident that for making any kind of soup the following group of ingredients are obvious.

- **Stock ……of any variety.**
- **Main body ingredients……the soup will gets its name.**
- **Herbs……to match the flavour.**
- **Butter…….as cooking medium.**
- **Seasonings……..for the taste.**

- **Thickening agent……..for binding solids and liquids.**
- **Garnish……..for presentation and eye appeal.**

The function of soup on the menu is to stimulate the customer's appetite rather than act as a complete meal. For this reason many soups are of alight and delicate nature. Hot soups are a welcome feature on winter menus; conversely cold soups are ideal in the summertime.As the soup preparation needs very less amount of butter or fat and also not very spicy,it can be easily an ideal food for invalids.

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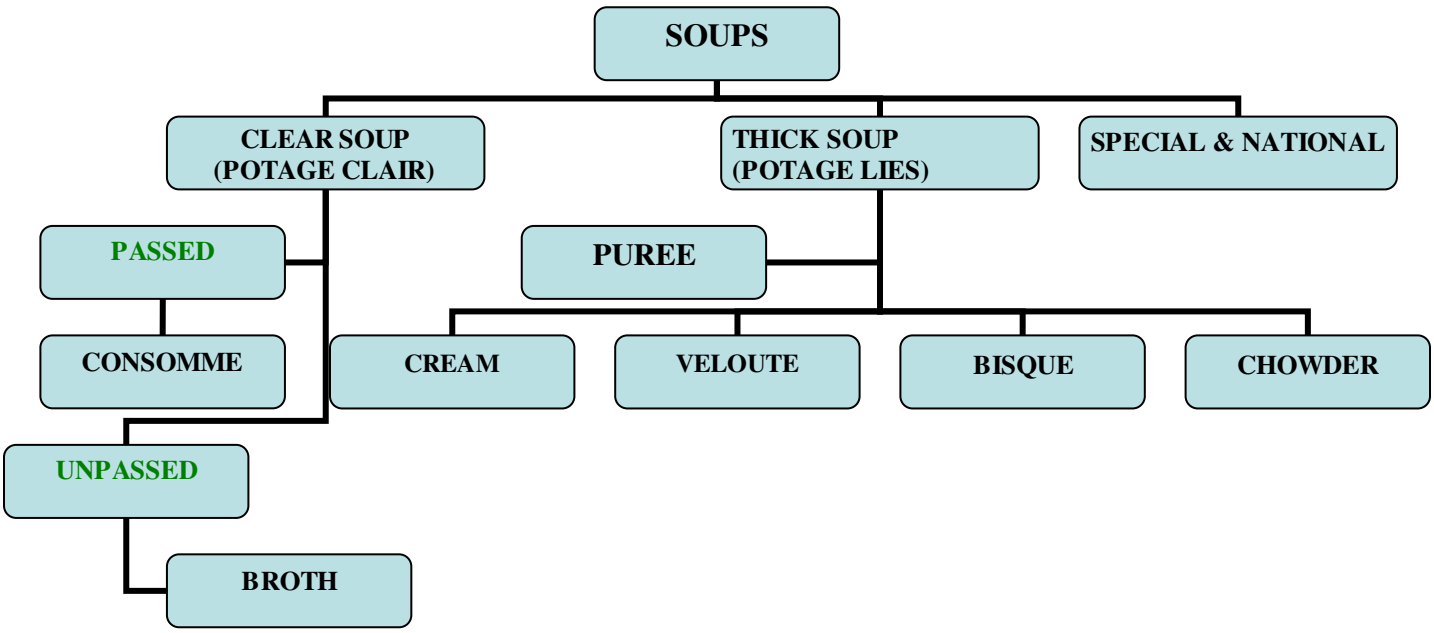
Classifications

The Soup may be classified in the following manner:-



Clear Soups

1. Consommés are refined clear soups prepared from good quality stocks, which are flavoured and clarified, by a combination of ingredients.

Clarification Process

During cooking the protein content, derived mainly from the egg white and minced beef, coagulates flocculates and rises to the surface of the consommé as rafts.

This action results in a clarified liquid being produced. Once cooking is complete the clear liquid lies beneath the mass of coagulated protein and other ingredients.

Points for Consideration

(a) In order to allow the egg white to disperse thoroughly, mix all the ingredients and allow to stand for a period prior to cooking.

(b) Use fat-free stock in order to prevent excess fat causing a greasy product.

(c) Mix only just warm stock to the ingredients.

(d) Slowly bring it to the boiling point and stir continuously so that the egg white disperse thoroughly.

(e) Once the consommé has been brought to the boil it is important to ensure that is simmers gently, without stirring for the remainder of the cooking period as rapid boiling or stirring will result in a clouded consommé. For the same reason do not cover the soup with a lid as this would disturb and inhibit the formation of congealed protein.

(f) A tall, deep, thick bottomed cooking vessel is ideally suited for consommé production, this type of vessel is designed to prevent excessive evaporation during cooking and helps to maintain an even temperature throughout.

(g) When most of the grease has been skimmed away from the completed consommé, any remaining grease is removed by passing pieces of absorbent paper across the surface of the consommé.

(h) On completion, strain the consommé with a wet muslin cloth carefully.

(i) The desired colour of consommé is amber.

Basic reasons for cloudy consommé

- The base stock is poor in quality.
- The base stock is greasy and not scummed well.
- The stock was not strained well.
- Raft is not very much compact due to poor coagulation.
- Stirring after boiling ,will prevent clarification by re mixing the impurities back into the liquid.
- Simmering followed by boiling will allow the raft to settle down before straining.
- The container in which the consommé has been made was dirty.

Double Consommé (consommé double)

The basic consommé which is prepared by using double the quantity of lean meat and a richer mirepoix is termed as Double Consommé.

Cold consommé (consommé froid)

The fat is carefully skimmed off from a double consommé and seasoned with Maderia , port wine and cayenne pepper.It is then portioned and allowed to cool in the refrigerator.May be served with or without any garnish accompanied with cheese straws (paillettes de fromage).A cold consommé always strong and spicy and should gel slightly.

BASIC CONSOMME consommé Ordinnair

Yield : 4 portions

Cooking time : 1 ½ hr

Ingredient	***Metric***
Cold stock (white or brown)	1 1
Beef shin (minced)	200 g
Mirepoix (scorched)	200 g
Egg white Bouquet garni Salt and pepper	50 g

Note: The type of stock used is determined by the flavour required in the consommé. In addition browned game, poultry carcasses, etc, may be added to appropriate consommé to enhance the flavour.

Method

Thoroughly mix all ingredients in cooking vessel and allow to stand approximately 30 minutes prior to cooking.

Commence cooking by bringing slowly to simmering point, stirring occasionally. Once boiling point is reached allow to simmer gently without any further stirring or undue agitation.

On completion strain carefully through wet muslin, degrease and correct seasoning. Reheat and garnish for service

Menu Term	***Ingredient***

Consommé en Tasse (Consommé served in a cup)	
Consommé Brunoise (Consommé with vegetables)	Cooked brunoise of vegetables Carrot,Turnip,Leek,Celery
Consommé Celestine (Consommé with savoury pancake)	Julienne of savoury pancake
Consommé Madrilène (C OLD) (Consommé with celery and tomato)	Celery (add to consommé throughout cooking period) Tomato puree (add to consommé throughout cooking period) Garnish : Tomato concasse,Small celery batons (cooked),Diced pimento (cooked),Shredded sorrel (seated in butter),Vermicelli (cooked),Flavoured with Madiera,Brandy and Cayenne Pepper.
Consommé Alphabetique (Consommé with shaped pasta)	Cooked alphabet pasta
Consommé au Porto (COLD) (Consommé with port wine)	Port wine
Consommé au Xeres (Consommé with sherry)	Sherry
Consommé Tortue (Consommé with turtle flavour)	1 sachet of turtle herbs *Diced cooked turtle meat Sherry Add turtle herbs to prepare consommé and infuse for 20 minutes before removing sachet

Consommé Royal (Consommé with savoury egg custard)	Cooked egg custard

2.. Broths Bouillons-Potages

Broth is comprised of savory stock liquor, flavoured and garnished with a combination of vegetables, vegetables and meat, or vegetables and seafood.In most cases broth contains a cereal ingredient, usually rice or barley. Herbs, seasonings and occasionally spices enhance the flavour. Often broth has the appearance of a thickened soup, a result of the starch content extracted from the cereal ingredient during cooking. However, because the soup remains unpassed, full thickening is not affected.

Broths are sub-divided into three types according to the method of preparations.

a) When the vegetables are added directly to stock base which contains a meat ingredient, e.g. stewing mutton as for mutton broth;

b) When the vegetables are sweated in fact without colour in the initial stages of preparation just prior to the addition of stock;

c) Fish flavoured broths e.g. chowders

English Term	***Meat Content***	***Garnish***	***French Term***
Beef broth	Stewing beef	Chopped parsley	Bouillon de Boeuf
Chicken broth	Boiling	Chopped parsley	Bouillon de Volaille
Game broth	Assorted stewing game	Chopped parsley	Bouillon de Gibier
Scotch mutton broth	Stewing mutton	Chopped parsley	Potage Eccossais

Menu Term	*Main Vegetables*	*Garnish*
Potage Bonne Femme (leek and potato soup)	Equal quantities of leek and potato cut into paysanne	Cream Chopped parsley
Cocky-Leeky soup	Julienne of leek	Julienne cooked chicken Julienne cooked prunes Chopped parsley
Potage Paysanne	Paysanne of : carrot, leek, onion, potato, swede, turnip, green Cabbage, celery	Green peace Diced French beans Chopped parsley
Minestroni (minestrone)	As for Potage Paysanne	Tomato concasse Raw spaghetti Tomato Puree (to colour) 8 Garlic pellets Grated parmesan cheese to accompany

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Thick Soups.

1. Purees.

This type of soup is produced from one of the following:

a) Vegetables containing a high percentage of starch e.g. – pulse vegetables.

b) Aqueous Vegetables i.e. watery vegetables e.g. celery, leaks onions etc.

Puree soups produced from *starchy vegetables* need no other thickening, agent as starch based vegetables act as self-thickeners.Alternatively, puree soups produced from aqueous vegetables need the assistance of a starchy food to effect cohesion. The ingredients most commonly used for this purpose are rice or potatoes.

All the puree soups are passed through the food processer for liquidizing and finally strained through a conical strainer (chinois).Its then reheated for correcting the seasonings and consistency.Puree soup are always garnished with crutons.

English Term-main ingredient	***Ingredient for Garnish***	***French Term***
Puree of haricot bean soup	Chopped parsley	Potage Soissonnaise
Puree of red bean soup	Finish with dry red wine	Potage Conde
Puree of lentil soup	Chopped parsley	Potage de Lentilles
Puree of lentil soup	Diced cooked bacon Pinch of chopped chervil	Portage Conti
Puree of lentil soup	Boiled rice Butter	Potage Esati
Puree of green split pea soup		Potage St. Germain
Puree of yellow split pea soup	Chopped parsley	Potage Egyptienne

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2. Creams Cremes

With only a few exceptions, the principal thickening element used in the production of cream soup is that of sauce béchamel. The recipe balance determines the predominant flavour of the soup.

The classes of vegetables best suited to cream soup production are the aqueous type. Starchy vegetables, in general act as self-thickeners and need no other thickening element.

It is worth mentioning at this stage that there are many soups appearing on the menu as creams, which are basically voloute or puree soups to which cream has been added prior to service. The work `cream' in these instances refers to the addition of cream rather than the underlying principle of cream soup production.

