Home Economics

for Secondary Schools



Book Three

HOME ECONOMICS FOR SECONDARY SCHOOLS

BOOK 3

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CONTENTS

CHAPTER **PAGE**

TABLE OF CONTENTS

1. CARE AND MAINTENANCE OF LARGE HOUSEHOLD EQUIPMENT 1

Large household equipment 1

Washing machines ***1***

Cookers 4

The refrigerator 11

2. LABOUR SAVING DEVICES IN THE HOME 15

Carpet sweepers 16

Vacuum cleaner 18

The pressure cooker 19

Floor polisher 21

The dishwasher 23

Liquidizers- blenders 24

Food processors 27

Electric carving knives 28

The coffee maker - percolator 29

3. ENTERTAINING 30

Etiquette 30

Table courtesy/etiquette 30

Table setting 31

Cover 34

Types of table service 35

4. MANAGEMENT PROCESS 58

Planning 58

Organising 58
Controlling 59
Evaluating 59
5. MONEY MANAGEMENT 60
Sources of money 61
Types of income 61
6. TIME AND ENERGY 64
Introduction 64
Budgeting time 64
Budgeting energy 65
Time plan 66
7. HOUSING FOR THE FAMILY 67
8. FRUITS 68
Nutritional value 68
Selection 69
Storage 70
Preparation and cooking 70
Dishes 71
9. VITAMINS 73
Vitamin A 76
Thiamine 78
Riboflavin 79
Niacin 81
Vitamin C 83
Vitamin D 84
10. Salads 88
Preparing salad greens 90
Salad dressings 90

11. EGGS 92
Structure 92
Food value 93
Egg cookery 93
Grading of eggs 95
Testing eggs for freshness 97
Storage of eggs 98
Preservation of eggs 98
12. MEAT 100
Nutritive value 101
Structure of meat 101
Inspection and grading 103
Cuts of meat 105
Choosing meat 110
Storage 110
Methods of cooking 112
13. STEWING 116
Rules 116
Advantages of stewing 116
Disadvantages of stewing 117
14. FATS AND OILS 118
Fats and oils used in cooking 118
Cooking fats or vegetable shortenings 120
Chief uses of fats in cooking 121
Some chemical reactions in fats and oils 123
Care and storage 124
15. FRYING 125
Types of Frying 125

16. FISH AND SHELLFISH 128
Storage of fresh & frozen fish 134
17. MEAL PLANNING AND MENU WRITING 137
Eating habits 137
Breakfast 138
Lunch/supper and dinner 139
Tips for meal planning 140
18. MAKING GARMENTS 144
19. MAKING A SKIRT 164
20. FIBRETO FABRIC 183
Introduction to man-made and synthetic fibres 183

Foreword

Curricula must be flexible enough to respond to the existential needs of the children in a changing society. Textbooks which are aids in the delivery of those curricula must be revised and edited as often as the need arises to make them contemporary in information and presentation.

Because of these things one welcomes the revised editions of the secondary school textbooks with pictures in appropriate colours.

We wish to commend all those persons responsible for this painstaking effort for having done a worthwhile job. The nation's children and their teachers will benefit significantly because of this effort.

May the industry of the editors be suitably rewarded by the wise use of the revised secondary school texts.

Priya Manickchand
Minister of Education

Preface

This series of secondary textbooks has evolved from the first and second sets of secondary textbooks which were planned for students in Secondary Schools. An important modification is that the new secondary books have been designed for students exposed to all types of secondary education (Senior Secondary Schools, Junior Secondary Schools and the secondary divisions of Primary Schools).

The books have been prepared with the common curriculum in focus and will be found to be consistent with most of the concepts dealt with in the curriculum guides for these schools. It is hoped that the introduction of these books to the different levels of secondary education now evidenced in Guyana, will help to remove some of the disparities which exist in accessing suitable learning materials.

1. CARE AND MAINTENANCE OF LARGE HOUSEHOLD EQUIPMENT

Large household equipment

In this chapter, we will be looking at large household equipment. A home should meet the needs and interest of the people living in it. When people are setting up homes, their priorities for buying mechanical equipment depend largely on their means and personal choices. In every purchase of a major appliance, you must weigh usefulness and length of service against cost. Many household chores are now done by mechanical means which took both time and energy, but the home maker can now give more attention, time and energy to other activities.

Washing machines

These machines come in different types that suit different needs. Not all of them are completely automatic. They differ in the details of the operation and in the variety of things they do. A combination washer-dryer does washing and drying in one operation. The types of washing machines that are common today are:

1. Single tub with hand wringer
2. Twin-tub machine with washing tub and spin-dryer.
3. Single tub washer with electric wringers.
4. Automatic washer - top and front loading.

Methods of agitation

1. The agitator is a fan-shaped spindle attached to the centre of the washing machine. It rotates backwards and forwards. It does not go around.
2. The pulsator is a wheel attached to the side or back of the washer. It goes round clockwise and so agitates the water.

3. The tumbler action is caused by the drum of the washer rotating.



(a) Single tub with hand wringer



(b) Twin tub machine with washing tub and spin-dryer



(c) Single tub washer with electric wringer



(d) Automatic washer- front loading



(e) Automatic washer-top loading

Figure 1-1.1 Types of washing machine

Choice of washing machine

1. Consider the money available.
2. The fuel available in your area.
3. The style- top loading or front loading for each has advantages.
4. Features- certain extra features perform special tasks. Select features to meet your needs.
5. Capacity - the average automatic washer takes nine pounds of dry clothes. For small loads, some machines have removable mini-baskets.
6. Outside finishes should be porcelain or baked enamel.
7. Interior surface should be smooth, snag free and finished with stainless steel or porcelain.
8. Doors should have tight seals with a safety mechanism to stop the machine when open.

Use of the washing machine

1. Fill the machine to the water level.
2. Add detergent and mix well.
3. Sort clothes into washing groups and place a load in the machine.
4. Do not overload the machine, otherwise the clothes will not move properly during the wash.
5. Start the wash action and time it carefully to suit the type of wash.
6. After the washing is completed, wring the clothes to remove as much soapy water as possible.
7. Pump the soapy water out of the machine and add clean cold water to the correct water level.
8. Replace clothes and agitate for a few moments, then wring clothes. Repeat until all the suds have been removed using cold water.

Note - Delicate fabrics and man-made fabrics will crease badly with too much wringing pressure.

Care of washing machine

1. When washing is completed, unplug the machine and store the cable in the compartment provided.

2. In an agitator machine, remove the lint or fluffy filter and agitator, wipe and dry machine.

3. In a pulsator, remove any lint from the outlet, wipe and dry the machine.

4. Make sure the wringer rollers are clean and dry. Release the pressure and keep a clean dry cloth between rollers.

5. Replace agitator, wipe and dry the exterior of the machine before putting it away.

Cookers

A cooker is a valuable piece of equipment in the home. If you plan to cook regularly for a large family or even for just one person, a cooker is one appliance you cannot do without. There are many on the market which can be bought.

(1) Solid fuel, e.g., coal, wood (2) gas (3) electricity (4) oil (5) spirit.

The first cooker is the solid fuel cooker- e.g., fire side made of clay or brick. These provide cooking facilities for many families especially in the urban area.

Uses of solid fuel cookers

1. Cooking
2. Heating waste
3. Drying clothes
4. Heating the room

Care and cleaning

1. **Enamel surfaces**: Wipe with a wet cloth, use a cleaning paste or powder if necessary. Rinse carefully with a clean wet cloth. Drying is not necessary as the cooker is always warm.

2. **Chromium:** Rub with a soft duster.

3. **Hot plate**: Rub with a wire brush.

4. **Fuel**: Requires sweeping periodically; the frequency is determined by the type of fuel used and the amount of work done by the cooker.

Choice of oil cookers

1. Buy from a reliable firm.

2. Buy a good stove, cheap ones are unsatisfactory and produce unpleasant smell. Oil cookers are similar to some solid fuel cookers and may be of two types-

    1. Those with a wick

    2. Those without a wick

Kerosene oil cooker

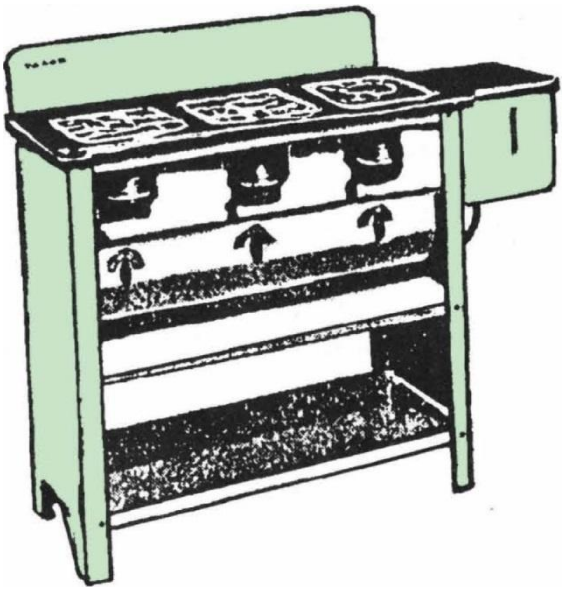


Figure 1-2 Kerosene oil cooker

Fuels used

a. Paraffin - obtained from shale and coal tar.

b. Petroleum - pumped out of the earth in various parts of the world.

Care

1. Keep very clean - trim wicks and refill daily.

2. Use good oil and never allow the oil to burn too low.

3. Use pots that are good conductors of heat.

Cleaning

1. Protect working area with newspaper.

2. Remove all movable parts.

3. Clean burners thoroughly. Wash burners in hot soapy water, using a brush. Rinse and dry thoroughly.

4. Empty the used oil and refill with clean oil.

5. Polish the outside and all metal parts of the cooker with paraffin.

6. Replace all parts after washing.

Gas cookers



Figure 1-3 The gas cooker

A gas cooker that has burners must be carefully managed, as there is the danger of explosion.

Choosing a gas cooker

1. Choose to suit money available.
2. Should suit the size of the family and space available.
3. Should be durable and easy to clean.
4. Parts should be available.
5. Design should be simple.
6. Special features available- easy to clean oven, glass, oven doors and thermostats.

Use of the gas cooker

1. Avoid having windows open near a lighted cooker.
2. If flames go out, turn off and relight after a few minutes.
3. Do not turn on the gas until you are ready to light the cooker.
4. Keep cooker clean.

5. Wipe spills as they occur.
6. Do not allow flames to come up around the sides of the pot.
7. Turn off the gas when not in use or cleaning

Cleaning

1. Protect working area with newspaper.
2. Remove bars, burners and shelves.
3. Wash in hot soapy water, rinse, drain and dry.
4. Wash the oven and outside of cooker with hot soapy water. Rinse.
5. Use a fine abrasive to remove stains.
6. Wash, rinse and dry the grill pan.
7. Replace all parts. Make sure burners are replaced firmly.
8. Polish with a soft dry cloth.
9. Clean area around cooker.

Care of a gas cooker

1. Use clean pots and pans on the cooker.
2. Use the size of burner suitable for the pot or pan to be used.
3. Turn off the gas before removing pan.
4. Boil only the amount of liquid needed for the purpose.
5. Use oven space wisely- utilize shelves fully.

Electric cooker

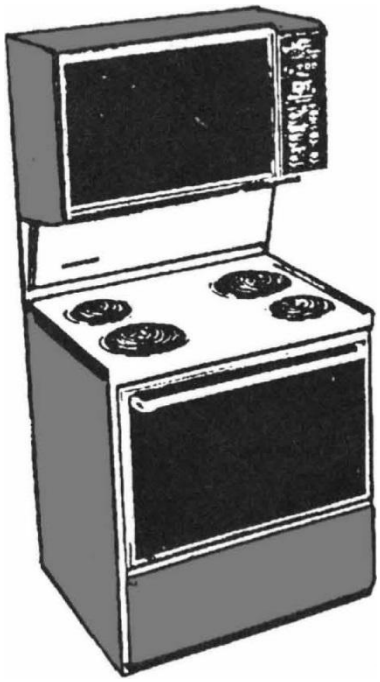


Figure 1-4 The electric cooker

Use of electric cooker

1. Keep the cooker and utensils clean.
2. Use suitable pots and pans (heavy flat-based).
3. Utilize oven space fully.
4. Wipe up spills as they occur.
5. Turn off oven 5 minutes before the end of cooking time.
6. Bright-surfaced pots and pans should be used as they do not radiate heat as black ones.
7. Use pans that are good conductors of heat.
8. Heat oven for 10 -15 minutes before, so that it has the required temperature.

Care and cleaning of electric cooker

1. Protect the working area.
2. Switch off the current.
3. Remove any utensils, oven shelves and lining. Wash in hot soapy water, using steel wool to remove stains. Rinse and dry.
4. Wash the oven with hot soapy water. Rinse and dry.
5. Replace lining and shelves.
6. Clean and polish outside of the grill pan.
7. Wipe floor and clean sink.

The refrigerator

A refrigerator is a common household appliance that consists of a well insulated box-like compartment. It has a heat pump that transfers heat from the inside of the refrigerator to its external environment. The inside of the refrigerator is cooled to a temperature below that of the room, (normally a few degrees above the freezing point of water). This retards the growth of micro-organisms. It is a cooling appliance for the storage and preservation of perishable foods.



Figure 1-5 The refrigerator

Today's refrigerator is the result of progress from the ice box to a variety of cold food storage. A refrigerator can only do its work, if it is properly cared and used.
The storage life of perishable foods is lengthened in a refrigerator, so that foods for several days can be purchased and safely stored.

Choice of refrigerator

1. Choose one of good quality made by a reliable manufacturer.
2. The size should suit the family's needs and finance.
3. The fuel available should be considered.

Use of the refrigerator

1. Check that the refrigerator is in good working order and the temperature is set to at least 40 degrees, which is the recommended setting for most items.

2. Ensure all shelves and spaces are clean and the door and light are functioning before use.

3. Keep all the contents of the refrigerator in separate drawers or on different shelves. This will help limit the chance of things becoming contaminated and keep the space organized and user friendly.

4. Wrap food in grease proof paper, foil or place in containers to prevent them being dried out.

5. Do not put hot foods into the refrigerator. It will cause a rise in the temperature.

6. Be energy efficient by keeping the door closed as much as possible and not allowing the temperature to rise above the recommended amount. Always close the door firmly and check that the seals around the door are pressed firmly together.