English Term main ingredient	***Ingredient for garnish***	***French Term***
Cream of asparagus soup	Cooked asparagus tips	Crème d'Asperges
Cream of carrot soup	Chopped parsley	Crème de

		Carrottes
Cream of carrot soup	As above plus boiled rice	Cream Crecy
Cream of cauliflower soup	Small cooked sprigs of cauliflower	Crème de Chou-fleur/Dubarry
Cream of celery soup	Cooked julienne of celery	Crème de Celeri
Cream of cucumber soup	Small cucumber balls	Crème Concombre/Doria
Cream of leek soup		Crème Poireaux
Cream of lettuce soup	Shredded lettuce lightly sweated	Crème de Laitue/Judic

English Term main ingredient	***Ingredient for Garnish***	***French Term***
Cream of mushroom soup (1/5 main unit may be used 160 g (6 oz)	Julienne of cooked mushrooms	Crème de Champignons
Cream of onion soup		Crème d'Oignon
Cream of spinach soup		Crème d'Epinards/Florentine
Cream of sweet corn soup	Cooked corn kernels	Crème de Mais/Washington
Cream of vegetable soup		Crème de legumes
Cream of watercress soup	Blanched watercress leaves	Crème Cressonniere

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3. ***Veloute Soups*** Veloutes

The French word veloute translated into English means velvety. This describes the finished texture and appearance of the soup. The principal thickening element is a blond roux or a veloute sauce, which may be flavoured using different stock bases according to requirements. When preparing meat, poultry, or fish veloutes the predominant flavour is determined by the stock used. Alternatively when producing aqueous vegetable veloute soups the flavour of the main vegetable predominates.

In order to achieve the velvety finish required, the liaison of egg yolks and cream is added just before service. Once this has been added the soup must not be allowed to reboil otherwise it will take on a curdled appearance, a result of egg yolk coagulation.

Menu term	***Main stock***	***Ingredient***
Veloute de Vollaille (Chicken Veloute)	Chicken	Julienne of cooked chicken
Veloute de Poisson (fish veloute)	Fish	Chopped parsley
Veloure Dieppoise (mussel veloute)	Fish and mussel cooking liquor	Budded mussels Shrimps/Prawns Chopped parsley
Veloute aux Huitres (oyster veloute)	Fish and oyster cooking liquor	8 poached oysters Chopped parsleys

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4. ***Shellfish Soups*** **Bisques**

Bisques may be defined as thickened, passed, classical seafood soups prepared from a base of fish stock flavoured with selected shellfish and mirepoix. They are enhanced with

wine, brandy and thickened with starch usually in the form of rice. Due to the delicacy of their flavour and the high cost of production bisques are best suited to service at dinner.

Menu Term	***Main Shellfish and preparation***	***Ingredient***
Bisque de Crab (crab bisque)	Crab Claws (cracked)	White crab meat
Bisque de Homard (lobster bisque)	Lobster, split (sack removed from head), claws cracked, remainder cut into pieces	Diced, cooked lobster meat, flavoured with branch)
Bisque de Crevettes (prawn or shrimp bisque)	Whole prawns or shrimps	Cooked prawns or shrimps

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5. **Chowder**

Its a thick variety soup generally made with sea food.The name is the corruption of the French word 'CHAUDIERE' means a heavy pot used by farmers and fishermen to cook soups and stews.The best known French Chowder is 'Bouillabaisse'.It is more like a stew which is an American speciality made with meat , fish ,vegetables along with milk ,pork belly ,tomato concasse and seasonings.Prior to the service crushed cracker biscuits or a thickner.Alternatively Chowder may be thickned with Beurre Manie.

English Term	***Main Shellfish***	***Garnish***
Calm chowder	Clams	Chopped parsley
Mussel chowder	Mussels	Chopped parsley

Oyster chowder	Oysters	Chopped parsley
Scallop chowder	Scallops	Chopped parsley
Seafood chowder	Assorted shellfish	Chopped parsley

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Special & National Soups

Special soups are those that made with unusual ingredients and are prepared by a distinctive method. Also their names should appear on the menu in the language of the country of its origins. So they are termed as National Soups. The examples are as follows.

Boillabaisse a la Provencale (assorted fish soup)…….France.

Busecca (onion,leek,beans,pesto & cheese)…….Italy.

Chicken Broth……...English.

Gazpacho (cold vegetable uncooked soup)……..Spain.

Minestrone…….Italy.

Mock Turtle Soup……..U S A.

Mullugatawny…….India.

Scotch Broth……Scotland.

Olla Porida…….Spain.

Oxtail Soup…….English.

Vichyssoise (cold)……..U S A

Zuppa Pa vese…….Italy.

Stocks
(Fonds de Cuisine)

Definition of Stock

Stock is a liquid containing some of the soluble nutrients and flavours of food which are extracted by prolonged and gentle simmering (with the exception of fish stock, which require only 20 minutes). Such liquid is the foundation of soup's sauces and gravies. Stocks are the foundation of much important kitchen prep therefore greatest possible cares should be taken in their production.

The word "fond" comes from the word "foundation". Just as a foundation is the base for a house, fond is the base for much of cooking. Almost every culinary preparation requires a fond. For all practical purposes, "stock" and "fond" have the same meaning.

Types of Stock

There are four basic kinds of stock/fond: white stock (Fond Blanc), brown stock (Fond Brun), vegetable or neutral stock (Fond Maigre) and Fish Stock (Fumet de Poisson). The classifications refer to the contents and method used to prepare the stock, not necessarily to color.

a. **White stock :** is made with white meat or beef, veal bones, chicken carcasses, and aromatic vegetables. The bones or meat are put in cold liquid and slowly brought to a boil. The mirepoix (a flavoring base of diced vegetables is sweated in suitable fat and then added to the liquid before it develops any color. The mixture is reduced to a simmer to finish cooking. This stock is used for white sauce, blanquettes, fricassee, and poached dishes.

b. **Brown stock** : is made with beef, veal, and poultry meat and bones. The bones are roasted until golden in color, not burnt. (Burnt bones and mirepoix will damage the stock's flavor and color). The mirepoix is added when the bones are three-quarters roasted; tomato product may also be added. When the bones and mirepoix are golden in color, cold liquid is added and the mixture is slowly brought to a boil, then reduced to a simmer to finish cooking. This stock is used for brown sauces and gravies, braised dishes, and meat glazes.
c. **Vegetable stock** : is a neutral stock composed of vegetables and aromatic herbs sauteed gently in butter, then cooked in liquid. This relatively new type of stock is gaining in popularity.

d. **Fish stock (Fume de Poisson):** is categorized separately from the other basic stocks because of its limited usage. The basis of fish preparation is the fumet or fond. It has been said that all fish produce a fumet are equal. Some fish produce better quality stock than others. The result from some fish are stocks which are too gelatinous and fishy tasting. Fish are which are oily yield stock that has a bitter taste or that is milky.

   Classical preparation calls for the bones of specific fish for fumet. Dover sole, turbot, brill and whiting are recommended for their superior flavour. However, the important thing is that the fish is fresh and that its flesh is white. A few guidelines are listed below.

1. Do not use trimmings from oily fish, such as salmon, mackerel, blue fish etc.
2. Flounder or lemon sole will work for sole fumet. Halibut for turbot and striped bass for brill.
3. The freshest local whitefish by any name is what you want.
4. Sometimes the complementary juices of oyster, mussel or clam are added to fish fumet. This liquid should not be reduced. It is used as an additive only.

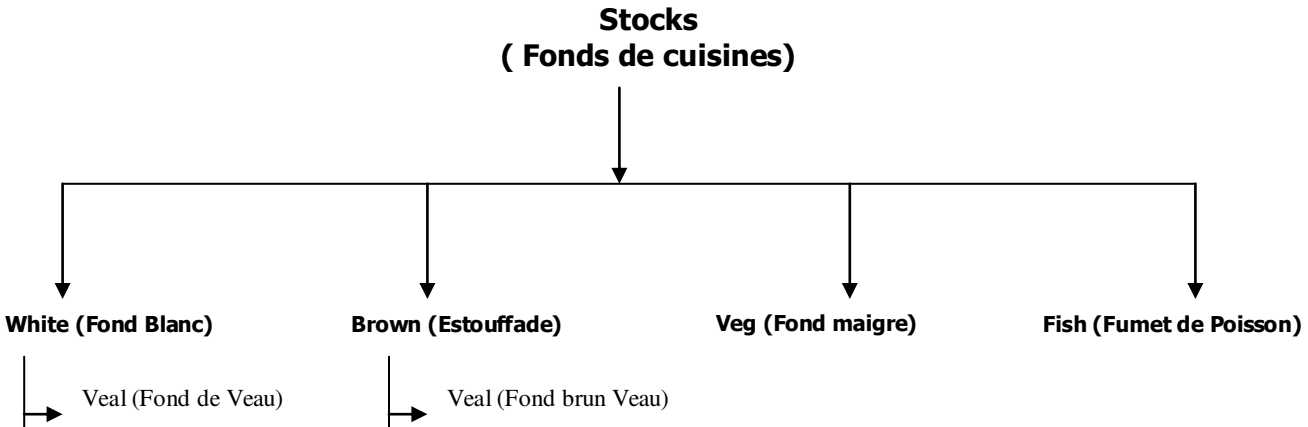
Beef: It is the culinary name for meat from bovines, especially cattle. Beef can be harvested from cows, bulls, heifers or steers.

Veal: The meat of young cattle (calves) bellow nine months of age.

Pork: It is the culinary name for meat from the domestic pig.

Poultry: It is a category of domesticated birds kept by humans for the purpose of collecting their eggs or for the meat. (Chicken, Duck, Goose, Turkey, Ostrich etc.)

Game: It is any animal hunted for food.



3. Preparing Stock

Stocks appear to be a simple item to prepare. Although the ingredients are simple and the cooking method simplistic, you must use great care. This is a base from which you will create a wide variety of other dishes, so the stock must be right. As with any other preparation, you should start with quality ingredients.

Composition of Stock:-

1. Selected bones and trimmings. 50%
2. Mirepoix of vegetables. 10%
3. Bouquet Garni.
4. Mushrooms and tomato trimmings (optional).
5. Moisture / Water. 100%

The four principle steps in producing a quality stock are:

1. Start with cold liquid
2. Allow natural clarification to occur
3. Skim carefully
4. Simmer, do not boil

Beginning with a cold liquid prevents the sealing of the items. This makes it possible to release the flavors of the meat, bones, poultry, etc. into the liquid surrounding them. This interchange occurs whether the bones and vegetables are browned or not.

However, when they are browned a richness of flavor and color is added that is not achieved otherwise.

A high-quality stock has a clear, clean appearance. This requires that it be clarified. Pouring the cooked stock through a fine sieve is not the kind of

clarification that we mean here. Clarification is the removal of the many minute particles that form in the cooking process.

Albumin is a protein complex found in muscles, blood, milk, egg white, and many vegetable tissues. It is soluble only in cold water. Albumin is valued for its property of clarification by coagulation (forming a mass) when exposed to heat. The slower the application of heat, the better the removal of cloudiness from liquid. Bringing stock slowly to a boil gives the albumin time to pass into the solution. As its proteins coagulate, they attract particles in the liquid. The action is similar to that of a magnet. However, as with magnets, when disturbed the albumin will drop the particles.

How Acid Affects Stock:

Acid helps break down the cartilage and other connective tissues in the bones, thus accelerating the formation of gelatin. The acid products used are generally one or another of the following:

- **Tomato:** Brown stocks use some sort of tomato product, usually tomato paste, which also adds color and flavor to the stock.
- **Wine:** White stock and chicken stock sometimes use white wine, and fish stock almost always does.

One thing to remember is that acid reacts with aluminum cookware, so use a stainless steel stockpot for making stock.

Preparing White Stocks

A good white stock has rich, full flavor, good body, clarity, and little or no color. Chicken stocks may have a light yellow color.

1. Cut the bones into 3 to 4 inch (8-10 cm) pieces

2. Rinse the bones in cold water, (if desired, chicken, veal, or beef bones may be blanched)

3 .Place bones in stock pot and cold water to cover

4 .Bring water to a boil, then reduce to a simmer, skim the scum that comes to the surface

5 .***Add the chopped mirepoix and the herbs and spices***

6 . Do not let the stock boil. Keep it at a low simmer
7. Skim the surface as often as necessary during cooking

8. ***Keep the water level above the bones, add more water if the stock reduces below this level***.
9 .Simmer for recommended length of times:

Beef and veal bones	6 to 8 hours
Chicken bones	3-4 hours
Fish bones	20 minutes

Most modern chefs do not simmer stocks as long as earlier generations of chefs did. It is true that longer cooking will extract more gelatin, but gelatin isn't the only factor in good stock. Flavors begin to break down or degenerate after a period of time. The above times are felt to be the best for full flavor, while still getting a good portion of gelatin into the stock as well.

10 .Skim the surface and strain off the stock through a strainer

11 .Cool the stock as quickly as possible, as follows

Preparation of Brown Stock

- ***Browning Bones and Mirepoix*** Brown stocks are made by first browning bones and mirepoix and, if required by recipe, tomato paste or puree. This step starts the process of developing the stock's flavor. Allow sufficient time for ingredients to roast properly for the best end product.

- Rinse the bones if necessary and dry them well to remove any excess moisture. Taking the time to do this will shorten the time required to properly brown the bones. If bones go into the oven when they are wet or still frozen, they will steam before the browning process begins. No one can say for sure that there is a distinct and measurable loss of flavor, but certainly it will increase the time the bones need to spend in the oven, as well as increasing the amount of energy required to cook them.

- Roast the bones until they are a rich brown color

The amount of time required will vary, depending on whether or not the bones had time to defrost and dry, how many bones are packed into the pan, and the heat of the oven.

For small quantities, it may be a good idea to heat some oil in a large rondeau over direct heat, and the bones and cook them on the top of the range. This is nor recommended for large quantities, but it is good way to quickly prepare smaller amounts.

- Add the mirepoix and tomato product to the pan.
  Although some chefs feel that the best-quality stocks are achieved by first removing the bones and beginning he stock-making process, then browning the vegetables later on in the same roasting pan, others consider the time-saving technique of adding the mirepoix and tomato directly to the bones as they roast to be a fair tradeoff.

- Simmer the stock long enough to fully develop flavor, body, clarity, color, and aroma.

- Brown stock normally requires 6 to 8 hours of simmering time.

Stocks Recipes

1. Brown Veal Stock

Veal bones, including knuckles and trim	3.6 kilograms
Oil, as needed	115 milliliters
Cold water or Remouillage	5.75 liters
Mirepoix	450 grams
Tomato Paste	180 milliliters
Bonquet garni	1 each

Method

1. Rinse the bones and dry them well
2. Cut the bones into 3 to 4 inches
3. Brown the mirepoix and tomato puree
4. Combine the bones and mirepoix, water
5. Bring the stock to a boil over low heat
6. Simmer for a total of about 6 to 8 hours, skimming the surface as necessary.

7. Strain the stock

2. White Veal Stock

Veal bones, cut into 3 inch lengths, blanched (optional)	3.6 kilograms
Cold water or Remouillage	5.75 liters
Mirepoix	450 grams
Standard Sachet d' Epices (Bouquet garni)	1 each

Method

1. Rinse the bones
2. Combine the bones and water
3. Bring the stock to a boil over low heat
4. Skim the surface, as necessary
5. Simmer the stock for a total of 6 hours
6. Add mirepoix and sachet d'epices (salt, if used) in the last hour of simmering.
7. Strain the stock

3. Fish Fumet

Fish bones	5 kilograms
Mirepoix	450 grams
Cold water	4.75 liters
Bouquet garni	1 each
White wine	750 ml
Mushroom trimmings	250 gm

Method

1. Prepare mirepoix.
2. Blanch the fish bones
3. In a stock pot add mirepoix, blanched fish bones, white wine, mushroom trimmings, bouquet garni.
4. Simmer for 10 minutes and strain the stock
5. Cover the stock pot with lid.

4. Remouillage

Bones, reserved from preparing stock	3.6 kilograms
Cold water	5.75 liters
Mirepoix	450 grams

Sachet d' Epices (bouquet garni) 1 each

Method

1. Combine all ingredients, and simmer for approximately 6 hours
2. Strain the stock

6. Court Bouillon

A **"short broth"** is often prepared as the cooking liquid for fish or vegetables. The basic components of a court bouillon include aromatic vegetables and herbs, an acid such as vinegar, wine, or lemon juice, and water. A court bouillon may be prepared as part of the cooking process or it may be prepared in large batches and used as required, in much the same manner as stocks.

Fish Stock	2.4 liters
Carrots, sliced	340 grams
Onions, sliced	450 grams
Thyme leaves, dried	pinch
Bay leaves	3 each
Parsley stems	1 bunch
Peppercorns	15 grams
White wine	75 ml
Vinegar (or) Lemon juice	

Method

1. Combine all ingredients and simmer for about 10 minutes.

A la Nage

A French term that refers to poaching and serving food, typically seafood, in a court bouillon with vegetables garnished around the food. The literal meaning is "in the swim"

Cooking a la nage means poaching food, usually seafood, in a court bouillon and serving the court bouillon and the vegetables around the food as part of the garniture. When making a court bouillon to use for cooking a la nage, you should cut the vegetables in a decorative manner, such as julienne. The most notable of this dishes is lobster a la Nage.

White Stock Vs. Brown Stock:

White stocks are used as the base for velouté sauce and various derivative sauces like the allemande and suprême sauces.

Brown stocks are used for making demiglaze and its derivatives, such as Bordelaise and Robert.

Note that beef or veal bones can be used for either white or brown stocks. The difference is that when making white stock, the bones are blanched first, or quickly boiled, then drained and rinsed, before simmering.

For brown stock, the bones are roasted before simmering, and some sort of tomato product is usually added. The roasting and tomato product give the brown stock its darker color.

Preparations From Stock

Meat glace

Meat glace is the reduced stock containing higher percentages of gelatin. Meat glace takes eight to twelve hours .It can be prepared from any kind of stock but the technique works best for the stocks that are rich in gelatin. For this reason meat glace is prepared from the knucklebones which are rich in gelatin. Stocks containing too little gelatin needs too long to reduce and by the time it reduces the flavour of the stock is compromised.

Fish glace

Fish glace is prepared in the same way as meat glace except that the fish stock is used instead of meat stock. Fish glace has a strong fishy taste and flavour ,which it can impart to sauces if used in more than tiny amount .It is better to use reduced court bouillon. If concentrated fish stock is required then a double fish stock is preferable.

Jus

The term jus traditionally describes the light, natural liquid derived from the drippings of the roasts. Because the natural juices are the most satisfying of all the sauces, chefs often use variety of technique s to stimulate the flavour of the natural juices.

Long and slow cooking is not the only stock or jus with the flavour of a specific meat. Although slow simmering will extract much of the gelatin and nutritive element from meats and bones, much of the character, freshness, and individuality of the meat is lost. Many chefs mistakenly assume that the best way

of extracting and intensifying the character of the meat is by long cooking and subsequently reduction. Actually, the best method for extracting the best flavour from the meats is to brown them in a heavy bottom pan with a small amount of mirepoix until their juices are released.
Juices obtained by this method are often termed as “jus”.

Essences

Essences are the extracts made from the vegetables and used as last minute flavoring for sauces; an essence is to vegetable what jus is to meats. In classic sauce making essences are used for final flavoring. The most common essences are mushroom essence, truffle essence and vegetable essence. Any essence is made from its cooking liquid. Simmering the ingredient in water for 15 minutes makes cooking liquid. When the cooking liquid is reduced to $1/4^{th}$ then it is termed as essence.

Remouillage

The word translates as a **“rewetting”,** which is a good way to think of the way that Remouillage is made. Bones used to prepare a “primary stock” are reserved after the first stock is strained away from the bones. The bones are then covered with water, and a “secondary stock” is prepared.

Estouffade

The classic formula for estouffade set down by Escoffier is virtually identical to what was then known as a **brown stock.** There are differences to note, however, Estouffade is prepared by simmering together browned meaty veal bones, a piece of fresh or cured pork, and the requisite vegetables and other aromatic.

Juslié

Meat juice thickened lightly with starch (Potato flour).

Flvouring used in stocks.

1. **Bouquet garni (Sachet d’ Epices)**
   A small bundle of herbs tied with string used to flavour stocks, braises and other preparation usually contains bay leaf, parsley, thyme and possibly other aromatics such as leek and celery salt.

2. **Mirepoix**

Roughly chopped aromatic vegetables e.g onion, carrots, leek, celery in the proportion of 2:1:1:1 used for flavouring stocks, soups ,sauces and stews.

GUIDELINES TO MAKE A GOOD STOCK

1. Use good raw bones - bones that are pleasant smelling and fresh. They should be cracked or cut out crosswise to expose the marrow. Shank and knucklebones are preferred.
2. Use fat free bones. Fat will produce grease in the stock, spoiling its flavour and appearance.
3. Do not wash the bones or you will wash many water-soluble flavour-producing substances. Some Chefs prefer to wash or blanch the bones, but this should not be necessary if they are fresh.
4. Start with cold liquid. Some proteins in the bones are soluble only in cold water. And a cold-water start will produce a clear stock, whereas starting with hot water will produce a cloudy one.
5. Use a tall, narrow pot to minimize evaporation. A certain amount of flavour is lost in evaporation and the rate of evaporation depends on the surface area of the liquid.

THCKENING AND BINDING AGENTS

Thickening agents give body, consistency, and palatability when used. They also improve the nutritive value of the sauce. Flavored liquids are thickened and converted into soups, sauces, gravies, and curries etc. In other words binding agents are used to transform the stocks into sauces.

There are various types of thickening agents, which are used in modern day cookery. They are as follows:

- Starches
- Flour
- Roux
- Beurre Manie
- Fruit and Vegetable Puree
- Egg yolk
- Cream
- Butter
- Blood

A… Starches:

Starches derived from roots and vegetables are among the oldest and the most versatile thickener for sauces. They are efficient and inexpensive and that they can be used without imparting flavour of their own.

Starches should be combined with liquid and heated to almost boiling temperature to be effective. Some starches are purer than others. Cornstarch, arrowroot starch, and potato starch are almost pure starches and produces shiny sauces, whereas flour contains protein, which gives a mat appearance to the sauces.

Cornstarch:

Of the purified starches, cornstarch is the most familiar. They should be used at the last minute for the thickening of the sauces and the cooking liquid that are being served. When it is cooked for long time then it looses its thickening power. Cornstarch is first mixed in water and then used to thicken the sauces and soups.It is also known as SLURRY.

Arrowroot:

Arrowroot is the best of the purified starches because it remains stable even after prolonged cooking. It is used the same way as cornstarch.

Potato starch: (Fecule)

Although potato starch is one of the first starches to be used in French cooking, it has never been popular as a sauce thickener. It is used the same way as the cornstarch and like cornstarch it tends to break down after prolonged exposure to heat.

B…Flour:

In western cooking, flour has long been the most popular thickener for the sauces. It can be used in several ways. Although flour has largely been

replaced in recent years by other thickeners. It is still the appropriate choice for many country style and regional dishes. Liquid in which flour is to be added must be degreased before the flour is incorporated. Flour binds with lamb and holds it in suspension throughout the liquid, making it difficult to skim. Result is a greasy, indigestible sauce with a muddy texture and flavour.

C…Roux:

The most common method of thickening liquids with flour is to prepare a roux, by cooking the flour with an equal weight of butter. This enhances the flavour of the flour and eliminates the lumps. Because flour contains proteins and other compounds that imparts flavor, sauces thickened with roux are usually skimmed for thirty minutes once they have been brought to simmer to eliminate the impurities. Although the stock is skimmed before the roux is added, further the sauce is skimmed to eliminate the butter, impurities in the flour.