7. Do not store bananas in the refrigerator, they will become discoloured.

8. Avoid storing pears, apples, pine apples and melons; they will lose their flavor.

9. Ensure that the refrigerator is turned off or unplugged, if the power that is supplied is cut.

10. Leave the door open when the refrigerator is left empty.

11. Foods should not be packed too tightly in the refrigerator.

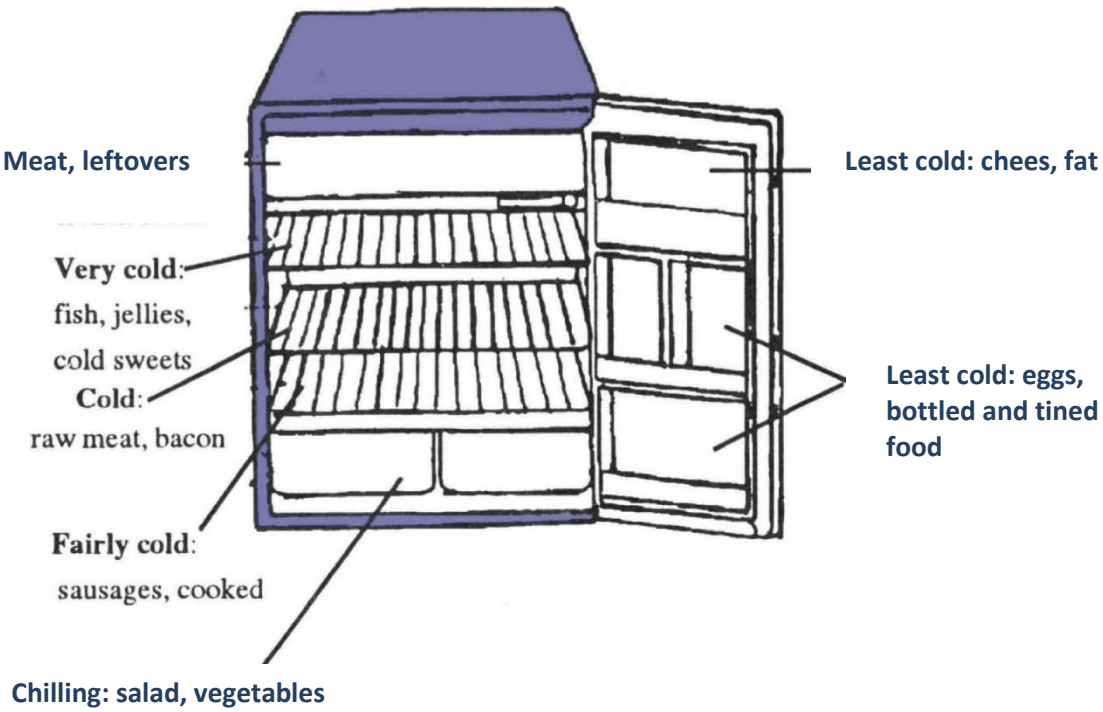


Figure 1-6 Food storage

Care and cleaning

1. Take all of the food out and put in a cool place.
2. Turn off refrigerator and leave to defrost.
3. Remove shelves and empty trays. Leave door open.
4. Check foods and re-wrap, if necessary.
5. Wash shelves in warm water using a little soap or bicarbonate of soda.
6. When completely defrosted, empty drip trays, wash and dry.
7. Wash inside of the refrigerator, rinse and dry.
8. Clean outside and rub chromium handle with cloth.
9. Turn on refrigerator and refill ice trays.
10. Replace foods and close door.
11. Clear out foods every few days, discarding those with a limited shelf life or things that are past their date
12. Clean your refrigerator on a regular basis (at least every two weeks) paying special attention to the bottom shelves for things that may have dripped or fallen.
13. Clear up spills as soon as they occur to prevent mold and stickiness.
14. Clean area around the refrigerator.

.

2. LABOUR SAVING DEVICES IN THE HOME

The home needs to be enhanced in appearance while at the same time it should be made comfortable for the family. In this chapter, attention will be given to some of the equipment that will help to save time and energy in the preparation of meals, cleaning all parts of the home as well as maintaining its appearance for the comfort and well-being of family members.

With the increase in technology in recent years, ways have been planned to save time, energy and money resulting in good management. If used with care, labour saving devices will assist the housewife to save time and energy but not always money.



Figure 2-1 Some labour saving devices

Before purchasing labour saving devices, there are some basic points which the housewife should consider:

- The price of the equipment as against time and energy.
- Capabilities of the persons using the equipment.
- Storage for the equipment
- The suitability of electricity and wiring system in the home to cater for the equipment.
- Safety measures on the equipment.
- The guarantee of the equipment.

The equipment which will be dealt are: carpet sweepers, vacuum cleaners, floor polishers, dish washers, liquidizers, food processors, electric carving knives, percolators, food mixers and pressure cookers.

Carpet sweepers



Figure 2-2 Carpet sweeper

A carpet sweeper is sometimes known as a box sweeper. It is mainly used for the removal of dust from carpets and rugs. The carpet sweeper consists of a polished wooden box, supported on four wheels. The under-surface consists of two dustpans, and in between these two is a revolving brush. All of these are attached to, and removed by means of, a long polished wooden handle.

A furniture guard consisting of thick, strong cotton braid with rubber corner cushions is provided on the wooden box. This helps to protect the furniture which may get hit accidentally while using the sweeper. The tyres on the wheels are made of rubber. There is a backward and forward movement over the carpet during cleaning. The action of the revolving brush is to enable the surface dust to go into one of the dustpans which is opened by means of a lever. The dust is emptied out and burnt. A spring or steel end-bond is used on the brush to assist in the easy removal for cleaning purposes.

Choice of a carpet sweeper

1. This equipment should be of medium size and weight, if it is too small or too light, it will be ineffective, and if too heavy, will be too tiring to use.

2. Bristles should be good, plentiful and of average length.

3. The furniture guard should be good.

4. The tyres on the wheels should be made of rubber.

Care and cleaning

Daily –

1. Remove all fluff and pieces of material, etc. from the brush; empty the dustpan.

2. Collect dust in newspaper, wrap and burn.

Occasionally –

1. Remove all fluff as for daily cleaning.

2. Unscrew the handle, remove the furniture guard and the revolving brush.

3. Wash the brush, dust and wipe the inside of the box and the dustpans with a wet cloth wrung out of warm soapy water. Dry thoroughly.

4. Dust, wash and polish all polished sections.

5. Use paraffin to clean the rubber.

6. Use an upholstery or clothes brush to brush the braid

7. Use paraffin to clean the rubber.

8. Use upholstery or clothes brush to brush the braid. After the brush is dried, replace it and screw in the handle.

Vacuum cleaner



Figure 2-3 Vacuum cleaner

There are a number of cleaners available today and they can be bought in varying sizes, capacity, weight and cost. Once electricity is available, they can be of great help to the busy housewife in saving both time and energy.

Choice

1. Purchase machines where the availability of spare parts is easy and cheap to obtain.
2. Always purchase a machine which has a guarantee.
3. Purchase from a reputable firm.

Types of vacuum cleaners

The upright vacuum cleaner is designed for thorough rug and carpet cleaning by suction, agitation and brushing.

The canister type vacuum cleaner has high suction power and is best for cleaning furniture, window sills, as well as hard surfaced floors. It is light in weight and is therefore easy to carry around.

Models of vacuum cleaners

1. A new name in upright cleaners is **"Electrolux"** -This has a clean air fan system which does not allow dirt to pass the fan on its way to the filter bag. If the brush agitator jams, automatic shut-off prevents damage to motor and breaking of drive belt.

2. **"Lightweight Winner"** - This has two motors for increased cleaning efficiency. One loosens ground in dirt while the other, a suction motor, prevents debris from blocking motor or fan. This type is designed for both carpeting and bare floors. Its protective cushion bumper and side air passages allow easy cleaning next to baseboards and in corners.

3. **"Clean is Easy"**- This has the powerful beater brush roll. For better carpet cleaning, this comes with the two-speed motor, a headlight to spot dirt, an "Edge Kleener" to pick up dirt right up to the base-board. There is also a complete set of cleaning tools and an automatic cord reel. There is also a gauge which tells when the disposal bag is full and needs changing.

4. **"Does Double Duty"**- This combines the power of an upright vacuum cleaner with the flexibility of the canister type vacuum cleaner because of its additional attachments. Power seal increases the suction, and front conversion feature makes it easier to tow.

5. **"The Big Clean-up"** -This is a power spray carpet cleaner that can clean a nine by twelve carpet without refilling the two-gallon tank. The cleaner sprays hot solution under pressure and vacuums dirty liquid up from the carpet. If the top unit is removed, the cleaner can be used as an indoor-outdoor vacuum.

The pressure cooker

This piece of labour saving equipment will cook food in approximately quarter of the time it will take to do ordinary cooking. Fuel is saved and less time is needed in the kitchen. Pressure Cookers can be had in various sizes, models and finishes.

There are mainly three types of finishes for pressure cookers:

(a) Aluminium
(b) Colour-Bright
(c) Hard Surface

Cleaning of the three types of finishes

1. **To clean an Aluminium Finish Pressure Cooker**

   The outside surface may be kept clean by using soap and water. Iron and various minerals in water and foods may darken the inside of the Pressure Cooker, but this will not affect the food cooked . These stains are harmless and may be removed by using a solution of cream of tartar. Scour thoroughly with a steel wool or cleaning pad containing soap; wash, rinse and dry.

2. **To clean Colour-Bright Finish Pressure Cooker**

   The outside may be cleaned in similar fashion as the aluminium finish. However, the inside needs special care, to keep it attractive and good looking. Avoid allowing burnt food to stain the finish; if this should happen, soak the cooker in warm water until the burnt food loosens. Scrub lightly with a nylon-mesh cleaning pad.

   Do not use steel wool or abrasive kitchen cleaners.

3. **To clean the Hard Surface Pressure Cooker**

   Wash this Pressure Cooker with warm soapy water, rinse and dry. Remove any food remaining by scrubbing gently with a fine nylon-mesh or other ordinary cleaning pad. Do not use steel wool or abrasive kitchen cleaners. To remove discoloration, use a cleaner designed to clean non-stick surfaces.

Parts of the pressure cooker

This type of equipment is a very special saucepan. The Diagram below in Fig. 2.4 will help you to become familiar with its parts.

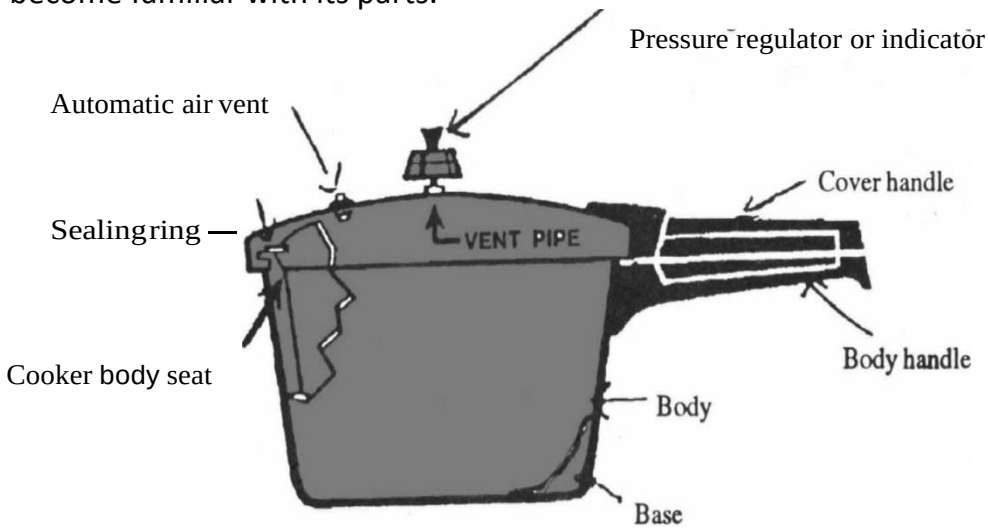


Figure 2-4 Pressure cooker and its parts

Care of the pressure cooker

- Remove and wash the sealing ring, scrub the sealing ring groove to remove the manufacturing oils.
- Scour the inside of the Pressure Cooker body and cover with a non- alkali, aluminium cleanser or a steel wool pad.
- Rinse with warm water and dry.
- When the Pressure Cooker is not in use, store the cover and body separately in a dry place. Pressure Cookers should not be stacked in other utensils.
- Ensure that the Vent Pipe is open before use.
- Pressure Cooker should not be filled for over two-thirds of its capacity.
- When preparing rice and root vegetables, do not full the Pressure Cooker more than half because these foods will expand during cooking.
- Do not remove the Pressure Regulator until pressure is completely reduced.
- The cover of the Pressure Cooker should not be forced off. Cool the cooker long enough for the cover to slide off easily.

Floor polisher



Figure 2-5 Floor polisher

The floor polisher can save much time and energy on hard and large floors. They contain two to three rotary heads onto which are clipped stiff or soft brushes or polishing buffers. The amount and types of brushes determine the cost and the various jobs of a polisher can do.

Types and uses

There are three main types of polishers:

Type	Uses
Wax polisher	applies polish and polishes the floor
Polish scrubber	Scrubs the floor, applies polish and polishes
Combination carpet shampoo polisher	Scrubs the floor, applies polish, polishes the floor as well as cleans carpets

Choice

The most important considerations to bear in mind when choosing a floor polisher are:

1. How convenient it is to be used and how well it can do the job.
2. Consider the type of floor and floor coverings used in the home.
3. The height and weight must be comfortable for the user.
4. The brushes and buffers must be easily removed for cleaning.
5. The 'on' and 'off 'switches must be easily accessed.

The dishwasher



Figure 2-6 The Dishwasher

This equipment saves the housewife approximately half the time she would take to do dishwashing by hand. She also uses less energy because all she has to do, when using the dishwasher, is to organise and plan her work at hand.

Types

1. The **installed or fitted dishwasher**- this may be built in the kitchen units. This is mainly loaded from the front. It carries a capacity which varies from six to eight place settings.

2. The **portable dishwasher** - this has casters and may be removed to an area around the sink. Some can be placed on the work surface near the sink.

Choice

1. Ensure that it is convenient for your family.

2. The cost of:
   - installation
   - operation
   - maintenance
   - special detergents to be used.

Note: This equipment is convenient for large families and for persons who do a great deal of entertainment.

- A high standard of hygiene is achieved. The dishes are washed at a high temperature of pressurized water mixed with strong detergent.

- The use of dish cloths, which will always carry bacteria, is not needed in this type of washing.

Care and cleaning

1. The following should not be put in the dishwasher: soft rubber, wooden handles, china, fragile glass, silver cutlery and bone or wooden handle cutlery.

2. Do not interfere with the circulation of water by overflowing the dishwasher.

3. Put glasses and cups face downwards and turn flat surfaces to the source of the water.

4. Plates, saucers and platters must be put on lower racks.

5. Do not put aluminium equipment under the detergent cup.

6. Always follow the manufacturer's instructions.

Liquidizers- blenders



Figure 2-7 Liquidizer blender

There are machines which may be an attachment to a food mixer, or a separate self-contained unit. They vary in power, price and design. They all have the same general features:

- **Motor unit**- if the blender is a separate unit, it will have its own motor. If it is an attachment to a food mixer, it will use the mixer's motor.

- **Control switch**- it is usually found in the motor unit. It may be a dial with two or more speed settings or a simple on/off switch with only one speed.

- **Cutters**- these are made of stainless steel with sharp edges. They are basically four, but some models have two or even six.

- **Goblet**- the size and shape of the goblet vary. It may be made of heat resistant glass or clear polystyrene. This may be marked in pints or metric calibration. There is usually a lip and a handle for ease of pouring.

- **Lid** -usually made of plastic and fits tightly over the top of the goblet. Many models usually have a removable cap in the centre; this allows for easy access of adding other ingredients when the blender is in use.

Type of blenders

One pint (0.5l) capacity and below - These are smaller goblet blenders and are sold as attachments to food mixers. They cater for small quantities of food. They usually have a single speed control switch; they do not make very stiff mixtures and more liquid may have to be added unlike the powerful blenders. If large quantities are to be prepared in such blenders, they may have to be divided up and prepared separately. The machine will have to be rested between intervals or sessions. Sometimes there is a grinder attachment for grinding foods.