There are three types of roux:

- White roux
- Blonde roux
- Brown roux

White roux: it is prepared by cooking flour and clarified butter for approx. 5 minutes over slow heat and stirring constantly with a wooden spoon. It is used for Béchamel sauce and thick soups.

Blond roux : Is made from fresh butter and flour. The preparation of butter and flour are the same as for white roux. It is made more rapidly and should be made at the last before using. Its color should be pale gold. It is used for volute sauce and for some soups.

Brown roux: cooking flour in bouillon fat in the oven, gently and for a long time, removing from time to time to stir, makes it. This roux should be of light brown color. It is used for brown sauce and demiglace.

HOW TO COMBINE ROUX AND LIQUID:

1. When you have a hot roux, combining it with a liquid is a two-step process. In step 1, you add part of your liquid, cold to the hot roux, blending it in with a whisk. In step 2 you blend in the rest of the liquid hot.
2. When you have cold roux, you can combine it with hot liquid, over heat, by blending it in with a whisk a little at a time.

Do not try to combine hot roux with hot liquid and cold roux with cold roux.

D…BEURRE MANIE: (Manipulated Butter)

Like roux, beurre manie contains equal part by weight of butter and flour. It differs from roux because it is not cooked and is usually added at the end of the sauce's cooking rather than at the beginning. It is most often used to thicken stews at the end of the cooking when the braising liquid is too thin.

The beurre manie should be added little by little in boiling stock whisking continuously so that lumps do not form. Unlike roux the beurre manie should not be cooked once the sauce is thickened otherwise the sauce will a floury taste. One of the peculiarities of flour is that develops a strong floury taste after two minutes of cooking that begins to disappear as the cooking progresses.

E …FRUIT AND VEGETABLE PUREE

Sometimes fruit and vegetable puree are used in thickening sauces and soups. The puree soups are the best example of the same

F…Egg Yolk

Because they thicken sauces in several ways, egg yolks are versatile liaison. They provide base for emulsified sauces, such as mayonnaise and hollandaise, and are used in conjunction with cream to finish the cooking liquid of poached meats and fish. Not only form emulsion of fat and liquid but also combines with air so that they be used for sabayon sauce. Sauces containing should not be boiled unless they contain flour, which stabilizes them. When combining egg yolk with liquids, be sure to combine some of the liquid separately before returning the mixture to the saucepan. If the egg yolks are added directly into the hot liquid then they are liable to coagulate as soon as they get in contact with the heat.

G… Cream

In recent years thickened cream has replaced roux as the thickener, becoming base for white sauces.
Precaution should be taken in reducing cream. Quick whisk should be given to the cream otherwise they become granular and may break. Always use large saucepan, three times the volume of the cream otherwise flames from the sides can discolor the cream.
Whenever cream is used, as a thickener in a wine based sauce, are sure to reduce the wine otherwise they giving an unpleasant flavour. Cream used in conjunction with egg yolk, butter, and flour gives a better result.

H…Butter

When butter is whisked into a hot liquid, it forms an emulsion, similar to the action of egg yolk. The milk solids and proteins contained in the butter acts as emulsifier and give butter sauce their sheen and consistency. Because the milk

solids in the butter are what maintain the emulsion, sauces and cooking liquids cannot be thickened with clarified butter. In fact cold butter is proffered to hot butter in thickening of the sauces.

I… Blood

Blood has long been used in cooking to finish sauces for braised or roasted game, poultry, or rabbit. Blood not only deepens the sauces flavour but also acts as a thickener. The blood must be mixed with a little amount of vinegar to avoid coagulation.

Review question

1. **Define Stock.**
2. **Classify stock with examples.**
3. **Give the recipe of white chicken stock.**
4. **Explain the other preparations obtained from stocks.**
5. **Explain the binding and thickening agents.**

UNIFORMS & PROTECTIVE CLOTHING

CHEF'S UNIFORM

Most people take the chefs' uniform for granted, but there are good reasons for each piece of clothing.

- **Chef's jacket:**

  The typical chef's jacket is made of heavy white cotton. This fabric is important because it acts as insulation against the intense heat from stoves and ovens. The cloth is thick enough to prevent the chef from being scalded by hot liquids or spattering hot oil and thermal shocks as the chefs constantly shuttles between the cold storage areas and the hot kitchen areas. Since there are two rows of buttons, the chef can re-button the double-breasted jacket to change sides whenever a side gets soiled during the course of work during a shift.

- **Chef's trouser:**

  Chefs wear either black pants or black and white checked pants.

- **Scarf/ neckerchief:**

  Chefs wear white neckerchiefs, knotted in the front. These were originally designed to absorb perspiration. Nowadays, chefs wear the neckerchiefs to keep the tradition and finish the look of their uniforms.

- **Apron:**

  Usually made of thick cotton fabric and is worn around the waist with the help of a long string reaching below the knees to protect the chefs from any spilling hot liquids. The string of the apron helps to hold the chefs' kitchen towel in place.

- **Kitchen towel/ duster:**

  They help in holding and pick up hot pots and pans and also to wipe hands in order to keep them dry.

- **Chef's hat:**

  The most interesting part of the uniform is the tall white hat; called a "toque." Along with the other conveniences disposable paper hats were invented to look like cloth so that they could be thrown away when they are soiled.

- **Shoes:**

  The shoes should be black and well polished. To prevent slipping the sole should be made of rubber. Black socks a standard in our kitchens (preferably the sweat absorbing cotton variety).

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VARIOUS TEXTURE AND SENSORY CHARACTERISTICS OF FOOD

Flavor

Millions of flavor sensations are experienced in a lifetime. Flavor is an important attribute of a food. It involves the complex integration of sensations from the olfactory center in the nasal cavity, the taste buds on the tongue, tactile receptors in the mouth, and the perception off pungency, heat, cooling, and so on when a food is placed in the mouth. However, much of what we call flavor is a blending of taste and aroma. Other sensory factors may also effect our total experience with food, including its visual appearance and even the sounds of crunching crisp foods such as raw carrots and celery and the sizzle of faitas when they are brought to the table.

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Taste and Aroma

Sometimes the words flavor and taste are used synonymously. In a strict sense, however, taste is only one part of flavor. Taste involves the sensations produced through stimulation of the taste buds on the tongue. It is generally accepted that there are only five primary taste sensations: sweet, sour, bitter and salty, umami. But the perceived flavor of a food involves, to a considerable extent, the sense of smell along with the taste sensations. It is influenced by other senses as well.

Taste buds are found in small elevations, called papillae, on the surface of the tongue. The actual taste sensations are produced when bitter, salty, sweet, or acid substances in a solution contact taste receptors in the taste pore leading to the taste bud. A message is sent to the brain from the taste cells by way of nerve fibres with endings in the taste cells. The brain interprets and identifies the specific taste.

The olfactory center is found at the top of the nasal cavity. To stimulate the olfactory center, substances must be in gaseous form. The gaseous molecules enter the nose as food is placed in the mouth and are drawn toward the olfactory center where they stimulate nerve endings.

Flavor a blend of taste, smell and general touch sensations evoked by the presence of a substance in the mouth

1) Olfactory: having to do with the sense of smell
2) Tactile : having to do with the sense of touch
3) Pungency: a sharp, biting quality

4) Taste : sensations perceived through stimulation of taste buds on the tongue; primary tastes are sweet, salty, sour and bitter

5) Aroma : an odor detected by the olfactory sense
6) Papillae: small, nipple like projections of various shapes on the surface of the tongue
7) Taste receptor : tiny ends of the taste cells that come in contact with the substance being tasted
8)Taste pore : a tiny opening from the surface of the tongue into the taste bud
9)Taste bud : a group of cells including taste cells, supporting cells and nerve fibres
10)Umami : Umami was first identified by Oriental Cooks 1200 years ago, it was'nt until the turn of this century that scientists isolated glutamate and other substance which convey this distinctive flavour.

Glutamate is an aminoacid that is found throughout the human body. Its also naturally present in protein- rich foods such as cheese,meat, fish and human milk. When present in its free form in foods - not bound together with other amino acids in protein - glutamate exerts its umami flavor effect.

MSG added to foods provides similar flavouring function on the "free" glutamate that occurs naturally in foods. It is often used to flavour meats, poultry, sea food, soups, stews, sauces and gravies.

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Texture

The physical properties of foods, including texture, consistency, and shape, involve the sense of touch or feeling, also called the tactile sense. When food is contacted, pressure and movement receptors on the skin and muscles of the mouth and tongue are stimulated. Sensations of smoothness, stickiness, graininess, brittleness, fibrous qualities, or lumpy characteristics may be detected.

Texture is the term used to describe the characteristics of a finished food product. The order in which the ingredients are added, the way of mixing and the method of cooking affect the resulting product.

A good cook should not only be able to distinguish between on texture and another but also be able to produce what he or she wants. Only by observation, experience and perseverance will a person be able to know what the correct texture of a particular product should be. A brief description of some commonly found textures and their correct

occurrence is given below, but it must also be borne in mind that the difference between one texture and another is very fine.

Firm and close: The air bubbles made by the raising agents are many but small, and the mixture is not in the least spongy. The fat included prevents the mixture from being too hard, e.g., in biscuits or plain short pastry.

Short and crumbly: This is similar to firm and close, but more fat is added. Eg.in shortbread or nankhatais.

Spongy: A soft and elastic texture showing inclusion of air, e.g.Swiss rolls, sponge cakes and idlis.

Light and even: Holes are plentiful and of a fair size. The food is firm but not hard or tough. It is neither so short as pastry nor as spongy as sponge cakes, eg. Madeira cake, Queen cake.

Flaky: This is caused by the method of adding fat. Thin crisp layers are formed, separated by air pockets.The flakes themselves should not be tough, eg. .flaky and puff pastry, chiroti, etc.

Coarse: Holes are large and uneven, and the food is sunken in the centre. This brought about by the addition of too much raising agent or too little liquid.

Tough: Coarse mixtures are also tough. Toughness is caused by too much liquid or through incorrect mixing. This will also result if too little fat is added.

Hard: A bad fault brought about by the addition of too much liquid or too much pressure while mixing. Hard mixing. Hard mixtures are usually heavy since the air enclosed in driven off.

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IDENTIFICATION, FABRICATION AND COOKING OF VEGETABLES

Introduction

From the earliest days as a species, man's primary source of food has been plants. Indeed they are the ultimate nourishment for all animals. Unlike animals plants can synthesize organic materials from the minerals, air and sun light and so they are the true origin of proteins, carbohydrates and other complex molecules to animal's life.

As people are becoming more conscious of healthy eating, the serving of a variety of correctly cooked, colourful, attractively presented vegetables becomes increasingly important. This can be achieved in a variety of ways: a small selection of vegetables served on a separate plate to the main course is popular when appropriate, as is the practice of placing dishes of vegetables on the table for customers to help themselves. There are also people who would welcome a small selection of vegetables served as a separate course.

The term vegetable refers to all parts of plants that can be eaten raw, cooked, or preserved in Some form. As a foodstuff vegetable play an important role in the diet of human being. They Provide mineral, vitamin and flavors not available in the meats and fruits. We must keep 2 goals in mind while dealing vegetable: Be aware of all the vegetables available and know about their texture, nutrition, flavor, and their keeping quality. Learn the method of preparation so that we can take care of the flavors, texture, color and nutrition.

As fast world-wide transport is now the norm, the more exotic vegetables, which were previously unknown are now available and caterers, should learn how to prepare, cook and serve them. However, these should not replace but, rather, supplement freshly picked and cooked local

produce, which will always be popular if correctly cooked, of good colour and attractively presented.