One and a half pint (0.7l) and above capacity - These are more powerful. Most tasks can be done with these blenders. They can cope with stiffer and larger quantities of mixture. This type also has a grinder attachment and the control switch usually has two or more speeds. As can be observed, this is an example of a self-contained unit.

Uses

The electric blender is a very versatile piece of equipment. Its use will depend on the power of the motor, the nature of the food placed in it and the length of time it will take to perform the

operation. They are generally used to complement the work done in the food mixers.

Jobs done by blenders in the preparation of foods

Job	Type of Food Preparation
Blending	Sauces, soups, batters, dips, baby foods.
Mincing	Cooked meats and fish, pastes and spreads.
Shredding	Vegetables for salads.
Pulping	Fruits and vegetables.
Chopping	Fruits and vegetables for chutney and pickles, herbs such as celery.
Grating	Cheese, orange and lemon rinds.
Pureeing	Fruit.
Grinding	Nuts, coarse sugar.
Crumbling	Bread and biscuits.
Whipping	Cold beverages

Cleaning of the blender

1. Always switch off and unplug, before cleaning.
2. Half-fill the goblet with hot water, add a little detergent and operate the blender for a few seconds.
3. Empty the blender and rinse thoroughly with warm water.
4. Either dry thoroughly or turn down and allow to drain.
5. Never immerse the motor in water.

Care of the blender

1. Never place blender in dish washing machine.
2. Never immerse the motor in warm water, always wipe with a damp cloth.
3. Never put your hand or a scraper, or a spoon or any type of tool in the blender, while the motor is running.
4. Always cut or dice hard tough ingredients into small pieces, before placing them in the blender.
5. Always place the lid on the blender, before starting the motor.
6. When the machine is switched on, ensure that your hand is placed firmly on the lid to steady it.
7. Adjust the speed to suit the type of mixture.

Food processors



Figure 2-8 Food processor

This is one of the most recent labour saving devices. It caters for a variety of uses, e.g. peel, chop and grate vegetables, mince meat, make bread crumbs, puree mixtures and make pastry.

In the base of the machine, a motor is placed. This turns the attachment blades. A plastic bowl with a lid and chimney covers the attachments. The food that is to be processed is lowered into the chimney and the machine operates with the lid in position.

Electric carving knives



Figure 2-9 Carving knife

The electric carving knife handle contains the motor and a variety of blades. It should be resistant to both grease and heat. When in use, the blades should be locked in. They can be removed easily for cleaning purposes.

NOTE: Batteries may be used in some models.

Care

1. Never place in water.
2. Wipe clean after use.
3. Store in a safe place out of the reach of small children.

Use

This is a useful piece of equipment for carving roasted meats, e.g., beef, pork, chicken and ham; but it could also be used for cutting bread, cakes and cheese.

The coffee maker - percolator



Figure 2-10 Percolator

A wide variety of this equipment is found in our stores today. Many of these are electrically operated, but some can be placed on the cooker. Those used by means of electricity may be automatically shut-off when the coffee is boiling.

3. ENTERTAINING

Etiquette

In the 20th century, the rules of etiquette were dictated by a very few aristocratic and wealthy people. Gradually, social relationships changed more and more and there was a mingling of classes. Today, it has become an accepted fact, that it is not necessary to have great wealth in order to have good manners. The rules of etiquette have become rules that are commonly accepted as guides for behaviour.

Table courtesy/etiquette

Table etiquette are rules that have been developed to ensure that good table manners are practised at home as well as in public.

The best way to be sure that we use good table manners in public is to make them a habit at home, for these reflect the pleasant and unpleasant things about you. Let us look at some of the most common manners:

1. Be clean, neat and punctual for the meal.
2. Chairs should be placed far enough from the table, so that you can sit back comfortably.
3. Keep feet on the floor and never on the legs or rings of the chair.
4. Keep elbows away from table.
5. Keep hands in lap when you are not using the tableware.
6. Pass food to others before helping yourself. Pass food to the right.
7. Accept all food served to you. Eat at least a small portion of everything.
8. Ask to have something you want passed to you. Do not reach across the table.
9. Cut only one or two bites of food at a time.
10. Bring the food to your mouth, without bending your head down to your plate to receive it.

11. Eat in small bites, chew quietly and slowly with your mouth closed, to avoid making noise.

12. Accept pleasant table conversation. Do not speak with food in the mouth.

13. Chew food thoroughly and avoid drinking while you are eating.

14. Use your napkins to lightly wipe your lips and fingers. Do not wipe your face.

15. Never pick your teeth (even with a toothpick) or roll your tongue to dislodge food from your teeth.

16. Replace your chair after getting up.

Table setting

Table setting is the art of laying or arranging the dining table with suitable table appointments. It refers to placing a table with tableware such as eating utensils and dishware for serving and eating.

Table setting is a wonderful way to bring colour and variety into the dining room. The table setting can be simple and functional or it may be more elaborate and festive.

An attractive looking table does much in making simple meals look appetizing and interesting. It makes the digestion of the food more thorough, because of the flow of digestive juices, caused by the pleasing appearance of the table.

Setting the table

1. Protect the table with suitable clean, crisp and well pressed tablecloth or place mats.

2. Use a trolley or tray to collect all the materials and equipment needed to set the table. Ensure they are clean.

3. Place a centre piece on the table.

4. Set cutlery as shown in Fig 3.1, unless you know the person is left-handed.

5. If there is more than one course, the cutlery to be used first is set furthest away from the table mat. The rest is set in order, going inwards towards the table mat.

6. Put side plates to the left of the place setting.

7. Place table napkin alone, or in a ring, on the side plate.

8. Set cruet sets where they can be easily reached.

Points to be considered before setting a table

Before beginning to set the table for a meal, these points must be considered:-

1. The time of the meal.

2. Use only spotlessly clean cutlery, glass ware and table linen.

3. The style of service.

4. The number and kind of courses.

5. The number of persons.

6. The menu.

Table appointments

Table appointments are all the items used to set the table for the meal.

Table appointments are very important in the completion of table setting. These appointments differ with the type of service. We are going to discuss some of them here.

1. **Menu cards** -These vary in size and colour and can be decorated, but for general use the plainest kind of card with simple lettering is the best style.

2. **Table decorations-** These should always be kept low, so that diners can see over them and be able to talk across the table easily. These vary in arrangement but the simpler the decoration, the more pleasing. They are often placed near the centre of the table but may be placed at the side or end of the table, e.g., flowers, ornaments, fruits.

3. **Place cards-** These are suitable for large luncheon or dinner parties to indicate where the guests should sit. The cards can match the menu cards and are placed in the centre or just above each guest's cover.

4. **The cover-** In this part, you will sit with crockery, glass and cutlery that are needed for the meal for one person. It is about 18"- 24" long.

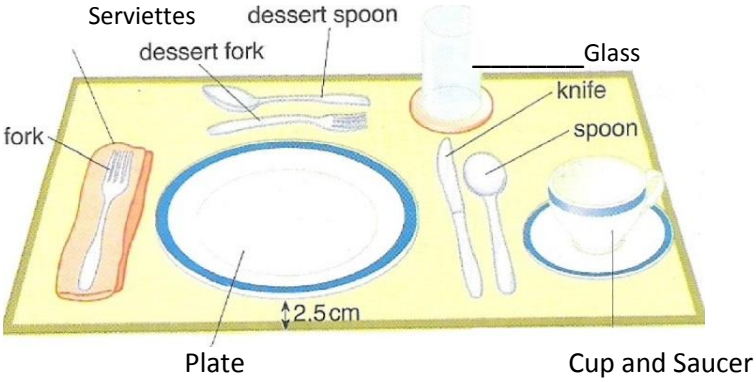


Fig.3.1 (a)

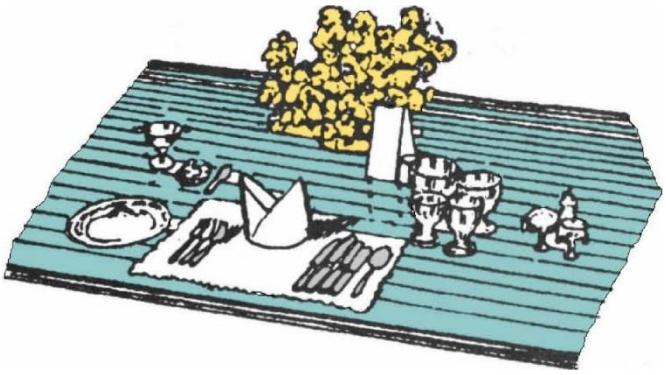


Fig.3.1 (b)

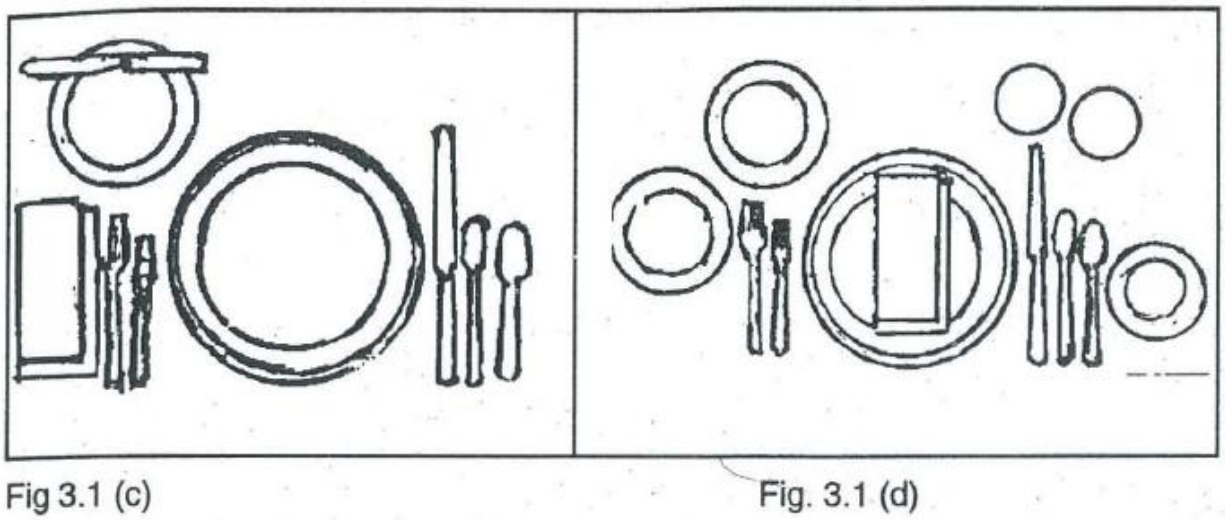


Figure 3-1 Types of covers

5. **Cruets** - These should be provided for pepper, salt and mustard. These should be refilled every second or third day.

Table linen - The three main ones used to set tables are:

- Tablecloths
- Table Napkins
- Table Mats

There are others such as silver cloths; covering cloths, etc.

- **Tablecloths** - These may be white or pastel; coloured ones are used for formal dinners and luncheons.

Note. If used for breakfast, they are always brightly coloured and checkered.

- **Table napkins** - These are usually made of damask and vary in size.
  Large ones are used for very formal dinners or luncheons. For informal meals, or general use, smaller ones are used.

- **Table mats** - These are used on highly polished tables or tables made from beautifully grained or coloured wood. They are made from a variety of materials.

Cover

A cover is the place or that part of the table set completely for a meal for one person. A cover is about 18"- 24"/46cm – 61cm wide. It includes cutlery, crockery and glass for each person.

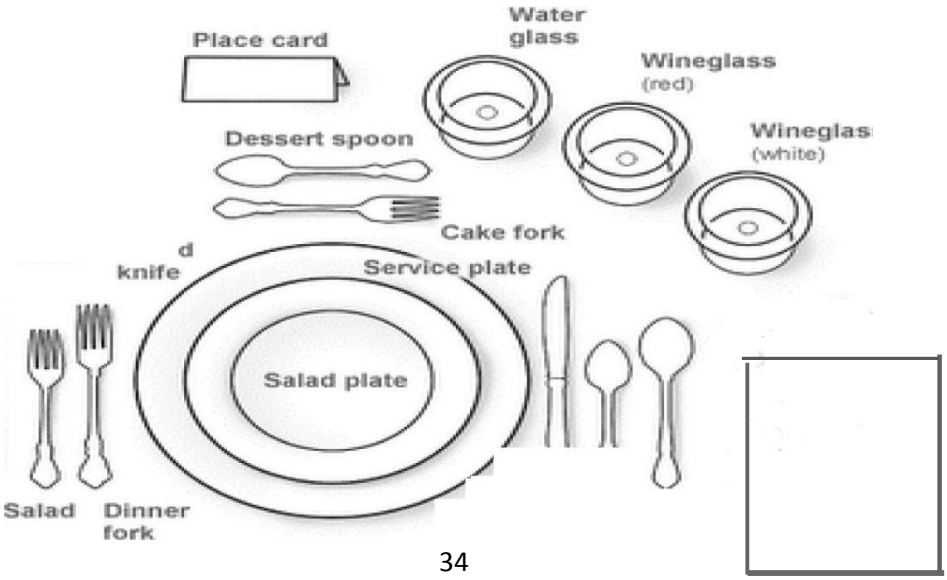


Figure 3-2 A cover

- **Service plates**- These are used strictly for formal service. They are beautifully decorated large plates on which the first course foods, with their underlining plates, may be placed but no food is placed directly on it.

- **Ideas for centre pieces :**

- Flowers - plants - fruits - vegetables
- Ornaments - shells - candles in holders

Types of table service

There are many ways a meal can be served in a family and this depends upon custom, size of the family, household help and the time available for a meal service. Meals for a period or an occasion are served very differently from a meal served daily to family members. A simple meal can pick up an air of glamour when you serve it beautifully. The way in which you serve a meal should be suited to the menu and table appointments.

Family style

In the family service, the father, or host, carves the meat or chicken and places the other food from serving dishes on the plates stacked in front of him. As he has each plate filled, he passes it along to someone at the table until all have been served.

The styles of meal service can be classified into groups:

- Formal

- Informal

The formal meal service requires the assistance of a waitress and is the most elaborate of meal service. This type of service is sometimes called continental or Russian service.

The informal Meal Service is one when members of the family or group participate in serving the meal.

This type of service can be done in many ways.

1. **Plate service** - Foods are placed in plates which are then placed on the table before the meal is announced.

2. **Family service** - The serving dishes are placed on the table so that each member can

serve himself or herself.

3. **Modified English service** - The food is brought to the table in serving dishes and is served by the host and hostess. The host will serve the main courses and accompaniments. The hostess will serve the beverages and dessert.

4. **Compromise service** - This is a combination of services (English and Formal Service). The main course is served by the host and the remaining of the meal would be served from the kitchen in individual portions.

5. **Buffet service** - All the foods are placed on platters on a table together with silverware, plates, napkins and glassware. The table is attractively laid with foods and dishes; persons serve themselves.

Clearing away and washing up after a meal

When clearing away, it is necessary to use a trolley or tray. This should be done as soon as the meal is completed and everyone leaves the table.

Points to remember when clearing away

1. If food remains, put this away first.
2. Keep the clean crockery and cutlery away from the used ones.
3. Glasses and cups should not be stacked.
4. Scrape all bits of food into one plate.
5. Remove cloths and mats, etc., if necessary.
6. Ensure table is properly cleaned.
7. Clean area and replace chairs and flowers.

Washing up

1. Washing up can either be done in a sink or dish washer or in wash basins or bowls, but whatever is used, this process needs to be thorough and hygienic.

Preparation:

1. There should be a supply of hot water, detergents and all other materials and equipment that are necessary.

2. Scraps from plates and tea leaves should be wrapped into newspapers and disposed.

3. Empty remaining beverages, butter, jam, etc. and store accordingly.

4. Empty milk jugs, sauce boats and other dishes in which were floury foods; these should be soaked.

5. Wipe knives with newspaper or paper towel and soak in jam jars containing warm water and detergent.

6. Plates should be wiped also.

7. Use rubber liners in sink and use a rubber bumper or the sink faucet to prevent cracks or chips.

Washing dishes by hand

1. Use both hands; wash one item at a time.

2. Wash in the following order - glassware, plastic, silver, cups, plates, saucers, small dishes, serving dishes, baking dishes, pots and pans.

3. Wash sharp - edged tools and fragile articles separately.

4. Rinse with clean clear water and drain.

5. Use a clean towel to dry all dishes that are not allowed to dry in the rack.

6. Wash and dry sink and drain board.

7. Wash towels and dish cloth.

8. Clean area around sink where washing was done.

Tray service

The usefulness of tray service is as follows:

1. A meal served on a tray can be eaten wherever one desires - on the balcony, in front of the television set, in the workshop or in the garden.

2. Instead of having to sit for some time on what may be a rather uncomfortable chair, one is free to take one's meal to a more comfortable chair.

3. Thirdly, tray meals are quickly set up and serving is casual and easy.

4. Tray meals provide persons who have tiny kitchens and no dining areas with a pattern for serving meals to guests.

Menus planned for tray meals should take into account the circumstances peculiar to dining in this manner. It should be possible to eat neatly and comfortably. Foods should be free from sauces, gravies and dressings that spatter and drip as it is carried to the mouth. All foods should be easily edible, such considerations would forbid serving wedges of lettuce, broiled steaks, barbecued spare ribs, fried chicken and thick soups.

Setting of tray for tray meals

In general trays are set in the same ways as individual covers, although certain modifications are often necessary because of the size of the tray. The most, usable tray does not have a rim curving outward and upward like the rim of the traditional plate; it simply curves upwards at the outer edge as does a coupé plate.

The smallest useable tray for tray meals measures approximately twelve inches by eighteen inches (12"x 18"). A tray of this size will accommodate the nine inch dinner plate, bread and butter plate or small salad bowl, beverage glass and flatware.

Note: No flatware is required for bread, biscuits, cookies and sandwiches; they should be eaten with bare fingers.

Breakfast in bed: this can be luxury to the older guest or weekday early riser. Arrange a convenient time the previous evening and serve the breakfast promptly.

If there is more than one guest give individual trays, each large enough to take the necessary dishes without overcrowding. Make the tray look tempting with a pretty tray cloth, napkin, matching china, polished silver and perhaps one or two freshly cut flowers from the garden. Serve a refreshing fruit drink and lastly, the food and the tea or coffee very hot. For a woman

living alone, the tray habit is well worth acquiring. It is pleasant, comfortable, unhurried and so good for the morale. Treat yourself as you would treat a guest. Remember that when loading a tray, the weight must be evenly distributed.

The Snack tray

Following are some suggestions for making the snack tray a comfortable surface from which to dine.

1. Place a mat of some kind, fabric, paper or other material on the tray to keep dishes from slipping and sliding.
   If however, the tray is non-slip, the use of the mat is optional. The condition of the tray, its colour, the colour of the food, dinnerware and the occasion, all offer useful guidelines in deciding what to do.

2. Lay only the flatware required for the main course. Include a salt cellar in the setting.

3. If desirable, you may tuck the napkin partially under the main plate or flatware to keep it from slipping off.

4. Use the short tumblers; tall ones are easily upset.

5. You may use the cups without saucers or mugs to avoid overcrowding the tray.

6. You may use bread and butter plates or small bowls for salads. They may be placed to the right of the main plate and in front the water glass. This position gives the tray better balance than the conventional position.

7. Small ashtrays and coasters of suitable design and material, as well as the old fashioned butter dishes, are convenient for small servings of such foods as relishes and cookies.

8. Serve the main course of the meal on the smallest plate that will accommodate it.

9. Put nothing unnecessary on the tray, but do include everything needed for comfortable dining.

10. When a light lunch or supper is served, dessert may be included in the original setting of the tray. If all plates are scaled to accommodate the food served.

Setting of a snack tray

1. Use a clean and attractive serving tray. A tray cloth may or may not be put on it, depending on the kind of tray.

2. Put the glass in a coaster or teacup and saucer, or ice-cream dish on the right of the tray. Put the small plate with the eatables on the left of it.

3. Add the cutlery (flatware) required, e.g., a cake fork on the right of a tea plate with cake, a teaspoon on the right of a teacup and saucer, or a stirrer on the right of a glass and coaster with an icy drink. No flatware is required for bread, biscuits, cookies and sandwiches; they should be taken with bare fingers.

4. Finally, add a folded napkin on the extreme left of the tray, to the left of the eatables.

Serving and removing food

- When you are serving plates of food, carry one in each hand.



Figure 3-3 Serving and removing food



Figure 3-5

- Stand at the left of the person you are serving. Place in front of him/her the plate you are holding in your left hand. Then transfer to your left hand the plate you were holding in your right hand.

- Move to the next person, and serve him/ her in the same manner.

- When you pass food to a person at the table, pass it to his/her left, low enough so he/she can reach it conveniently with his/her right hand. Then move to the next person's right.

- When you remove soiled dishes, stand at the left of the person and take the plate in your left hand. Transfer the plate to your right hand, leaving your left hand free to remove the next plate.

The accepted way in America of conveying food to the mouth is shown at (a); the accepted way in England and on the continent is shown below at (b).



Fig.36. (a) The American way of conveying food to the mouth



Fig.3.6 (b) The English way of conveying food to the mouth

Figure 3-6

At the end of the main course, the flatware - knife, fork, butter knife and teaspoon is placed in the proper position on the plates.



Figure 3-7 Position of the flatware

To cut your food correctly, hold the knife and fork so that the handles are concealed in the palms of your hands, with the forefingers on the back of the knife blade and on the end of the fork handle, tines down.



Figure 3-8



Figure 3-9

In carrying food to your mouth , use the fork, holding it as you would hold a pencil, with tines up to spear a piece of food or with tines down to pick up a small portion of food.



Figure 3-8

When you drink soup, dip the spoon into the soup, away from you, rather than toward you. Drink from the side of the spoon and avoid making a sound as you drink. (Fig.3.11 and 3.12)



Figure 3-9



Figure 3-10

- When you have finished your soup, leave the spoon on the plate under the soup dish.



Figure 3-11

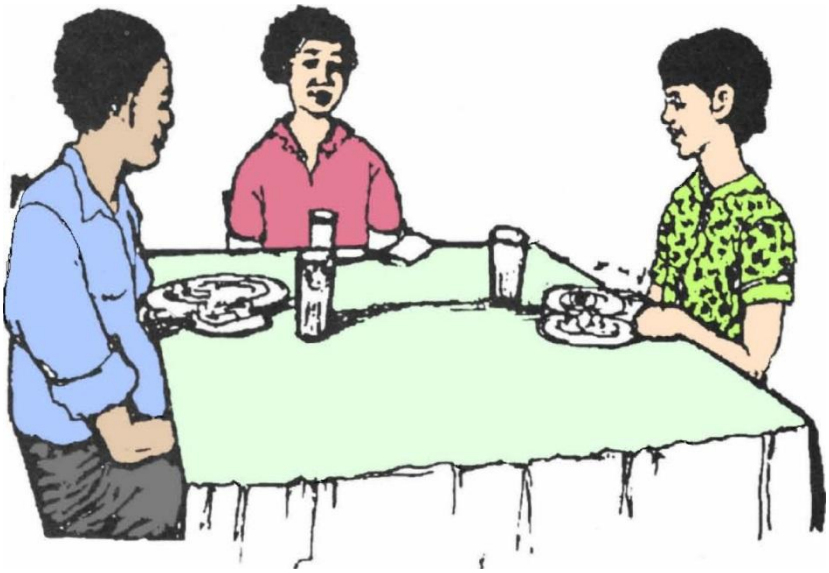


Figure 3-12

At the end of a meal, place the unfolded napkin on the table at the left of your plate.

Napkins

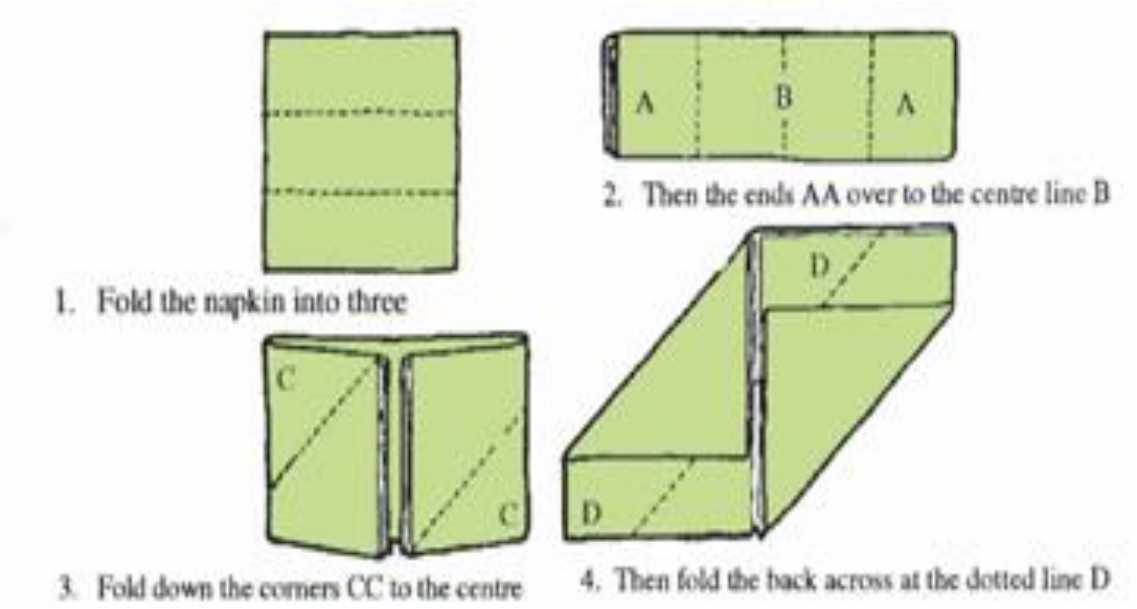
The napkin is usually placed to the left of the fork. For a formal dinner, the napkin may be placed on the side plate. Napkins may be folded in an oblong, square or triangular manner.

The oblong is usually preferred for dinner and more formal meals. The open corner may be at the lower left or lower right, according to your preference.



Figure 3-13 Ways to fold table napkins

Figure 3-16 The mitre



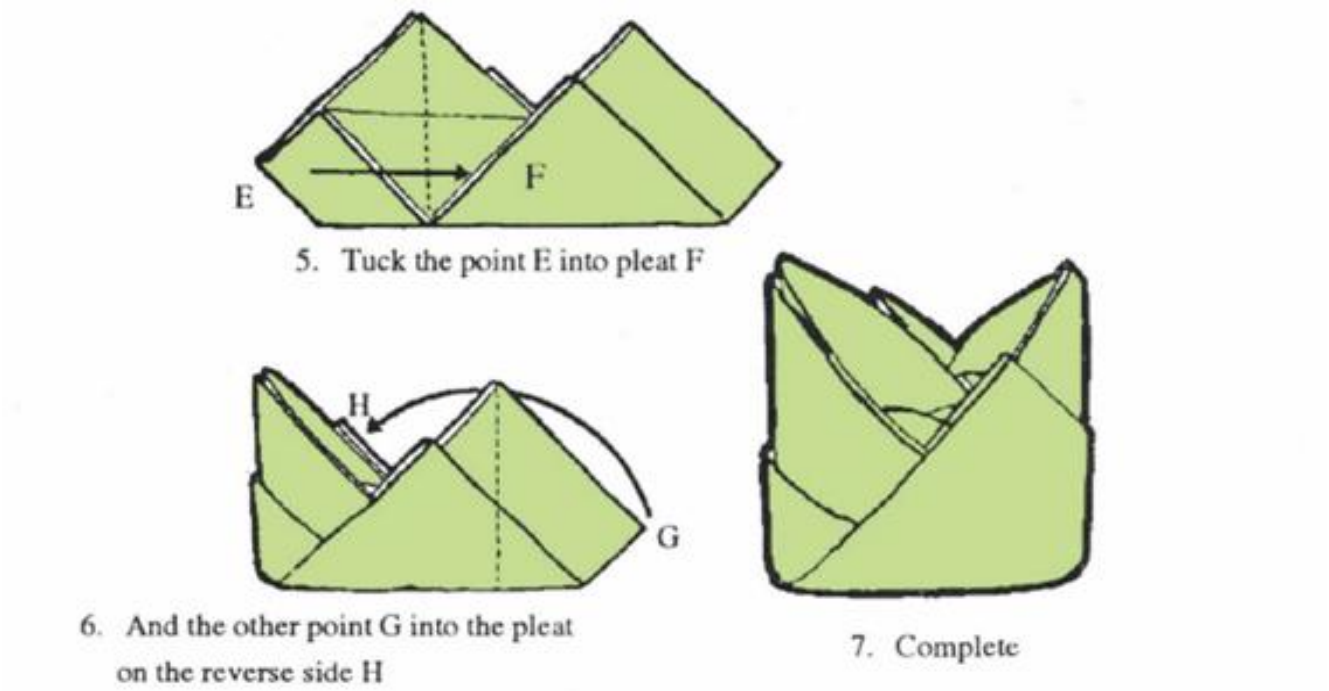
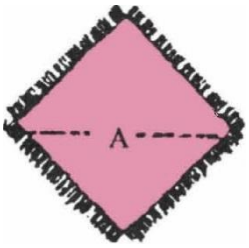
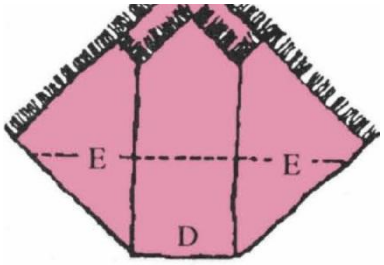


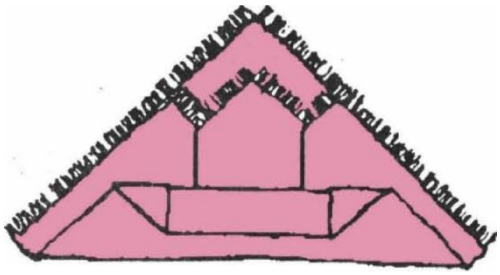
Figure 3-17



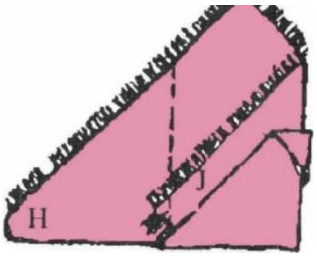
1. Fold the napkin across at the dotted line A



3. Fold across at the dotted line E turning up the portion marked D



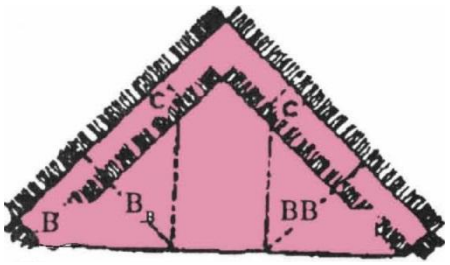
5. Curl at the base of the triangle



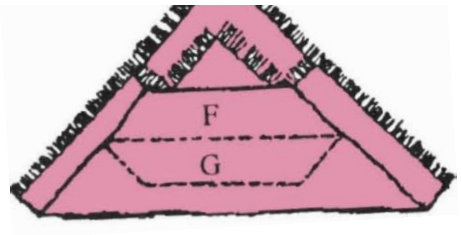


6. Insert the point of one side H into the pleat of the other

7. Pull down the pointed leaves, curl and tuck them into the pleats



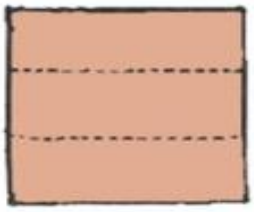
2. Then the two portions BB up at the dotted lines DB and BB to the centre part CC



4. Turn down the part marked F on to that



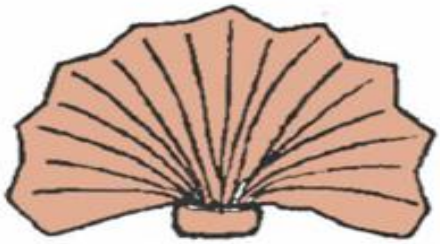
8. Complete



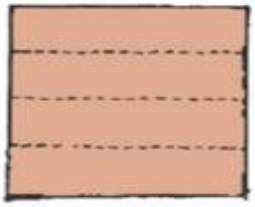
1. Fold the napkin into three as shown in diagram 2



2.