When preparing vegetables they should be cooked as close to service time as possible, or prepared and blanched without over cooking. Over cooked vegetables lose their colour and vitamin and nutrient content.

On an average fruits and vegetables contribute 1% of our daily intake of fat, 7% proteins, 10% calories, 20 % niacin, thiamine and iron, 25% of magnesium, 35 % vitamin $B_{6,}$ 50% vitamine A and 90% of our vitamin C. In other words they are the prime source of our body requirements.

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CLASSIFICATION OF VEGETABLES

The vegetables are classified in to different categories like vegetable grown bellow the ground and vegetable grown above the ground. Again another way of classify it is as follows:

Types of Varieties:

1. Roots
2. Green vegetables

FOOD VALUE

Root vegetable is useful in the diet because they contain starch or sugar for energy, a small but valuable amount of protein, and mineral salts and vitamins. They are also good sources of cellulose and water.

The food value is not the same as for the root vegetables, because no food is stored in the leaves, therefore little or no protein is present in green vegetables. They are rich in mineral salts and

vitamins, particularly vitamin C and carotene. The greener the leaf the more the amount of vitamine present. The chief minerals are calcium and iron.

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PURCHASING POINTS:

ROOTS:

1. Must be clean of all soil.

2. Must be firm, round and clear of any spade marks.

GREEN VEGETABLES:

1. They must be absolutely fresh.

2. The leaves must be bright in colour, crisp and not wilted.

3. Cabbage and Brussels sprouts should have tight growing leaves and must be compact.

4. Peas and beans should be crisp and of medium size. Peas pods should be full and beans should not be stringy.

5. Blanched stems must be firm, white, crisp, and free from soil.

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Composition and nutritional value

Most vegetables have a very high water content, a low calorific value and contain many of the substances vital to man's health; mineral salt, vitamins organic acids, carbohydrates, fiber and

very low quantity of fat. The proportion of these elements varies from one vegetable to another. Potato is very rich in starch; marrow has very high water content, while carrot, corn and onions contain a high degree of saccharose. Vegetable plants whose fruits we eat are rich in potassium leaf and flower are rich in iron. With the exception of legumes, which have a high protein content, vegetables have only traces of proteins, varying from 1% to 4%. Vegetarians must ensure that they eat plenty of legumes, preferably at the same time as cereals, which maximize the absorption of proteins. Not all vitamins are present in the vegetables. Vitamin A and C predominate and together with mineral salt are found mainly in the larger, older and, and external leaves which are too often discarded. A proportion of vitamin content is also liable to be lost if the vegetables are not used fairly soon after harvesting. Prolonged soaking in water and certain cooking methods further deplete their nutritional value. All vegetables contain organic acids, which are of crucial importance in maintaining the alkaline balance in our bodies, and in helping to eliminate toxic substances; they neutralize the acids, which we produce as a result of physical and psychological stress and help to counteract the harmful side of the diet too high in protein and animal fat.

Fiber, in form of cellulose and lignin, simply work its way down the digestive tract and is not absorbed into the blood stream. This does not mean that we can do without these substances; as by their mere presence these substances can help the body to eliminate potentially carcinogenic substances present in certain food. They also help to lower the level of glucose and fatty acids in the body. And prevent chronic constipation and its consequences.

Legumes have special properties unlike other vegetables they have a high-energy value being rich in carbohydrates. **THIS IS VEGETABLE PROTEIN** often referred to as noble protein, which is much suited to man’s digestive system than animal protein. Vegetables may be called

poor man's meat because they are so cheap and plentiful but an increasing number of people who can well afford to pay for the most expensive cut of meat are opting for this healthy alternative for some, if not all, of their meals.

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STORAGE

1. Roots should be emptied out and stored in bins and sacks.
2. Green vegetables should be stored in well-ventilated racks.
3. Salad vegetables must be stored in a cool place.

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Classification:

Broadly the vegetables can be divided in the following categories family wise:

1. **Roots and Tubers 2. Pods, Seeds and Corns 3. Fruit vegetables. 4. Gourds and Squashes 5. Greens and Salad Greens 6. Cabbage and Brassicas 7. Mushrooms and Truffles. 8. The Onion family 9. Stalks and Shoots 10. Pulses**

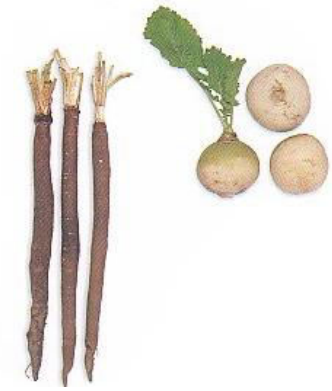
- **ROOT AND TUBERS:** It grows underground and include potatoes, sweet potatoes, yams, carrots, turnips, parsnips, celeriac, beetroot, Jerusalem artichokes, kohlrabi (technically a cabbage), salsify, red and white radishes and mooli are also root vegetables. Root vegetables need to be cleaned well to remove soil, which can be a source of contamination. The bacteria *Clostridium Perfingens* and *Bacillus Cereus* are present in soil and are very harmful.

  Most root vegetables are store well in a cool , dark place. Most of them need to be cooked until just tender and general rule is to start cooking in cold water, bring to boil and simmer until tender to avoid breaking up. Roots and tubers are extremely versatile and can be cooked in many ways: steamed, boiled and mashed, sautéed, baked, fried or gratinated. Their higher water content makes them ideal for microwave cooking. Most of them needed to be peeled before cooking although young potatoes and carrots can be trimmed and scrubbed.

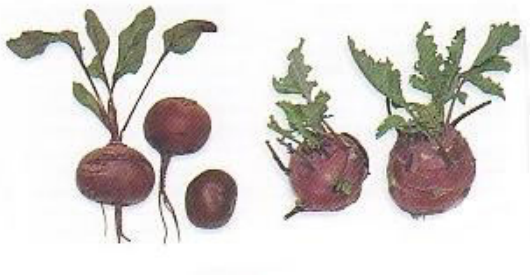
  Key points

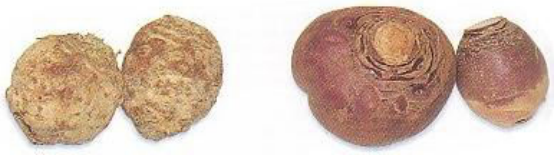
- Do not refrigerate potatoes as low temperatures cause the flesh to blacken.
- Potato turns green and become toxic if exposed to bright light .This is called **Solanin.** So store them in a cool dark place.
- Potatoes discolour when exposed to air, so if preparing ahead, peel and drop into a bowl of cold water till the actual cooking begins. The discolouration is the work of an enzyme known as **Polyphenoloxidase**, which oxidizes **phenolic** compounds in the tissue and causes them to condense into brown or grey polymers.

Black Salsify **Turnip** **Carrot** **Parsnip**



Beetroot **Kohlrabi** **Celeraic** **Swede**

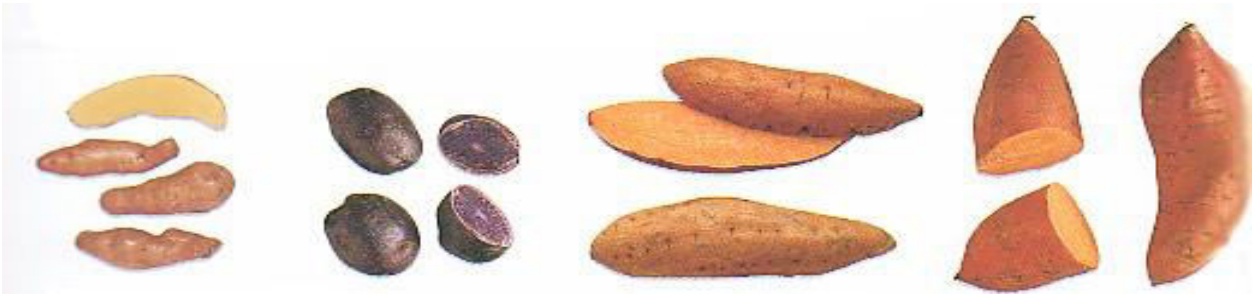




Jerusalem Artichoke **Yam**

Icicle **Black** **Mouli**

Scarlet Globe **French Breakfast**



Salad Potato **Blue Potato** **Orange Sweet** **Yellow Sweet**

All Purpose yellow **All Purpose white** **New potato** **Baking potato**

- **PODS, SEEDS AND CORNS:** This group of vegetables are the seeds of their plant; sometimes only the seed is eaten like green peas, otherwise whole pods are eaten like mange-tout. Although the corn is technically a grain, the kernels are the actual plant seeds. These vegetables are generally high in protein and carbohydrates.

- Beans and pods are the vegetables with double seamed pods containing a single row of seeds; this group contains a huge variety of green beans from round the world. In spite of regional differences, most of them are prepared and cooked in similar ways. Shelled peas and beans like garden peas and fresh broad beans are removed from the pods to eat fresh. Others are left to dry. The best examples are

  Broad Bean: Can be used as a salad item, mainly used as a hot vegetable dish.

  French Bean: Used as a hot vegetable dish.

  Runner Bean: Large ones can be stringy and tough.

  Mange touts: Crisp flat underdeveloped pea. Stir-fried or sautéed.

  Peas: Should be firm and crisp, sugar snap peas should be cooked like Mange tout.

  Kenya Beans: Similar to French bean but grown in Kenya.

Key points

- Green vegetables, unlike root vegetables, are best cooked by dropping into boiling salted water and boiling rapidly for 2 to 10 minutes until just tender. Remove and refresh them in cold water which makes them crisp, crunchy with a bright colour by arresting the carry over cooking.
- To prepare okra, do not wash them until ready to cook. Use a small sharp knife, trim off the stem evenly. Avoid piercing it. Always choose a non corrosive pan to avoid discoloration.
- While boiling corn in boiling water. Add 1 tablespoon of sugar and boil about 5 minutes to make bright white in colour.

Dragon tongue beans **Snap beans**

Haricot verts / French Beans

Italian Runner beans

Sator

Wax beans

Chinese long beans

Fresh peas

Fresh Fava beans

Fresh lima beans

- **FRUIT VEGETABLES:** Botanically speaking, tomatoes, aborigines, sweet peppers, avocados, pumpkin, squashes are fruits, but are usually treated as vegetables in the kitchen. Each of them requires different preparations and cooking techniques. Although each of them can be used as principal ingredient and can also be used as background or flavouring for other ingredients.

  Vine ripened tomatoes have an intense perfume and superior flavor and texture but they are extremely fragile and do not travel well.. They are only available during the summer and in early autumn. Green house and hydroponic tomatoes (grown in water without any soil) often look good but lack of flavor, but they are available year round. There are many varieties of tomatoes available, ranging from the giant beefsteak tomato to thumb nail sized cherry tomatoes.

  Other fruit vegetables types are

  Tomato: Should be ripe and red, Cherry, Beefsteak, Plum.

  Avocado: Must be ripe; soak in Lemon juice after preparing.

  Aubergine: Egg plant, when prepared sprinkle with salt, removes excess water.

  Cucumber: Used in salads, baby cucumbers are called Dills.

  Capsicum: Peppers, green, yellow, red, black, white, orange.

Courgette: Also known as by their Italian name Zucchini.

Okra: Also known as Ladies fingers.

Baby Sweet corn: Good source of Vitamin C & B1.(Marrow and Courgette are also known as a fruit).

Key points

How to prepare tomatoes for Blanching?

- Remove the eye of the tomato by using a sharp small knife.
- Score the bottom of the tomato by making an X, just penetrating the skins.
- Drop the tomatoes into the rapidly boiling water for 10 to 20 seconds depending upon the ripeness. Remove and **refresh in iced water**.
- Remove the tomatoes and peel off the skin.
- Cut each tomato into halves and squeeze out the seeds. Use the knife to scrape out any remaining seeds or quarter each tomato and with a sharp knife remove the seeds. Slice or chop as recipe directs.