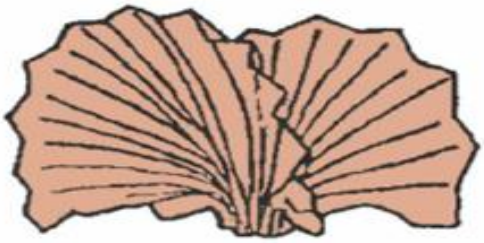
3. Pleat, open out, and place in a napkin ring or glass



4. Fold into four as shown in diagram 5



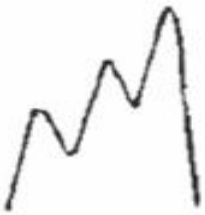
5.



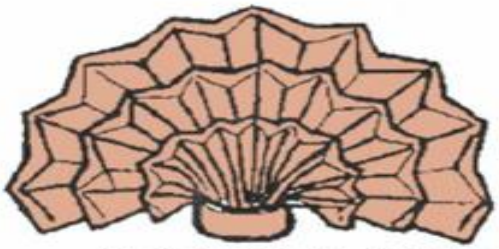
6. Pleat, open out, and stand alone at the corner of the table



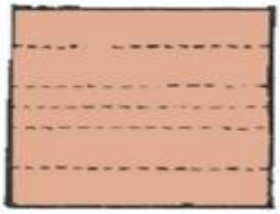
7. Fold or pleat as shown in diagram 8



8.



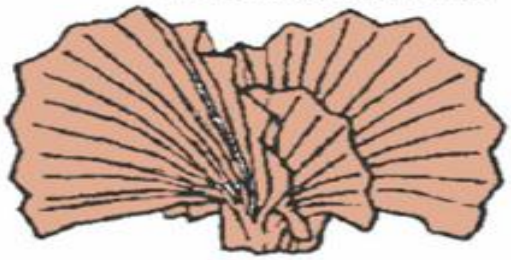
9. Pleat, open out, and place in a glass or napkin ring



10. Fold as shown in diagram 11



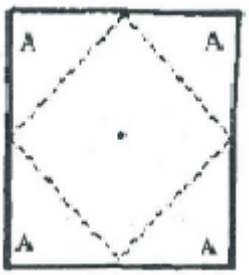
11.



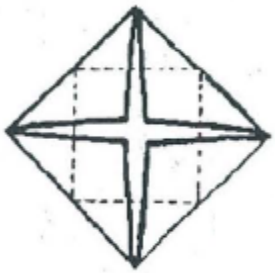
12. Pleat, open out, and stand alone

Figure 3-14 The bishop

The Rose



1. Lay the napkin flat on the table, and fold at the dotted lines so that the corners AAAA meet at the centre spot.



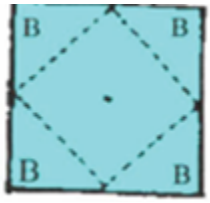
2. Without turning the napkin, fold the corners down again in the same way



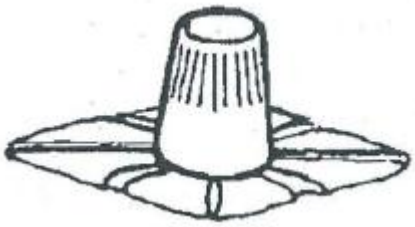
3. And repeat again



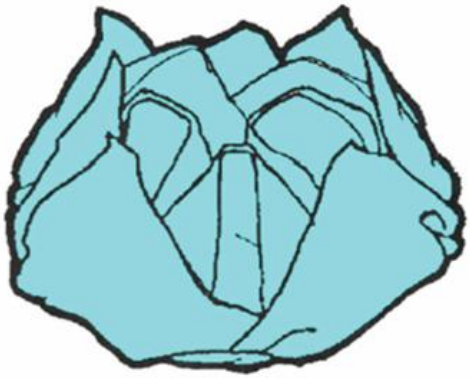
4. Now turn the napkin over on to the plain side.



5. Fold at the lines so that the corners BBBB meet at the centre .



6. Hold a tumbler firmly on the napkin at the centre, pull each of the points away from underneath.



7. Complete

Figure 3-15 The rose

Trays

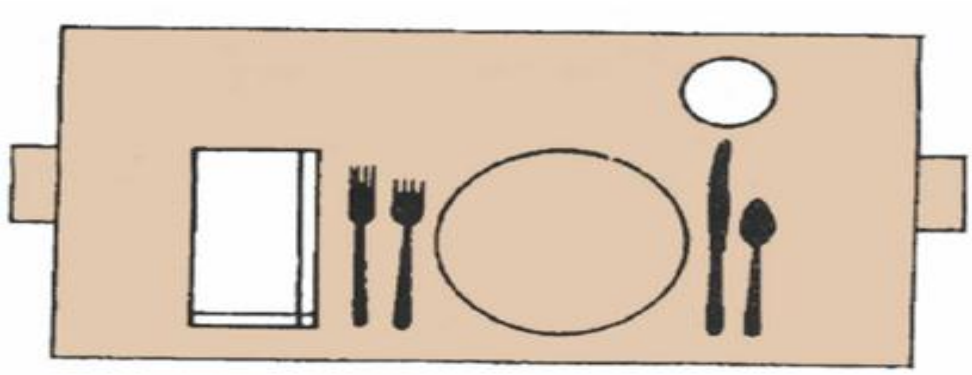


Figure 3-16 The tray

Set a tray or tray-table as an individual place setting. If space is limited,omit the butter plate; spread rolls in advance and serve from a bread plate or basket.

Butter spreader



Figure 3-17 Butter spreader

The butter spreader may be placed in either of the ways shown here. Never place it so that it rests in the centre of the plate.

Teaspoons

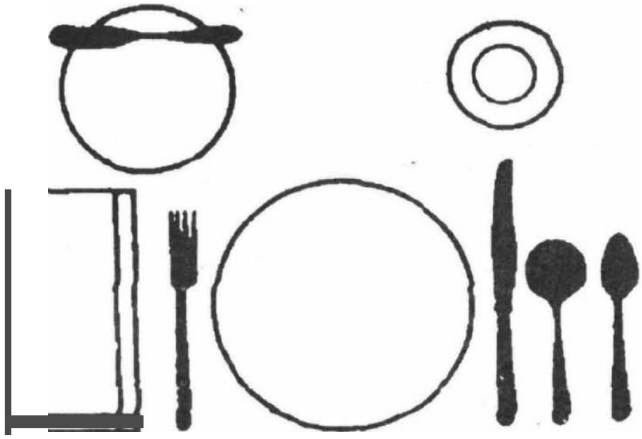


Figure 3-18 Teaspoons

At meals where the beverage is served with the main course (breakfast, family dinner), the teaspoon may be part of the place setting. At the other meals, teaspoons are placed in the saucer.

Buffets

Buffets are convenient and probably the most popular way to serve food for guests. They give the hostess a chance to express her originality in table arrangement within limits of orderliness and convenience. Here are a few suggestions for buffet settings:

1. Tableware and food should be arranged in a convenient order so that guests can pick their plates first, then food and condiments, with silver, napkins, cups/ glasses and beverage last.

2. Dessert and dessert silvers and plates may be on the table, or brought out later, depending upon the size of the table and type of dessert. For example, a beautifully decorated cake might be the centre of attraction on the buffet table, from start to finish.

3. A tablecloth, lace or damask, is usually preferable to place mats for a buffet, to help unify the setting. As another means of unifying a buffet table, place items in groups: put all together at one end, with beverage server if needed; silver and napkins together; large dishes of food surrounded by smaller dishes of condiments.

Duties of the hostess

The hostess receives the announcement of the meal by the waitress or waiter and so indicates by a nod or bow to the host. She and her escort are the last of the group to enter the dining room. She signals the guests to be seated, assists with conversation, indicates the time for serving and removing o f each course, and gives any needed directions to the waitress in a quiet and unobtrusive manner. When the dinner is over, she indicates the time for leaving the table.

Duties of the host

The host, escorting one of the guests (usually the guest of honour), leads the group to the dining room. He receives the indication from the hostess for seating, and seats the guests of honour. The other men in the party do the same for the women they escort in the dining room. The host assumes the responsibility for direct conversation.

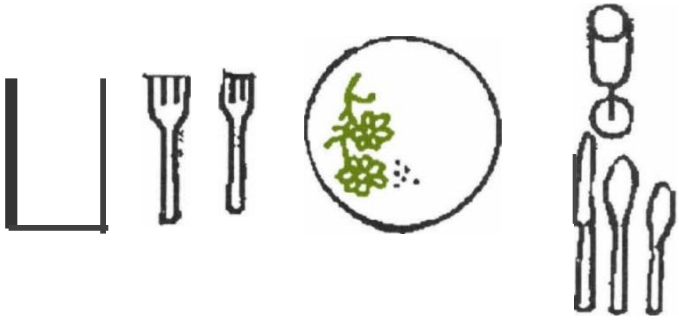
Duties of the waitress

A waitress or waiter is required for each service. A service plate is used for each cover and is left on the table until exchanged for the first hot plate. A guest is never left without a plate at his cover, except for the dessert course when the table is cleared and crumbed.

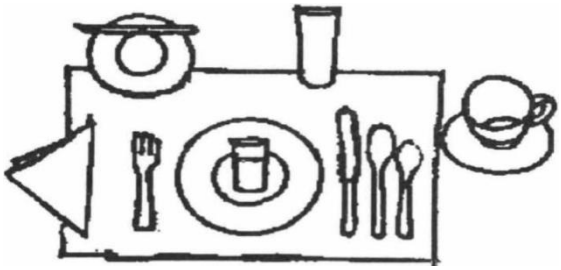
The waitress serves first the guest of honour, then the other guests in an order previously indicated by the hostess and the host. She refills the mugs with water, as needed; they should be kept well filled throughout the meal.

Using a knife, fork, spoon and fingers

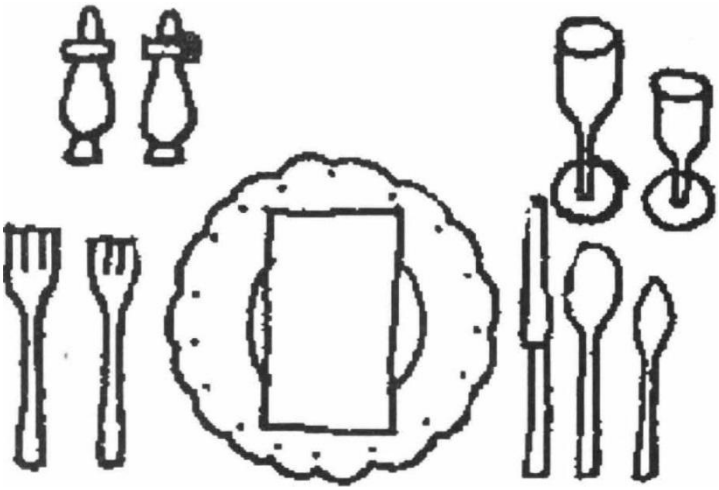
(a)



(b)



(c)



(d)



Figure 3-19 Tips for table setting

Use your knife

To:

- spread butter
- cut all meat
- cut fish that cannot be broken easily by a fork
- cut sandwiches and salads, when hard to manage with a fork

Use your fork

To eat:

- all foods that are not eaten with a spoon or your fingers
- meats
- vegetables and fruit dishes, unless they are very juicy
- salads
- cake
- all egg dishes, except soft cooked eggs
- watermelon

Use your spoon

To eat:

- cereals
- vegetables that are stewed with much liquid
- soft cooked eggs
- custards and puddings

- fruit cocktails
- ice cream
- soup
- stewed fruit
- stirring and tasting beverages

Use your fingers

To eat:

- bread and rolls
- small cakes
- fresh cherries cookies
- corn on the cob
- crackers
- fruit served whole
- potato chips

4. MANAGEMENT PROCESS

Many processes of management are known. Most of these are incorporated daily in the management of different kinds of business. In this chapter, we will mainly consider the following steps of Planning, Organising, Controlling and Evaluating.

There are several a steps in the process of management. Most of these steps are incorporated daily in the management of different kinds of businesses as well as in the home.

Planning

This is considered the first step in the management process. If there is a task to be done, you have to plan who will be given specific aspects of the job, e.g., checking on progress of work, time - checks to be made, etc. These aspects of the job indicate the importance of planning, as it forms the basis for other activities within the management process. When you plan, you are able to provide a sequential approach to your work. Planning also helps in the prediction for what is to happen and determines goals and values of both individuals and family members.

Planning includes decision making, i.e., identification of a problem that is to be solved or any goal that is to be achieved; gathering information; determining possible courses of action and the results of each action; choosing the course that will be most productive and being responsible for the choice taken.

In order to achieve maximum satisfaction in management, planning will have to be seen as a group process. The persons who will be involved and/or affected by the decisions to be made will have to be present, when planning is been done and decisions are being made.

Organising

This step in the process of management is saying that everything should be placed orderly in order to complete any task or achieve goals at planned times. Families need to organise the activities that are planned in order to achieve their goals. Organising is a daily step because many activities are done every day. When organization of activities is being done, division of labour comes into focus. Where the work is divided into groups the family members are given activities that are determined by their abilities and experiences. If family members have good working relationships, they would be able to work together to achieve their goals. Organising also provides knowledge of persons with authority and those with special qualities.