Tomatillo

Cherry tomato

Grape tomato

Green tomato

Teardrop tomato

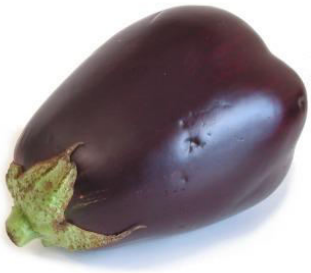
Plum tomato

Vine tomato

Globe egg plant

Apple eggplant

Indian eggplant



English cucumber

Japanese cucumber

Yellow pepper

Green pepper

Red pepper

Pimento

Cayenne pepper

Okra

Jalapeno pepper

Babycorn

Poblano chilli

Avocado

Yellow zucchini

Green zucchini

- **GOURDS AND SQUAHES:** Squashes are the members of the gourd or ***Cucurbitaceae*** family which contains hundreds of varieties round the world. Gourds tend to be found in warm regions such as Africa and India, but most squashes are the native to America. There are many varieties in a huge range of colours, shapes and sizes but for the cook they can be divided into **summer squashes** and **winter squashes.**

<u>Key points</u>

- Winter squash come in many sizes and shapes, but all have hard outer rinds that surround sweet, often orange flesh. Winter squash arrive late in the growing season and they have

a long shelf life, so they've long been a staple in winter and spring, when other vegetables are harder to come by. Unlike summer squash, winter squash must be cooked. They're usually baked or steamed, and then sometimes puréed. Select squash that are heavy for their size.

- Summer squash, characterized by courgette, is soft skinned with a mild tender flesh. Unlike winter squash, summer squash can be eaten rind, seeds, and all. They can be lightly cooked by boiling, steaming or stir frying. Larger varieties can be hollowed out for stuffing. The different varieties vary in size, shape, and color, but they can be used interchangeably in recipes. Select summer squash that's small and firm.

Acorn squash **Banana squash** **Butternut squash**

Golden nugget squash **Pumkin** **Spaghetti squash**

Turban squash **Chayot** **Globe squash**

Pattypan squash

Scallopini squash

Indian bitter menon

Chinese okra

Fuzzy melon

Winter melon

- **GREEN AND SALADGREENS:** Green refer to the white variety of green leafy vegetables, some of which can be eaten raw, but which are often cooked. Greens are eaten in most countries round the world. Some green like mustard greens, sorrel, spinach, watercress and turnip greens have astrong peppery flavour. Other greens like lettuce lettuces and salad greens are always eaten raw. Green can be roughly divided into 2 categories; **hearty greens(most oftely cooked)** and **salad greens (most commonly eaten raw).** All greens have a very high water content and shrink drastically when cooked . Allow at least 225 grms / portion if the greens are cooked.

  Hearty greens: Many of these sturdy leafy vegetables (sometimes called pot herbs) can be eaten raw in salads when they are young and tender, but they are rarely found at this stage. Most of them are older and tougher and need cooking to tenderize them and soften their robust flavour.

  Salad greens: The major salad greens, lettuce can be divided into crisphead and butterhead or soft leaf salads. Trim off the root and wash well. Always dress salads gently at the last minute, so dressing does not wilt the leaves.

Key points

- **Preparing greens:** Wash all greens well to remove any sand and grit. Immerse in a sink or bowl of cold water and soak for 3-4 minutes. Gently lift out of the water into a

colander to drain. Repeat several times until no sand or grit remains on the boyyom of the sink or bowl, shake well and pile leaves in a colander.

- Remove any large ,tough stalks from spinach , kale or other greens by gripping the leaf with one hand and pulling stalk up and away from the leaf
- Some greens like spinach only take seconds, while others benefit from longer cooking. To cook spinach , put the leaves in a saucepan with just the water which clings to the leaves from washing. Set over amedium heat and cook gently until just wilted for 2-3 minutes or stir fry in a little butter or oil until wilted for 1-2 minutes. To blanch, dip in to boiling water for 30 seconds followed bt refreshing in ice chilled water. If using spinach or other greens in another preparation such as creamed spinach or a braised dish, turn into a sieve and pass out as much liquid as possible with a wooden spoon. Use leaves whole or chop as recipe directs.

Types of leafy vegetables:

Rocket lettuce **Belgian endive** **Bibb lettuce**

Boston lettuce

Cress

Curly endive

Dandilions

Red endive

Iceberg lettuce

Lollo rosso

Radicchio

Romaine lettuce

Kale **Kohlrabi greens** **Sorrel**

Spinach **Malaber spinach** **Mustard greens**

- **CABBAGE ABD BRASSICAS:** Cabbage is a member of *Brassica* family , one of the oldest vegetables cultivated by man. There are many kinds of cabbage, mostly characterized by round heads pf compact leaves, though some are flattened, elongated or more loosely packed. It is generally a cold weather vegetables, inexpensive , widely available and easy to prepare and cook. It can be eaten raw as in **coleslaw,** pickled as in **sauerkraut** or cooked in wide variety of ways. Do not over cook cabbage , as it becomes soggy and has a very unpleasent smell. Look for a cabbage, heavy for their size, discarding any tough outer leaves.

  White cabbage sometimes called round or **Dutch cabbage**., is the most common. Usually trimmed off its darken , tough outer leaves. It has a pale green head and solid core with robust flavour. It can be shredded for crisp salads or coleslaw, stirfried, braised

, boiled , simmered in soups or stuffed. **Savoy cabbage** or curley cabbage has slightly looser leaves and a purple tinge and is more delicate in flavour.

Red cabbage has a brilliant purple colour and and slightly sweeter taste. It needs longer cooking time than white cabbage and is often braised with onion and apple to accompany duck or games. An acid such as vinigar is usually added to set the colour. A little sugar usually complements the acid, giving it a sweet and sour flavour.

Chinese cabbage has pale greenish yellow elongated leaves. It is milder in flavour than white cabbage, can be eaten raw or cooked and is an ingredient in many Chinese stir-frier.

Key points

- **Brussels sprouts** are the miniature cabbages originated in Belgium where they are grown on thick stalks. Rarely eaten raw. They have a strong nutty flavour, which goes well with games, ducks and other rich meats. They are some times braised with cashewnuts and are a traditional accompaniment to Christmas turkey. Boil or steam until just tender for 7-10 minutes.
- **Broccoli and cauliflower** are the members of the cabbage family. Both of them have tightly grouped flower buds coming from a single stalk. They can be eaten raw in salads and crudité platters or cooked in a variety of ways, whole or separated into florets. Boil or steam florets until tender for 5-10 minutes.

Bok choy **Brussels sprouts** **Flowering kale**

Green cabbage

Kohlrabi

Napa / Chinese cabbage

Red cabbage

Savoy cabbage

Broccoli

Cauliflower

Broccolini

broccoli Romanesco

- **MUSHROOM AND TRUFFLES:** Mushrooms, the members of the fungi family are one of the oldest food eaten bt man. There are many different varieties which vary in size,

colours and flavours but all have a central stalk with an umbrella shaped cap. There are two types of mushroom; cultivated and wild. Most of them are prepared and cooked in the similar ways. The cultivated mushroom or common white mushroom has been successfully produced since the late 1800's. Very young, closed cap mushrooms are called **button mushrooms**. They are mild in flavor and widely available all round the year. Flat mushrooms, sometimes called field mushrooms or **Portabella** are ideal for grilling. A growing number of previously wild varieties are now being cultivated. Mushrooms like **Shitake, Enokitake, Cloud ears** and **Oyster** are all now widely available.

Wild mushrooms are found all over the world, most frequently in late summer and autumn, in many woods and fields providing the perfect conditions. The flavor is intensely earthy and should always be cooked before eating. Many mushrooms can be dangerous, so do not pick or gather wild mushrooms unless you are accompanied by an expert. Wild mushrooms such as **Morels, Cepe or Porcini and Chanterelles** are all expensive, but so highly flavoured that a little goes a long way. Some of them are available in dried form.

The most famous fungi are the **truffle.** This pungent, black treasure is really a tuber, sniffed out of the oak forest of **French Perigord (black)** and **Italian Piedmont (white)** by pigs or dogs.

Truffles have fascinated people for thousands of years. Their attraction is a tantalizing taste and aroma, which once experienced, can never be forgotten. The taste and aroma of commercially collected truffles is so intense that they are used as a flavoring instead of a separate dish. Magical powers and virtues have even been attributed to truffles. They

have been collected for at least 3600 years. Growing underground, they are difficult to find and very expensive as a result.

Key points

- Cultivated mushrooms should not be washed before using. If they are very earthy or sandy, plunge quickly in cold water, drain and dry immediately. Trim the stalks.
- Wild mushrooms are often very sandy and do need washing.
- Morels sometimes need soaking to draw out sand.
- Use a stainless steel knife for cutting mushroom to avoid discoloration.
- Sprinkle with little lemon juice to prevent darkening if preparing ahead or chopping a large quantity.
- Wrap fresh mushrooms loosely in Kitchen paper and refrigerate for up to 3 days. Do not store in plastic bags as the moisture will cause rapid deterioration.

Abalone cap mushroom

Black trumpet mushroom

Clamshell mushroom

Cloud ear mushroom

Enoki mushroom

Hedgehog mushroom

Morels

Porcino

Portobello mushroom

Shiitake mushroom

Truffles

Button mushroom

Oyster mushroom

Chanterelle

Lobster mushroom

- **THE ONION FAMILY:** This strong flavoured , auromatic vegetables are the members of the *Lily family*. Onions, Spring onions, Leeks, Shallots, Garlic are sometimes used as vegetables but are most often used as flavourings in other dishes. Chieces are only true herb in the onion family. Onions vary in colours, size, texture and flavour and are used in every cuisines round the world. The characteristic flavour of the onion family is due to the presence of the volatile substance known as Allyl propyle disulphide which is very strong and pungent and the eyes watery.

Green onion

Leek

Spring onion

Red onion

Shallot

Elephant garlic

Garlic

Pearl onion

Bermuda onion

- **STALKS AND SHOOTS:** These are vegetable plant stems which contain a high percentage of cellulose fiber. The vegetables like asparagus, celery, cardoon and artichokes tend to be crisp when raw and highly aromatic when cooked. Asparagus can range from pencil thin to jumbo. Fresh green asparagus is most popular in Britain. Cardoon is Mediterranean vegetable, is more closely related to artichoke. Although its flavor is between artichoke and celery.

  You can buy fresh shoots at some Chinese markets, but you must boil them first to rid them of hydrocyanic acid, a toxin that causes cyanide poisoning. Canned shoots are safer and more widely available. Rinse them well before using. Submerge any unused shoots in fresh water and store them in a sealed container in the refrigerator, changing the water daily.

  Examples are :

  Celery: Used in Bouquet Garni, Soups or salads.

  Chicory: Used as lettuce

  Fennel: Bulb like with a strong flavour, used in salads.

  Asparagus:3 main types with white, green & purple heads.

  Cardoon: A relation of the Globe Artichoke prepare like Celery.

  Fiddlehead Fern: A mixed flavour of Asparagus & French Beans.

Asparagus

Bamboo shoots

Cardoon

Celery

Fennel

Fiddlehead

White asparagus

Wild asparagus

Rhubarb

- **PULSES:** Pulses which includes dried peas, beans and lentils are the edible seeds of pod plants. Most commonly sold dried. They are very high in protein and carbohydrates. There is tremendous range of dried beans, peas and lentils which vary in size, colour and shape. Most of them needed at least 4 hours of soaking but can be left overnight to save

time. Soaking is not must for lentils or split peas, although it will shorten their cooking time.