Controlling

This is seen as the most challenging aspect in the management process. It involves:

- careful observation and assessment of performance;
- checking work and performance, ensuring that activities or tasks are going according to plan;
- reviewing and changing to suit the plan .

Controlling is associated with progress as it relates to the time plan, quality of work, costs, or personal relationships, i.e., attitudes, feelings and satisfaction of persons. The situation may arise where some type of evaluation would have to be done at this stage, in order to review and replan the entire activity, or some aspects of it, to meet changing needs and availability of resources.

This process also involves decision making, where one is able to check the plan at each stage and determine whether it needs reviewing or whether the work can continue as planned.

Evaluating

This is checking to determine how well plans that were made, have been accomplished.
The evaluating steps involve:

- identifying and checking activities as well as selecting and making them valid
- specifying desired behaviour as well as the activities for classifying them
- measuring desired behaviour as well as the activities for obtaining valid and reliable information
- analysing results to see the extent to which the desired behaviours are achieved, as well as checking methods of the planning, for further improvement of one's own competencies and performances.

Evaluating also checks to see why outcomes are different from desired goals. It is the instrument that analyses the effect of a particular action on the total pattern of living.

Finally, the value of evaluating is to acquire the necessary skills to ensure validity in the management process.

5. MONEY MANAGEMENT

Many relationships suffer because of financial misunderstandings. The ability to discuss money matters reasonably and objectively within the family, and the willingness to accept responsibility for money decisions, contribute to harmonious family living. In every respect, finance is a family affair.

How you manage money is often more important than your actual income. Two families may have the same income and visible financial problems: one will live comfortably, while the other will be constantly at odds because of financial misunderstandings.

Money management unites planning in relation to carefully chosen goals, allotting funds in appropriate amounts for different needs and special wants, and knowing how to choose the qualities of goods and services, that will best suit family needs. It also makes judgements about when to use time, energy and skills rather than money to meet needs,

Money in itself has no value. It cannot be eaten or worn but it is simply a means of exchange, whereby, labour is turned into the goods and services essential to living. Money should never be considered as an end in itself by any thinking person. Money in the modern world is a complex commodity. Not only can you work to earn money, but money can also be made to work for you.

People are careful with their money, ensuring that they use it to gain the best possible results. Some people are careless with money. They spend whatever they have, without thinking whether more return in good living would be possible for their investments. Others over-value money and become misers, hoarding it away while they live in want.

The amount of money obtained each week, fortnight or month can be spent in various ways. The different ways money is used and the ideas of extravagance or thrift are quite individual, and will determine the elasticity of your money which will be dependent upon your choice of spending. It could be spent all at once or maybe on just one item, e.g., a pair of shoes, over a period, or some can be saved.

Therefore, it is necessary for the person who has the responsibility of ensuring the smooth running of the home, to ensure that the best use of this resource is made. In order to ensure proper use of your income, you need to plan exactly how it is to be spent or saved. Before this can be done, however, you need to be aware of how much is the family's income and where it will come from.

It has now become necessary in this chapter to look at Money Management, as it involves considering the inter-relationships of time, energy and money.

Sources of money

People get paid to produce something by means of mental or physical work. Wages and fees for work vary according to skills required, education needed, and demand for work to be done.

Sometimes money is received as gifts, as inheritance or as income on investments. If the money income is small, the family may add to it by growing food and by doing, at home, many of the tasks otherwise paid for.

Income

This is money received for work done. It may be either wage which is money received for a particular job when completed, e.g., carpentry; or a salary which may be an annual or monthly payment for services, e.g., teaching, nursing; or a pension which is a monthly payment to retired workers for past services rendered.

Family/Household income

Family income is a measure of the combined incomes of all persons sharing a particular household or place of residence. It includes every form of income, e.g., salaries and wages, retirement income, remittances and investment gains.

This source of money comes under control of the family and is used by them to satisfy their needs, desires and honour their obligations.

Types of income

Money - Purchasing power, in dollars and cents, that goes into the family treasury in a given period of time: Sickness benefits, dividend interests, net rent, pensions or royalties. This is converted into goods and a service required for daily living and often a part is diverted into savings fund for delayed use or for investment purposes.

Real income - This is the flow of goods and services used or available for any given period of time. Real income is derived from the use made of money income together with that added without the use of money, but as a result of efforts of family or household members in their

daily living.

Physical income - This is the level of satisfaction that arrives out of our everyday experiences derived largely from the use of money and real income. It is intangible and subjective but it is the most important income in terms of family living.

Budgeting

This is the planning and calculating of one's expenditure. There are various types of budgets.

National budget – This shows a plan of how the country's money is to be spent and collected. This is given by the Minister of Finance at the National Assembly for approval by parliament.

Family budget - A family budget is the main tool used to manage personal finances and save money.
A family budget can be simple or detailed, depending on your needs. This shows the planning and calculating of income received by the family or household. The income earner may be one or more than one person.

Personal budget - This is simply a plan and calculation of how personal money is to be spent. This applies not only to earners, but to everyone who receives money.

Planning for the family or household budget

The family or household budget is a plan and calculation of the family's expenditure for a fixed period, e.g., monthly.

Budgets vary according to individual circumstances but there are certain principles which must be considered by every family. -

1. **Housing** -This is regarded as the chief item in the budget. It may take the form of rent, rates and taxes, or repair and general maintenance to the home.

2. **Food –** A family cannot survive without food therefore this item takes priority. It refers to meals eaten at home as well as meals eaten out.

3. **Fuel** - There is need for fuel which may be gas, electricity, kerosene, coal or wood, regardless of where a family lives. Some families, depending on their appliances, may need more than one type of fuel.

4. **Clothing** - This is also a necessity for the family and it should be realised that each month the same amount of clothes will not be purchased. Nevertheless, there should

be a fixed amount set aside, in the event of an emergency.

5. **Household expenses** - Apart from housing expenses, there are household expenses which include cleaning agents, laundry equipment, laundry, travelling expenses and domestic help if necessary.

6. **Personal expenses** - Each member of the family has personal expenses which include cosmetics, toiletries, entertainment and leisure.

7. **Savings** - A household budget will not be complete without savings. Regardless of how small, there should be an amount put aside for saving, even if it is in the form of an nsurance at first. From savings, the family is prepared for sickness, holidays, etc.

It should be realised that at the end of each period, an exact amount will not be spent on particular items. Sometimes, hardly any money will be spent on an item. When this happens, the excess may easily be put with the savings money so that money is not spent unnecessarily.

It may not be possible for a young married couple to plan and calculate a perfect budget immediately, therefore, for the first few months, allowances should be made and amounts that are accurate, should be noted, so that soon there would be a budget that is well planned and calculated.

Care should be taken when planning a budget so that the amounts calculated, make allowances for rise in prices or emergencies without spending money allocated for other items\savings.

6. TIME AND ENERGY

Introduction

A home maker's time is spent in purchasing and managing goods and services, caring for her family, preparing food, cleaning away after meals, clearing and caring for the home and a host of other home making activities. In addition, the home maker must find time for sleep, rest, personal care and grooming, eating meals, recreation and many individual pursuits.

Unless she is skilful in managing her resources, as well as those of others in her family, she will find her task difficult and exhausting, rather than joyful and creative.

Definition

Time: This is the duration of an event from the beginning to the end. The interval is measured in seconds, minutes, hours, days or years or a combination of minutes and hours, for example. It is concerned with analysis of the time used in carrying out details of tasks.

Energy: This is the ability or capacity to do work. Energy is used to sweep, cook, laundering, etc. It is the use of motion/movement in completing tasks.

Budgeting time

You have heard some homemakers apologise because they never get around doing the things they want to do, or even the things they ought to do. Their beds are left unmade. However, no matter how busy they are, they can find time for outdoor activities and leisure with their children.

A time plan is very important, especially to the homemaker, because it helps busy housewives use time wisely. To manage time wisely, it is important to follow these simple rules:

1. List the activities you are to carry out.

2. Estimate the time necessary to do each of them.

3. Plan to include time for worthwhile activities which you intend to carry out later.

4. Allow a small amount of schedule time to take care of emergencies and unforeseen changes. Such a plan should be simple and easy to follow.

5. Give the plan a trial by following it over a period of several days.

A time plan should allow time for all the activities for helping at home, for personal grooming, studying at home, for work and social activities.

Budgeting energy

A job will be tiring if all the wrong muscles are used. Many jobs are tiring because you do not use your body properly or you use more motions that are actually needed for them. Be sure that you bend, lift, reach, stretch, push and pull without strain. Let the force of gravity work for you when you can e.g., sit when you iron or when you prepare certain foods.

Sometimes, rearranging your work area will reduce muscle fatigue or strained body posture. Work surfaces of the proper height and width are important in avoiding body strain. Exhaustion can be avoided by having well lighted work surfaces and avoiding glare. When standing, distribute weight evenly on both feet to reduce strain.

Many people have more energy than they realize. Energy fluctuates with the demand made on it. It is best to undertake heavy and demanding tasks while you feel fresh and to save the less demanding ones for later. If you are going to use your energy to the best advantage and your skills and those of family members effectively, you must decide who is to do what, or whether certain jobs are better performed, with the use of household appliances.

Time plan

Household time plan

Time	Activities
6:30am - 8:00am	• Prepare breakfast; eat breakfast. • Make beds, put rooms in order. • Prepare and pack lunches. • Sweep- leave house in order. • Get dressed for work/school.
8:00am - 4:00pm	• Leave for work or school. • Empty clothes into washing machine. • Do homework. • Begin preparation for supper • Put clothes to dry.
4:00pm - 7:00pm	• Complete preparation of supper; eat supper. • Clear away and wash up. • Pick up clothes
7:00pm - 10:30pm	• Mend and iron clothes. • Prepare for the following day. • Homework.

7. HOUSING FOR THE FAMILY

A family must make available housing space to serve many individual and family needs. A dwelling suitable for a particular family will provide areas for both individual and group activities. There should be a general area for group living, including conversation, listening to music, eating, watching television and entertaining friends.

Housing must also supply space for work, such as preparing and serving, food, sewing, laundering and storing supplies for household maintenance. It must also provide areas or quiet zones to meet the individual needs of the family. Quiet zones should be set aside for sleeping, reading, thinking, studying and pursuing hobbies.

Privacy is also required for personal cleanliness and grooming. Storage facilities of various kinds for all the family must be considered. Some families will have to make special arrangements to meet the needs of handicapped or disabled family members. Of course, it is not only the amount of space a family has at its disposal that affects a family's comfort and convenience in day to day living. It is also the way in which that space is arranged. The arrangement of living space is a layout and can be shown on a floor plan or blueprint.

Have you ever found yourself back-tracking as you go from one room or task to the next? The path you follow in going from one living area to another or within a given area is sometimes referred to as traffic lanes. To be convenient, traffic lanes should be planned so that you do not have to go through a quiet zone or a private area to get to an area that is generally used. You should not have to retrace your steps or retrace your movements as you work within an area.

Planning storage space

Families have different storage needs. Some families tend to acquire more things- clothing, books, records, dishes and equipment- than they actually need or can use. If these are not to become dust collector and eyesores, storage space must be planned with care. Not only should adequate space be set aside for storage, but storage should encourage use and simplify living. It should not be just a way to keep belongings out of sight.

Well-planned storage contributes to orderliness s and ease in living. To plan storage efficiently, first, group together the articles to be stored. Second, decide how each item can be stored closest to its point of most frequent use.

Organising living space

Good organisation in sharing both space and equipment is particularly important. Careful organisation can work wonders in helping you to maintain order and to find things as you need them.

8. FRUITS



Figure 8-1 Fresh fruits

Botanically, fruits are the parts of plants that carry seeds for the generation of future plants. Thus, legumes, nuts and vegetables are technically fruits. However, for our purpose the word fruit will be used to denote the more fleshy, flavourful, often succulent plant produce such as cherries, sugar apples and mangoes.

In this country, fruits are generally used as snack items, but their rich colour, tantalizing flavours, and interesting textures can also be used to enhance our meals. In addition to its aesthetic value, fruits are an important source of nutrients.

Nutritional value

The nutrient content of fruits varies considerably among different varieties. In general, fruits are very low in protein and fat. Their main contributions to the diet are vitamins, minerals and carbohydrates.

Vitamins and minerals

Fruits are a very good source of Vitamin C and the Vitamin A precursor carotene. West Indian

cherries, guavas and citrus fruits are excellent sources of Vitamin C. Yellow and pink fruits such as papaw, mangoes and pink grapefruit are good sources of carotene.
Some fruits also supply small amounts of iron and calcium. Dried prunes, dates and figs contain some iron. Custard apple and dried fruits supply some calcium.

Carbohydrates

Some of the starch produced in plants during photosynthesis is stored in their fruits. As the fruits ripen, starch is converted to glucose and fructose. We receive some starch and sugar from fruits, depending on the stage at which they are eaten.

Fruits are also a useful source of dietary fibre. They aid digestion and excretion. Fibre is also useful for persons on low calorie diets as it gives a feeling of fullness and so reduces overeating.

Generally, fruits are an insignificant source of the other nutrients but a few. However fruits such as avocado and awara are rich in fat.

Selection

Care should be taken when purchasing fruits, as many of them perish easily.

1. Choose fruits that are just ripe, firm, unblemished, of a good colour and heavy for their size. These are signs of freshness and good quality.
2. Size and higher prices do not necessarily mean quality.
3. Look for fruits with a good shape. Cracked or very rough surfaces are often wasteful. However, fruits that are to be cut into small pieces or pureed, do not need to be perfect.
4. Take advantage of fruits in season. Fresh fruits are cheaper and of a better quality at peak season.
5. Buy dried fruits with the labels of reputable manufacturers.
6. When buying canned products, use the name of the product as a guide, e.g., fruit juice contains 100% fruit juice while a fruit drink may have 35-90% real juice. Fruit flavoured drinks may contain less than 10% real juice or no juice at all.

Storage

Fruits begin to deteriorate as soon as they are harvested or even before, so much care should be taken when storing them.

1. With the exception of lemons, store all fruits in the fruit compartment of the refrigerator. This slows down ripening and prevents moisture loss. Avocados and bananas should be fully ripe before they are refrigerated, as chilling causes them to lose their power to ripen. Chilling also darkens the skin of these fruits. In the absence of a refrigerator, store fruits in a well-ventilated place.

2. Stack older fruits on fresher ones so that the older ones are used first.

3. Fruits that give off an odour should be stored separately.

4. Store frozen fruits in the freezing compartment before they begin to thaw. Once thawed, do not refreeze.

5. Store canned and dried fruits in a cool, dry and well-ventilated place. Dried fruits are best stored in tightly covered containers or their original sealed packages. Cooked fruits and fruits from opened cans should be refrigerated in covered containers.

Note: Cans that are rusty, leaking, bulging or dented should be discarded. Canned fruits will keep about a year, if stored at a temperature of 70°F (20°C). Those with a high acid content tend to deteriorate more rapidly.

Preparation and cooking

Careless preparation and cooking of fruits can cause a deterioration of colour, texture, a loss of flavour and nutritive value. These changes can be kept to a minimum, if we observe the following rules.

1. Peel, slice and cut fruits just before serving or cooking.

2. Dip fruits that brown easily, e.g., bananas, in lime juice or other acid fruit juice after they have been sliced. This prevents discoloration. Gelatin also prevents browning in fruits.

3. Cook fruit for the minimum period of time in very little water.

4. Cover the pot while cooking.

5. Make use of the syrup from canned fruits.

Cooking

Fruits are most often cooked by boiling, stewing and baking.

Boiling

Many fruits can be boiled at a low temperature, i.e. at simmering point. To simmer, cook fruit in a covered pot in its own juice or in a small amount of water. Simmered fruits are usually used to make sauces and jams. Pressure pots can also be used for softening fruits.

Stewing

This is the cooking of fruits in small amounts of liquid with added sugar. Sugar helps to preserve the texture of the fruits, but too much causes them to shrivel and harden.

BAKING

Most fruits can be baked with favourable results. Grilling is not a popular cooking method for fruits. However, it can be used on grapefruits and tomatoes that have been previously topped with butter and sugar.

Dishes

Fruits can be used in the preparation of a wide variety of dishes such as:

(1) Salads, e.g., Fruit salad

(2) Appetizers, e.g., Fruit cocktail

(3) Beverages, e.g., Fruit punch

(4) Pies and puddings, e.g., Jam tarts

(5) Cakes, e.g., Christmas cake

QUESTIONS

1. Name the vitamin precursor that is found in yellow fruits.
2. Why should the cooking and canning liquid of fruits be utilised in the preparation of dishes?
3. List three selection tips that should be observed when purchasing fruits.
4. List three methods of cooking that are recommended for fruit cookery.
5. Identify three dishes that can be prepared by each of the methods listed.

9. VITAMINS

For centuries, man knew that foods such as liver, citrus fruits, fresh vegetables and cod liver oil were able to cure specific illnesses, but up until the early 1900's the actual substances that prevented or cured those illnesses had not been identified.

Extensive work with carbohydrates, fats and mineral salts proved that they were not the substances that cured those illnesses, so scientists began to search for new health giving factors in foods. Between 1910 and 1920, several of those factors were found. Some were closely associated with fats and others were not. At first, those substances were called vital amines or vitamines for short. Later the "e" was dropped, and as each new vitamin was discovered, it was named after a letter in the alphabet. Thus, the first vitamin was called Vitamin A. This vitamin was discovered in 1913. Shortly after, a second vitamin was discovered. However, further work proved that it was not one, but a group of different substances. This vitamin was therefore called Vitamin B Complex. The identification of the various vitamins within this group occurred between 1930 and 1948. In the meanwhile, Vitamin C was isolated in 1928 and Vitamin D in 1930. Today we know of several vitamins of nutritional importance. Some of the most important ones are:

- Vitamin A - Retinol
- Vitamin B - Complex
  - Thiamine (B1)
  - Riboflavin (B2)
  - Niacin (B3)
  - Pantothenic acid (B5)
  - Pyridoxine (B6)
  - Biotin (B7)
  - Folic acid (B9)
  - Cobalamin (B12)
- Vitamin C- Ascorbic acid
- Vitamin D - Calciferol
- Vitamin E- Tocopherol
- Vitamin K - Menadione

Some scientists that deserve mention for their work with these vitamins are Grijns, Pekelharing, Hopkins, Holst, Frolich, Hart, Me Collum, Funk and Eijkman.

Classification

Vitamins can be classified into two groups, the fat soluble group and the water soluble group.

Vitamins - Their classification, similarities and differences

Fat Soluble Vitamins	Water Soluble Vitamins
A,D,E and K	**B complex, C**
1. Are more stable to heat.	1. Are destroyed by heat.
2. Are insoluble in fat.	2. Are insoluble in fat.
3. Are insoluble in water	3. Are soluble in water



Figure 9-1 Wholesome foods

Wholesome foods: milk, vegetables, fruits, eggs, meats, beans, whole-grain cereals and bread.

Sources

All vitamins can be obtained directly from foods but some are formed by:

(1) precursors or pro-vitamins present in our foods and in our bodies.

(2) bacteria present in our intestines.

General functions

Each vitamin has specific functions in the body, but as a group they are responsible for maintaining and regulating body processes such as:

(1) Growth.

(2) The production of healthy off spring.

(3) The maintenance of health and vigour.

(4) The digestion and utilization of mineral elements, amino- acids, fats, and carbohydrates.

(5) Normal appetite.

(6) Mental alertness

(7) Resistance to infection.

Since vitamins are so important, we must make a special effort to include them in our diet each day. However, we must note that our bodies only need small amounts of these nutrients. Large amounts received through the use of supplements could be wasteful or even toxic. Vitamin supplements should be avoided, unless prescribed by a physician. The best way to get vitamins is by eating a wide variety of foods.

Vitamin A

This is available in the diet as retinol or as the precursor, carotene.

Properties

1. Insoluble in water but soluble in fat. Fat must be present for it to be absorbed from the digestive tract.

2. Fairly stable to heat. There is little loss during cooking, evaporation, pasteurization, and irradiation. However, long slow cooking and very high temperatures can cause serious loss.

3. May be destroyed when exposed to oxygen. Foods that are rancid, wilted, or dehydrated would have a lower Vitamin A content. Anti-oxidants, such as Vitamin E, help to reduce the loss of Vitamin A.

4. May be destroyed by ultra-violet light as in sunshine. Store in a dark, cool place.

Sources

Technically speaking, Vitamin A or retinol is only present in animal foods. However, the yellow-orange provitamin carotene that is plentiful in plant food can be converted to Vitamin A in our bodies.

The best sources of Vitamin A are liver, kidney, butter, egg yolk, oily fish, fish liver oil and whole milk.

The best sources of carotene are bright yellow-orange fruits and vegetables such as carrots, pumpkin, ripe mangoes, papaw, corn, sweet potatoes. Also rich in carotene are red and green vegetables such as calaloo, spinach, lettuce, tomatoes, pak choi and pepper.

In some countries, Vitamin A is added to foods such as margarine and milk powder.

Functions

Vitamin A is necessary for the:

(1) Formation of healthy epithelial tissue and mucous membrane, i.e. skin lining of the nose,

throat, mouth, eye, respiratory, digestive and genito-urinary tracts.

(2) Formation of visual purple, i.e. the eye pigment that allows us to see in dim light.

(3) Development of bones and teeth.

(4) Protection against infection.

Deficiency

Our bodies store large amounts of Vitamin A in the liver; small amounts are held in the kidney, lungs and fatty tissues. Consequently, Vitamin A deficiencies do not occur readily. However, this deficiency is prevalent in poverty stricken parts of Africa, Asia, Latin America and the Caribbean, particularly among children.

Signs and Symptoms of Vitamin A deficiency

1. Stunted growth.
2. Inability to see well in dim light (night blindness) or more serious eye trouble.
3. Diseased conditions of the skin, lining of the respiratory, digestive and genito-urinary tracts.
4. Abnormalities in the enamel forming cells of the teeth.

The eye is the first organ to show effects of this deficiency. There is itching, burning and inflammation of the lids.

As the deficiency worsens, a part of the eye ball (conjunctiva) hardens, producing a condition known as **xerophthalmia** or dry-eye. Finally, the cornea softens producing the condition **keratomalacia**. This may result in infections, ulceration and permanent blindness.

In advanced stages of vitamin A deficiency, keratinization, the drying, shrinking, hardening, and roughening of other membranes occur. This leaves the sinuses, middle ear, lungs and genito-urinary tract open to infection.

Toxicity

While a deficiency of Vitamin A has serious effects on our health, extra-large doses or the

intake of large amounts, over a period of time, can have toxic effects. These include liver damage, bone abnormalities, desquamation, vomiting, spontaneous abortions and birth deformities. Early signs and symptoms include lethargy, abdominal pain, headache, excessive sweating, brittle nails, yellowing of the soles of the feet and palms of the hand.

Thiamine

Thiamine was the first B vitamin to be identified.

Properties

1. Soluble in water but insoluble in fat. It is easily leached out of food stuff during washing and boiling. Excess is excreted in urine and, to some extent, in perspiration.

2. Destroyed by heating, especially in neutral and alkaline solutions. Much loss occurs when soda is used in vegetable cookery and when a high temperature or prolonged cooking is necessary.

Sources

Most natural foods contain thiamine but much of it is destroyed during cooking and processing. Pork, heart, liver, kidney, dried beans, peas, peanuts and yeast are excellent sources. Grain products are also important sources because they are usually enriched. Green vegetables are a fair source in communities where lots of vegetables are eaten. Milk, meat, poultry and fish are also fair sources.

Functions

The main function of thiamine is to release energy from carbohydrates. It also plays a part in promoting:

(a) Normal appetite

(b) Better functioning of the digestive tract.

(c) A healthy nervous system

(d) Growth

Deficiency

Thiamine is not stored in the body, so **beri-beri**, the thiamine deficiency disease, is common

especially in persons whose diets are mainly composed of unrefined cereals. Beri-beri is also common in chronic alcoholics and in pregnant women who may suffer from persistent vomiting.

Signs and Symptoms of Thiamine deficiency

Thiamine is sometimes called the morale vitamin because early signs of its deficiency are depression, irritability, inability to concentrate, fatigue, insomnia, lack of appetite and loss of weight.

Later signs are:

(1) Gastro intestinal disturbances.

(2) Numbness and tingling of toes and feet.

(3) Stiffness of ankles and absence of the ankle jerk.

(4) Pain and weakness in legs and feet.

(5) Atrophy of leg muscles. This may be masked by the accumulation of fluid in the leg tissues. This is known as wet beri-beri.

(6) Lack of co-ordination.

(7) Disturbance of heart functions and death due to heart failure.

Toxicity

There is no known toxicity as excess is excreted.

Riboflavin

Riboflavin was the second B vitamin to be discovered.

Properties

1. Dissolves in water. Foodstuff should be cooked in limited amounts of water.

2. Relatively stable to heat. Little loss occurs during cooking, drying, canning, pasteurizing and freezing.

3. Easily destroyed by light and irradiation. Milk and other food stuff should be kept in cool dark places or in opaque containers.

4. Sensitive to strong alkalis. Some loss occurs when soda is used in cookery.

5. Absorption is assisted by phosphorous.

6. Stable in acid media.

7. Not easily oxidized.

Sources

The most important source is milk. Other sources are liver, kidney and heart. Yeast is also a very good source. Small amounts are found in meat, fish, legumes nuts and green vegetables. Cereals are a poor source, unless enriched.

Functions

Riboflavin is necessary for:

1. The use of protein, fatty acid and carbohydrate in energy production.

2. The production of enzymes and other body substances.

3. Growth.

Deficiency

Riboflavin deficiencies usually occur along with other B vitamin and protein deficiencies. Gastro-intestinal disorders, chronic illnesses, wound healing, and stress periods such as pregnancy, lactation, and growth spurts all require an increased intake of riboflavin.

Signs and symptoms of Riboflavin deficiency.

Signs and symptoms of riboflavin deficiency centre around inflammation and breakdown of tissue.

1. Injuries become aggravated and do not heal easily.

2. Lips become swollen and cracked (cheilosis) and cracks appear at the corner of the mouth (angular stomatis).
3. Tongue becomes swollen and purple-red (glossitis).

4. Eyes burn, itch, look watery and bloodshot.

5. Skin becomes scaly, with greasy eruptions especially in skin folds (seborrheic dermatitis).

6. General debility and changes in behaviour are experienced.

7. Lesions appear on the genitalia.

8. Anaemia.

Toxicity

There is no toxicity as excess is excreted.

Niacin

Niacin is known as nicotinic acid and the anti-pellagra vitamin. Niacin prevents the four D's-diarrhea, dermatitis, dementia and death.

Properties

Moderately soluble in water. Slight losses occur when cooking water is discarded.

Very stable to alkalis, acids, heat, light and oxidation. Little loss occurs during processing and cooking.

Sources

Liver, kidney, brain, poultry, meat and fish are the most important sources of niacin. Brewer's yeast, peanuts and peanut butter are also very rich sources. Potatoes, peas, beans and some green leafy vegetables and artificially fortified flour also contain fair amounts of niacin.

In addition to these direct sources, niacin can be manufactured in our bodies by the precursor tryptophan. Tryptophan is an essential amino-acid found in most protein rich foods. Niacin can also be synthesized by bacteria which live in our intestines.

Functions

Niacin is necessary for:

(1) Healthy tissues.

(2) The release of energy.

(3) Growth.

(4) A healthy appetite.

(5) Proper functioning of the digestive tract.

Deficiency

Pellagra is the disease caused by a deficiency of niacin diet. It is prevalent in countries where corn is the staple food; niacin is unavailable in corn. This disease affects the gastro-intestinal tract, the skin and the nervous system.

Signs and Symptoms of Niacin deficiency

Early signs include loss of weight and appetite, disorientation, memory loss, indigestion, fatigue, listlessness, headache, backache and general poor health.

Later signs include:

1. Sore tongue, mouth and throat with glossitis throughout the gastro-intestinal tract.
2. Nausea, vomiting, headache and diarrhea.
3. Dermatitis on exposed surfaces of the skin.

Note: If not treated, pellagra can lead to death.

Vitamin C

Vitamin C or ascorbic acid is a water soluble white crystalline material that is stable in dry form.

Properties

1. Vitamin C is lost in cooking, but the loss can be reduced by cooking quickly in small amounts of water, or steaming foods with the pot covered tightly.
   Preservation is also accomplished via quick freezing.

Sources

All fruits and vegetables contain some amount of Vitamin C.
Fruits with the highest sources of Vitamin C include cantaloupe, citrus fruits and juices such as orange and grape fruit, kiwi fruit, mango, papaw, pineapple, strawberries, raspberries, blueberries, cranberries and watermelon.
Vegetables with the highest sources of Vitamin C include broccoli, brussels sprouts, cauliflower, green and red peppers, spinach, cabbage and other leafy greens, sweet and white potatoes, tomatoes and tomato juice and squash.
Some cereals and other fruits and vegetables are fortified with Vitamin C., i.e. Vitamin C is added.

Functions

1. It is needed for the growth and repair of tissues in all parts of the body.
   It is used to form an important protein used to make skin, tendons, ligaments and blood vessels.

2. It can function as a coenzyme or as a cofactor in the body.
   It appears to be necessary for the normal function of cellular units and subcellular structures.

3. In metabolism, it accepts and donates hydrogen.

4. It plays an important role in the functioning of the nervous system.

5. It helps to promote the healing of wounds, fractures, bruises, some hemorrhages and bleeding gums.

6. It reduces susceptibility to infections, e.g., common cold.

7. It facilitates the absorption of iron and calcium, and it is essential for the utilization of folacin.

Deficiency

Excess Vitamin C is not stored in our bodies but tissues are usually saturated with the nutrient, so signs of a deficiency do not appear immediately. To keep our bodies well supplied we need to eat foods rich in Vitamin C every day. Our need for Vitamin C is greatest during periods of growth, pregnancy, stress, fever and infection.

Signs and Symptoms of Vitamin C deficiency

Early signs are susceptibility to infection, poor wound healing, irritability and poor health in general. If unattended, this mild lack can grow into the deficiency disease known as scurvy. Signs of scurvy are:

1. Swollen, bleeding gums and loose teeth.
2. Wasted muscles
3. Enlarged hone ends and ribs
4. Painful joints
5. Weakened blood vessels seen as small red spots under the skin.
6. Rough skin
7. Shortness of breath and anaemia

Toxicity

Very high doses of Vitamin C can be taken without toxic effects. After saturation point is met, excess is excreted in the urine.