Key points

- Most pulses must be boiled rapidly for the first 10 minutes to remove the toxin on the skin. Reduce the heat and simmer gently till it become tender.
- Take 3 parts of water and 1 part of pulse for boiling.
- Lentil and split peas do not need the above mentioned treatment.
- Salt and other seasonings should not be added to pulses until they are cooked, as they toughen the skin. Add them about 10 minutes before the end of cooking time to improve the flavor.
- Test the beans for doneness: the interior should be soft but the skin firm.

Black-eyed pea **Chickpea** **Yellow pea**



Green pea **Azuki bean** **Fava bean**

Pinto bean

Red kidney bean

Butter / Lima beans

Borlotti bean

Calypso bean

Cannellini bean

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<u>Pigments and colour changes and effect of heat</u>

When we look at plant life in the moderate Oregon climate, we see many different natural plant colorants. This can be seen in the mountains and forests as well as in the grocery display case. The type of pigment is going to influence the plant colorant. Plant colors are not entirely dependent upon the plant pigment alone. Many factors influence pigment color. In addition to pigment interaction and the presence of acids, bases, and salts, the ripeness of the food is an important contributing factor.

The color of fruits and vegetables are either fat-soluble or water-soluble pigments. However, many of the other constituents in the plant impact the resulting color of the pigments.

olour	Phytochemical	Fruits and vegetables
Green	Glucosinolates	Broccolo, kale
Orange	α- and β-carotene	Carrot, mango, pumpkin
Red	Lycopene	Tomato
Red-purple	Anthocyanins	Grapes, blackberries, raspberries, blueberries
Orange-yellow	Flavonoids	Honeydew melon, peach, papaya, orange, tangerine
Yellow-green	Lutein and zeaxanthin	Spinach, corn, avocado, melon

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PROCESSING OF PIGMENTS TO GET OPTIMUM RESULT

The following table summarizes the affect of heating, acid and alkali on color during the heating of a fruit and/or vegetable. It indicates the stability of each pigment.

The best way is to start from terminology. Fiber is the texture in vegetables and it is the substance in food that helps stimulate the intestine to move it contents along. It is a very

important factor in everyone's diet. Older vegetables contain more fiber than tender young ones. Fiber is made firmer by acids, so when an acid is present the vegetable must be cooked longer to soften it. Fiber is softened by alkaline and by cooking. Hard water and some salts in the soil are alkaline. The fiber structure is made of cellulose and pectin. The cells are where water, starch, sugar, vitamins, minerals, and flavor compounds are stored. Vegetables cooked in small amounts of water, steamed, or braised have the most vitamin retention and they maintain the best color and flavor.

The different color pigments are also an important issue as to how they should be cooked. The red in tomatoes is called lycopens. This pigment is very stable to heat and the color is not affected by acids or alkaline. Now beets and red cabbage have a pigment called anthocyanin. Acids help maintain its bright red color and alkaline can make it look bluer. It is water soluble, which can leach some of the color and make it look paler. If you cook red cabbage uncovered some of the strong sulfur can be released. Carotenes, the yellow and orange pigment in vegetables are very similar to Lycopene and are stable to heat and not affected by acids or alkaline and is not water soluble. Strong tasting vegetables like turnip and rutabagas should be cooked uncovered so some of the strong flavors will become milder. Your green vegetables contain chlorophyll. By adding baking soda, an alkaline, to the water the vegetable becomes greener, but this method destroys its vitamins and the new green color looks almost artificial, so it should not be used. Green vegetables are naturally acid so they should be cooked slowly and uncovered, so some of the acid can escape.

When a vegetable is taken right from the garden, it has a higher sugar content and tastes sweeter. The sugar in corn, beets, and peas turn to starch the longer that they are kept before service. Adding a little sugar to the water does restore a little of its sweetness. Most of the flavor in vegetables come from its oils. By adding a little oil to the water, it will hold in some flavor as does salt. White vegetables have a pigment called flavones. White vegetables like cauliflower or the white of zucchini and cucumbers stay white in acid and turn yellow in alkaline. Some acids associated with vegetable cooking are cream of tartar, vinegar, lemon juice and tomatoes.

Vegetables can be classified as roots, bulbs, tubers, seeds, stems, flowers, leaves, and fruits of plants. Some are hearty like potatoes, carrots, and onions and can be stored for months in a cool,

and dry place. There are also spring, summer, and fall vegetables. So it is best to treat and cook each vegetables based on its own character.

Name of Pigment	**Color**	**Solubility**	**Effect of Acid**	**Effect of Alkali**	**Prolonged Heating**
Chlorophylls	green	slightly	changes to olive green(phaeophytin)	intensifies green (chlorophyllin)	olive green (pheophytin and pyropheophytin)
Carotenoids	yellow and orange; some red or pink	slightly	less intense color	little effect	color may be less intense
Anthocyanins	red, purple, and blue	very soluble	Red	purple or blue	little effect
Betalains	Purplish red; some yellow	very soluble	little effect	little effect	pale if pigment bleeds from tissue
Anthoxanthins	white or colorless	very water soluble	White	yellow	Darkens if excessive

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POINTS TO BE REMEMBERED BEFORE COOKING VEGETABLES

- Do not refrigerate the potatoes as low temperature break down the colour of potatoes.
- Sometimes potatoes turn green due to exposure to the sun light which is toxic by nature, so they must be stored in a cool dark place. This effect is known as SOLANINE.
- After peeling potatoes, should be dropped in water prior to cooking to prevent the discoloration. This occurs because of an enzyme called POLYPHENOLOXIDASE which oxidizes phenolic compounds to brown coloured polymer.
- Green leafy vegetables should be washed thoroughly in running water at least thrice to remove the dirts and cooking process should be conducted in an open pan as green vegetables have a volatile acid in them which affect chlorophyll in presence of heat to make them discolored.
- The red vegetables like red cabbage ,beet root should be boiled in a close chamber before fabricating to ensure that they are retaining their original colour
- The sweet corn or baby corn should be boiled with one table spoon of sugar to enhance their white colour.
- Cultivated mushroom (fresh mushroom) should be washed in cold water without rubbing it; otherwise it will be losing its natural delicacy. If they are very sandy just rinse them in chilled water and dry them up with a cleaned cloth.
- Use stainless steel knife for chopping the mushrooms to prevent discoloration.
- Always sprinkle some lime juice before chopping the mushroom to prevent discoloration.
- Most of the pulses must be boiled rapidly for 10 minutes to remove their toxic effect in the skin. Drain well followed by a slow cooking process will always give the best results.
- Take three parts of water with one part of pulses for boiling.
- Salt and other seasonings should be added once the pulses are absolutely tender.

CLASSIFICATION OF FRUITS

Fruit may broadly be classified under the following heads (non-botanically):

1. **CITRUS FRIUTS:** This group includes lemons, limes, citrons, oranges, grapefruit etc. They are juicy fruits with a prominent sweet and sour taste and are high in Vitamin C content. Such fruits are cultivated in the regions which have Mediterranean type of climate, i.e. cold and dry winters and warm and sunny summers with scanty rainfall. Citrus species originate from South-East Asia. They hybridise readily and there are numerous cultivated forms. The main species grown in New Zealand – mandarins (*Citrus reticulata* and *C. unshiu*), lemons (*C. limon*) and oranges (*C. sinensis*) – are evergreen trees.

   Citrus fruits have a wide range of uses. Some of them are used for flavouring starters and main courses. Because of their bright colours, they garnish many dishes and beverages. The meat of the fruits are also eaten raw in fruit salads or by themselves, especially at breakfast.

Key points

- They are rich in vitamin C and potassium, have an acid flavour to varying degrees.
- citrus fruits are much used in cooking, they are at their best when served fresh, with the exception of lemon and lime which are too acid
- Vitamin c is still essential to health because it prevents scurvy and eating citrus fruits or drinking their juice is the most pleasant way of ensuring that the body has vitamin.
- Citrus fruits are used in soups, savoury stews and salads soufflés and mousses. In valuable as decoration, their vivid colours complement almost all foods.
- Oranges are widely used in desserts, patisserie, and confectionery, for fruit salads, dessert creams, jams and marmalades.
- The candied peel is also used in numerous desserts and cakes, either as an ingredient or as a decoration.

- The pigment of citrus fruits is carotenoids the colour of which commences to show through during ripening when the chlorophyll green begins to disappear out that the reddish to purplish colorations found in blood oranges are due to presence of anthocyanins.

EXAMPLES

- **Oranges:**There are different types of oranges, some with yellow flesh and blood oranges with red flesh. Oranges are sometimes eaten fresh or made into juice. They are also used in desserts and for garnishing different dishes. The peel can also be grated for flavouring purposes.
  - **Navel oranges** are characterized by a navel- like depression enclosing a small internal embryonic fruit. They are seedless and appear from the end of October.
  - **Thomson oranges** have a very fine smooth shiny skin, have highly coloured fibrous pulp, not very sour and moderately juicy but with a good flavour
  - **Washington oranges** have a firm rough skin, are juicy and slightly sour. Navel oranges are mainly grown in Italy and have a particularly rich flavour, reminiscent of berries. Another variety, the aromatic pineapple orange, is full of pips and is commercially used for juice.
  - **Blood Oranges** have a dark red pulp and the skin may be veined with dark red. They are available from December to April.
  - **Mandarins** are small, slightly flat, loose skinned oranges with a sweet taste. Perhaps the best known mandarin is the tangerine. The Japanese Satsuma is a Clementine (a bitter orange and tangerine cross) is bright orange red with a pebbled skin and tangy sweet flavour

- **Lemons:** A ripe lemon has a bright yellow peel and is light yellow in color inside. It has tart taste. It is mainly used for flavouring food, especially fish. It is also used in drinks. The peel is grated and used to add flavour to different dishes. The fruits are large or small with smooth thin or thick knobby skin, generally, plump lemons, heavy for their size and with smooth oily skins, have less peel and more juice than large, knobby skinned lemons.
- **Limes:** Limes are used in the same way as lemons in cooking and different beverages. The juice and the peel are what you use from it. As with lemons, limes are not usually eaten raw like oranges.A small fruit, similar to lemon but rounder, and with green-yellow thin skin and tart yellow flesh.it may be substituted for lemon in cooking.it is much used in curry dishes but is more expensive than lemons.
- **Grapefruits:** Grapefruit are either white- fleshed with a yellow rind or pink fleshed with a pinkish blush to the rind. The two differ little in taste, which depends more on the presence of pips than on colour. Fruits with many pips have a pronounced flavour and are grown for canning, while the milder, pip less varieties are usually eaten fresh or in salads**.**
- **Shaddock:** The shaddock (also called pummelo or pomelo) is the largest citrus, resembling a large grapefruit with coarse, bittersweet dry flesh with a greenish, yellow or pinkish skin. It was brought from south East Asia to the new world by a Captain shaddock in 1696.
- **Kumquat**: The smallest citrus is the tiny, orange oval kumquat, which originated in the east but is now grown mainly in Brazil. The fruit has distinctive sweet sour flavour, the

sweetness is especially evident in the rind and kumquats are usually eaten unpeeled. They are deliciously fresh, but may also be candied.

- **Tangelo:** This specialty fruit is a cross between a tangerine and a grapefruit. (The name comes from pomelo, the European term for grapefruit.) The fruit is fairly large, with an easy-peeling rind and few seeds. The deep orange flesh is best when peeled and eatenout of hand for lunch or snacks, but it also can be used for juicing

ORANGE

LEMON

LIME

GRAPEFRUITS

SHADDOCK

TANGELO

2. **FLESHY FRUIT:** This group includes apples, pears, bananas, melons, pineapple etc. These fruits are fleshy in nature and may be with or without the fruits. The taste may vary from fruit to fruit and the climate conditions required for the cultivation may also vary like in India,

apples are grown in the cold hilly tracks while melons are grown in the 'Khaddar' region of river Ganges in Uttar Pradesh.

- Pears are high in fiber and potassium. They have different texture and flavor. Pears are mostly used as fresh fruit but can also be preserved. They can be used in pastry dishes as well.
- Apples are high in vitamin C, potassium and fiber. Many of the apple nutrients are in the peel. Apples are often used in cooking and in desserts. You can eat them raw, dried and baked. There are also used to flavour drinks. There are over 1,000 different apple varieties in the entire world. Apples are divided into categories based on which season they mature or their graininess, sweetness or sourness.

3. **STONE FRUITS:** Apricots, peaches, plums, mangos, cherries, custard apples, litchis etc. come under this group of fruits. These are the fruits that have a stone in the center which is then surrounded by fleshy part all over.
4. **BERRY FRUITS:** This group includes red, black and white currants, cranberries, strawberries, raspberries, gooseberries, grapes etc. Most of the fruits falling under this group are not cultivated in India with the exception of grapes and a little cultivation of raspberries, gooseberries and strawberries.
5. **NUTS:** Coconuts, sweet chestnuts, almonds, walnuts, pistachio nuts, cashew nuts etc. all fall under this group.

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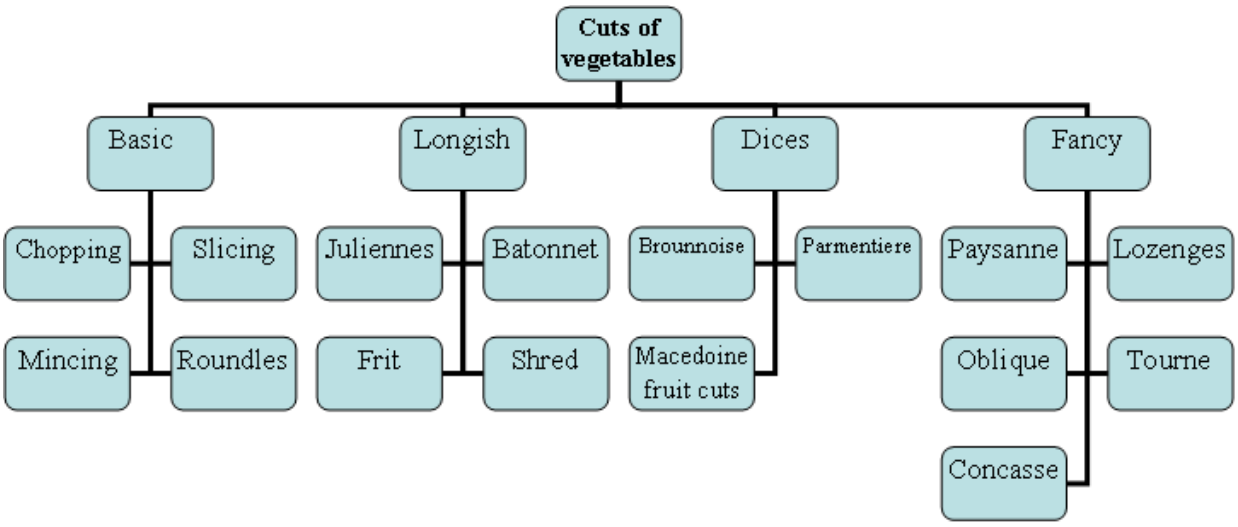
CUTS OF VEGETABLES

BASIC CUTS AND SHAPES

Cutting food products into uniform shapes and sizes is important for two reasons:

- It ensures even cooking.
- It enhances the appearance of the product.



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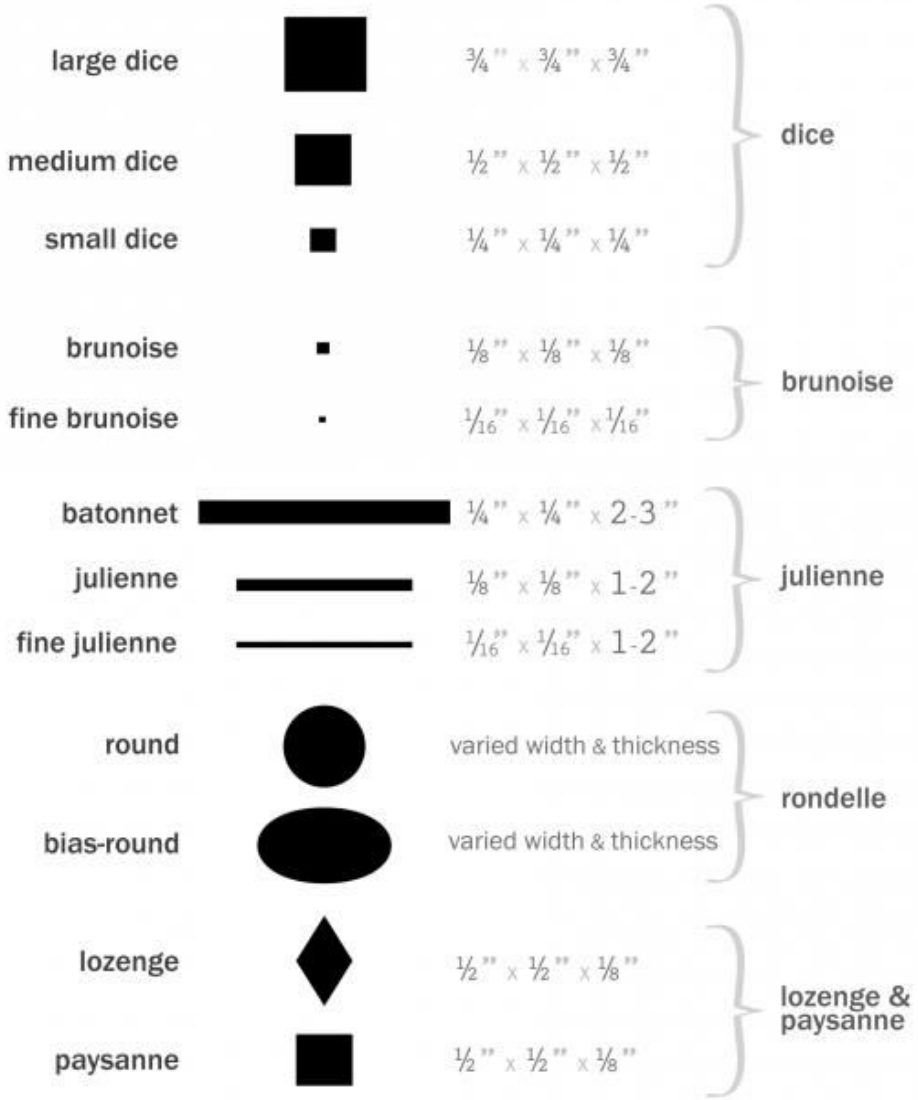
basic knife cuts

uniform cuts

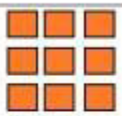
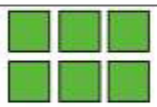
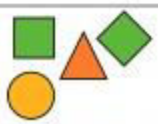


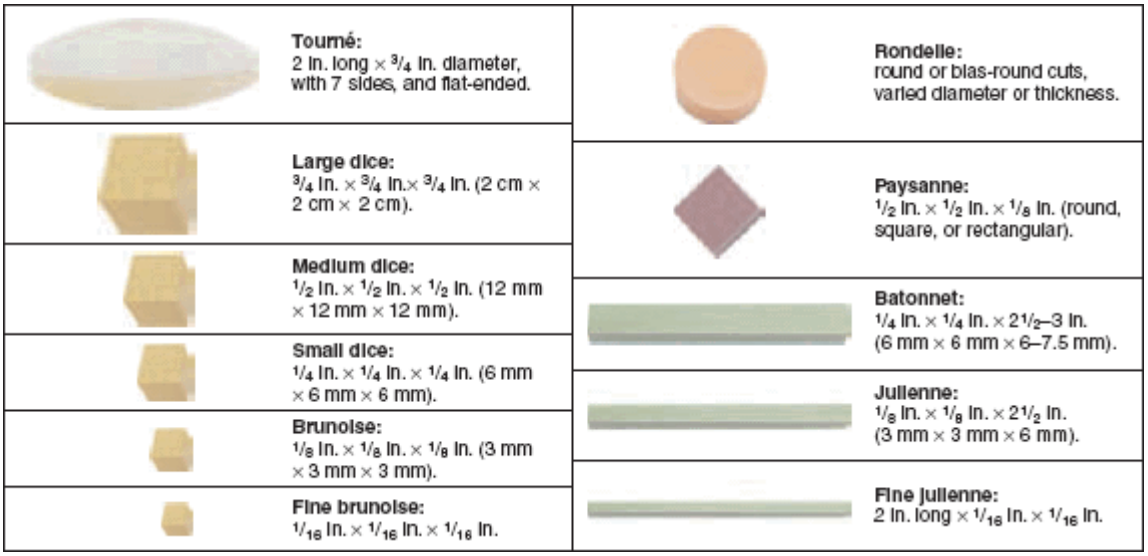
irregular cuts

peel - remove the skin or a thin layer from produce
shred - cut into thin, small pieces, typically with a grater
chiffonade - roll leaves and slice into thin shreds.
chop - coarsely cut into irregular shaped & sized pieces.
mince - chop into very fine pieces.

chasingdelicious.com & rvank.com

CLASSICAL CUTS OF THE VEGETABLES

Name and Image	Description	Suitable foods
 Julienne	Matchstick cuts of vegetables 3mm x 3mm x 40mm in size.	Carrot Shallots Onion Capsicum
 Brunoise	A very fine dice 3mm in size.	Carrot Onion Capsicum
 Jardinière	Small batons 4mm x 4mm x 20mm in size.	Carrot Potato Zucchini
 Macedoine	Diced vegetables that are 8mm in size.	Carrot Potato Onion
 Chiffonnade	Finely shredded vegetables. Suitable for use with, fresh herbs and leek.	Leafy greens (e.g. spinach) Cabbage Leek Fresh herbs
 Paysanne	Thin slices of vegetables approximately 2mm x 15mm in size and a variety of shapes such as triangles, circles and diamonds.	Carrot Potato Onion



Basic cuts and shapes.

(a) Tourné: 2 in. long x 3/4 in. diameter, with 7 sides, and flat-ended (5 cm x 2 cm)
.

(b) Large dice: 3/4 in. x 3/4 in. x 3/4 in. (2 cm x 2 cm x 2 cm).

(c) Medium dice: 1/2 in. x 1/2 in. x 1/2 in. (12 mm x 12 mm x 12 mm).

(d) Small dice: 1/4 in. x 1/4 in. x 1/4 in. (6 mm x 6 mm x 6 mm).

(e) Brunoise (broon-wahz): 1/8 in. x 1/8 in. x 1/8 in. (3 mm x 3 mm x 3 mm).

(f) Fine brunoise: 1/16 in. x 1/16 in. x 1/16 in. (1.5 mm x 1.5 mm x 1.5 mm).

(g) Rondelle: round or bias-round cuts, varied diameter or thickness.

(h) Paysanne: 1/2 in. x 1/2 in. x 1/8 in. (12 mm x 12 mm x 3 mm; round, square, or rectangular).

(i) Batonnet (Jardinière): 1/4 in. x 1/4 in. x 21/2–3 in. (6 mm x 6 mm x 6–7.5 cm).

(j) Julienne (or allumette potatoes): 1/8 in. x 1/8 in. x 21/2 in. (3 mm x 3 mm x 6 cm)

(k) Fine julienne: 2 in. long x 1/16 in. x 1/16 in. (1.5 mm x 1.5 mm x 5 cm).

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Review questions

1. **How the vegetables are classified?**
2. **Give 5 examples from each category.**
3. **What are the effects of heat on vegetables?**
4. **How do you blanch the tomatoes? What are the effects of blanching?**
5. **Why potato gets discoloured?**
6. **List 6 classical cuts of vegetables with the diagram.**