Vitamin D

Vitamin D is really a group of compounds but it is customary to speak of them as one. The pure crystalline form of this vitamin is called Calciferol.

Properties

1. Soluble in fat and fat solvents. Fat must be present for its absorption to take place.

2. Insoluble in water.

3. Stable to heat, acids, alkalis and oxygen. There is little or no loss in cooking, processing and storage or preservation.

Sources

Natural foods are generally poor sources of Vitamin D. The only foods with a reasonable supply are egg yolk, liver and fatty fish such as tilapia. Fish liver oils (cod liver oil) and fortified foods (milk and margarine) are also very good sources of Vitamin D.
We also get Vitamin D directly and indirectly from sunlight. This vitamin is formed when precursors in plants and animals are exposed to the ultra-violet rays of sunlight. Ergosterol is the Vitamin D precursor in plants and Dehydrocholesterol is the precursor in animals. In human beings, this precursor is located in and under the skin.
Unfortunately, we cannot always depend on sunlight for our supply of Vitamin D as the ultra-violet rays can be blocked by dust, smoke, fog, clothing and pane. The colouring matter in the skin of negroes is also effective at blocking out ultra-violet rays.

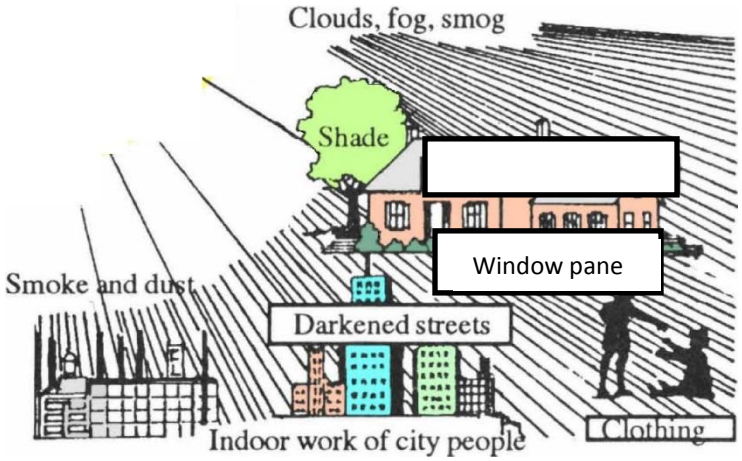


Figure 9-2 How ultra-violet rays are blocked

Functions

Vitamin D is necessary for the:

1. Absorption of calcium and phosphorous from our digestive tract.

2. Formation of calcium and phosphorus in our teeth and bones.

Deficiency

Vitamin D deficiency is more prevalent in northern regions, especially among dark skinned children and inhabitants of overcrowded, sooty section of cities. Pregnant women, lactating mothers, invalids and house-bound elderly people are also subject to Vitamin D deficiencies. In children this disease is called rickets. In adults it is called osteomalacia. The signs and symptoms of these diseases are associated with poor bone and tooth structures, and poor muscle tone.

Signs and Symptoms of Rickets

1. Delayed closure of fontanelles, softening of skull, bulging of the forehead.

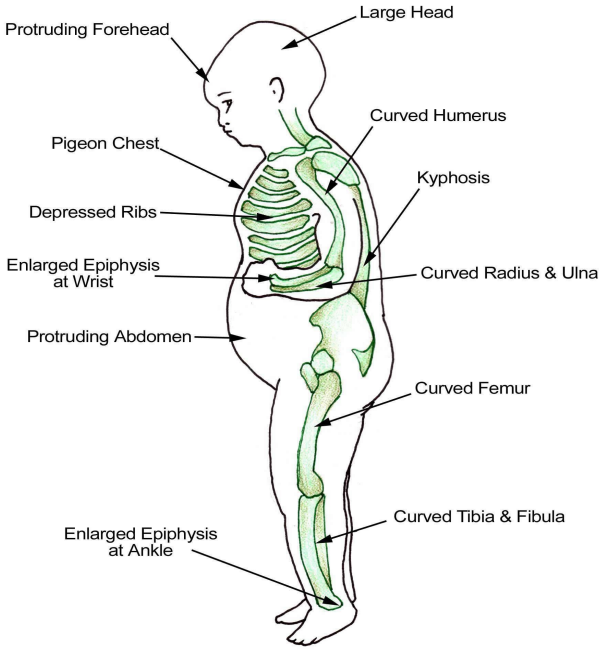
2. Soft fragile bones producing bowed legs, knocked knees, spinal curvature, shrunken chest and narrowing of the pelvis.

3. Enlargement of large bone ends due to the accumulation of soft bone (cartilage). This results in enlarged wrists, knees and ankles, bending of the ribs and projection of the chest.

4. Poor muscle development resulting in pot belly and delayed walking.

5. Tetany - twitching of muscles, cramps and convulsions.

6. Restlessness, nervousness and irritability.



Curved tibia and fibula

Signs and Symptoms of Osteomalacia

1. Softening of bones producing fractures and deformity of legs, spine, thorax and pelvis.
2. Pain of the rheumatic type in legs and lower back.
3. General weakness with difficulty in walking and climbing stairs.

Toxicity

Much of our surplus Vitamin D is stored in the liver. Some is also stored under the skin and in the brain, lungs, bones and fatty tissues. Signs and symptoms of an excessive intake are vomiting, diarrhoea, weight loss, frequent urination, fatigue, brittle bones and calcification of the heart, blood vessels, stomach, kidney and bronchi.

QUESTIONS

1. Name the vitamins which have an important role in energy production.
2. Name the vitamin that enhances calcium absorption from the intestine.
3. What are the basic differences between water soluble and fat soluble vitamins?
4. What general alterations would you expect in an adult's bone structure and or body functions, if the diet is deficient in:

   (i) Vitamin A (ii) Vitamin D
5. A nurse suggests to a patient that he/she should take his/her iron supplements with orange juice. Give one reason for this practice?
6. Why are milk and cheese excellent suppliers of niacin, even though the food composition table shows that they contain very small amounts of niacin?
7. James is admitted to hospital for surgery. Prior to the operation, he receives a large dose of antibiotics which destroy much of the bacteria in his intestines.

(a) Which nutrient supply would be decreased because of the destruction of intestinal bacteria?

(b) Which nutrient should be supplied in adequate amounts to promote healing?

10. SALADS



Figure 10-1 A salad

A salad is an attractive combination of raw, cooked or pickled foods used to enhance the nutritive value of a meal. They are usually served flat, tossed or moulded and may be either savoury or sweet. Moulded salads contain gelatin. Those that contain little or no sugar are known as aspic or savoury jellies.

The size of a salad and the number and selection of ingredients in it is usually determined by the role of the salad in the meal.

Types of salads

Salads may be classified according to their food content. A more convenient way of grouping them is by their role in the meal.

Accompaniment salads

These are the most common types of salads. They may consist of coloured vegetables only, coloured vegetables and fruits or coloured vegetables and starchy foods. Most persons prefer to use raw fruits and vegetables in salads because they add crispness to the meal. However, cooked or canned ingredients would be safer when cholera or similar epidemics are imminent.

Main dish salads

The chief ingredient in a main dish salad may be meat, poultry, dish, cheese, legumes, eggs or nuts. These protein foods are combined with one or more salad vegetable(s) and may be used as a filling for sandwiches or as the main dish of lunch, supper or dinner menus.

Appetizer salads

These are small light, tangy salads made from tart fruits, salad greens and or sea foods. Appetizer salads are served at the beginning of meals to stimulate the appetite.

Dessert salads

These are colourful attractive salads served at the end of meals. They are usually made of fruits and may be served with a sweet sauce or whipped cream.

Garnish salads

These are small salads consisting of an attractive combination of vegetables, fruits and pickled items. Garnish salads are used to add eye appeal to dishes.

Rules for preparing and serving salads

These rules are designed to protect the freshness, food value and attractiveness of the salad.

1. Use fruits and vegetable that are perfectly fresh.
   These have a better colour, flavour and texture. If ingredients must be bought in advance, store them in the fruit and vegetable compartment of the refrigerator.

2. Wash, drain and shake off all surface water. Excess moisture prevents salad dressing from clinging to salad and may produce an unattractive soupy appearance. Lettuce leaves may be dried by enclosing them in a clean towel and shaking lightly.

3. Prepare just before serving or keep closely covered in a refrigerator. Cut fruits and vegetables lose some vitamins when exposed to air. Arrange salad ingredients attractively, making good use of the natural colours and shapes. For a pleasant blend in flavor, avoid a wide mixture of ingredients and use small amounts of strong flavoured foods.

4. Add salad dressing at the last moment before serving. Acid and oil cause salad greens to go limp. However, the flavour of potato, meat and fish salads can be improved by marinating the above ingredients in salad dressing, an hour or two before serving. To preserve the crispness of vegetables, add these at the last moment.

5. Use large enough plates so that the salad does not extend over the edge.

Preparing salad greens

Salad greens are best washed in running water or large containers of water. If an epidemic alert has been sounded, ensure that all water, including water that is used for washing, is treated. The leaves of lettuce should be removed during this process to get rid of all traces of mud and sand.

After thorough draining, lettuce leaves may be torn or shredded. Some people prefer tearing because they believe that cutting destroys cells thereby increasing vitamin loss. Whichever method is used, ingredients should be small enough to be comfortably eaten, but not so small that they could not be identified.

Tomatoes may be sliced, cut into wedges or shaped into lilies. Cucumbers are usually sliced but they can be cubed or cut into long strips. Carrots can be grated, cut into thin strips or made into curls. Curls are made by steeping thin slices of the vegetable in cold water.

Cooked vegetables should be tender but firm enough to hold their shape.

Salad dressings

A salad is in not complete without its dressing. A salad is served with a dressing partly to aid digestion and partly to increase its refreshing quality. The oil or fat also helps in the conversion of carotene to Vitamin A.
There are basically three types of salad dressings: french dressing, mayonnaise and cooked dressings. Salads may also be dressed with lemon juice, vinegar, sour cream or evaporated milk combined with vinegar or lemon juice.
The kind of dressing used depends on personal preference but there are some salad and dressing combinations that are commonly used, e.g., french dressing with tossed salads and cooked dressings with fruit salads

QUESTIONS

1. (a) List three types of salads.

   (b) What is the name given to savoury moulded salads?

2. List four foods, other than vegetables, that can be used in the preparation of salads.

3. Explain why we should observe the following practices when making salads:

   (a) use dry salad greens

(b) put on salad dressing at the last moment

(a) marinate meats in salad dressing

(b) use a salad dressing

(c) prepare salad just before serving

11. EGGS

Eggs are significant for many cultural and religious purposes and they are also important as food. Some edible eggs are those of domestic birds, turtles and some variety of fish. For our study we will confine ourselves to the hen's egg.

Structure

The egg has three main parts, namely the shell, the yolk and the white. In addition, there are several other important parts.

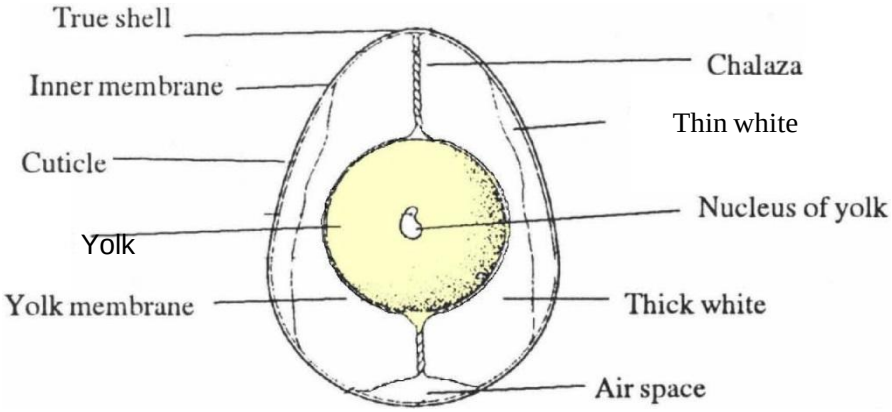


Figure 11-1 The structure of a hen's egg

The shell

The shell of an egg is largely composed of calcium carbonate (chalk) and its colour may vary from white to brown. Contrary to popular belief, the shell colour has no bearing on the nutritive value or keeping quality of an egg. It is merely a reflection of the breed of the bird. The keeping quality of an egg is however, affected by the porous nature of the shell. The shells have tiny holes or pores that allow gas, moisture odours and bacteria to pass in and out of the egg. When eggs are stored for a long time, bacteria may multiply within the egg and cause it to spoil.

On the outside of the shell, is a thin cuticle or bloom and under the shell is a semi-permeable film known as the shell membrane. The cuticle and the shell membrane help to reduce the penetration of bacteria into the white and yolk of the egg.
The shell membrane divides into two layers at the broad end of the egg to form an air chamber

or air space.

The egg white

The egg white is a clear, viscous substance which can be divided into layers, the thick white and thin white. Fresh eggs contain more thick white than older eggs.

The yolk

The yolk is a concentrated source of food, suspended in the centre of the egg. The colour varies from pale yellow to orange; it is a reflection of the hen's diet. The nutritional value is not significantly affected by the colour of the yolk. The yolk is surrounded by a thin film known as the vitelline membrane. Attached to the vitelline membrane are two cord-like structures known as chalazae or balancers. These hold the yolk in the centre of the egg where it is less likely to be attacked by bacteria. The chalazae also acts as a shock absorber protecting the embryo from injury during movement.

The embryo occurs as a light spot on the yolk. In a fertilized egg, this spot develops into a baby chick, if the egg is incubated.

Food value

Eggs make a very valuable contribution to the body's needs. The nutrients are so richly supplied, that eggs can be used in place of meat.

The yolk is rich in the proteins vitelline, ovalbumen and livetin, fats and the fat like substance lecithin. The yolk also contains fat soluble vitamins A, D, E and K; and the water soluble B vitamins. The mineral salts calcium, iron, sulphur, and phosphorous are also present in the yolk.

The white of the egg contains the proteins ovalbumen and mucin, and is a rich source of riboflavin. It also contains sulphur.

Egg cookery

The egg is a very versatile food, but a great deal of care is required in its use.

Principles of egg cookery

Because they are rich in protein, eggs should be cooked at a low temperature. High temperatures and overcooking cause discoloration, toughness and curdling. Discoloration is seen in the form of a green-black circle around the yolk of an egg, when it is boiled for too long. This is due to the reaction of sulphur in the white with iron in the yolk, and is particularly obvious in eggs that are not very fresh. Immersing eggs in cool water, directly after boiling, helps prevent discoloration.

When eggs are overcooked or cooked at high temperatures, the proteins coagulate and shrink rapidly squeezing out liquids. This results in a tough, rubbery product that is difficult to digest. In custards, the protein is seen as tough streaks, giving the dish a curdled appearance.

The proteins in egg white start to coagulate at 60°C ($140^{O}F$) and the proteins in the yolk start to coagulate at $70^{0}C$ (158°F)

Rules for egg cookery

1. Clean eggs and break separately, before mixing with other ingredients.
2. When combining beaten eggs with a hot liquid, pour hot liquid unto eggs while stirring continuously.
3. When stiffly whisked eggs are needed as for sponges and meringues, ensure that no fat is present on the utensils. In the case of meringues, no yolk must be present.
4. Fold eggs lightly into mixtures to avoid expelling air.

Uses of eggs in cookery

Their colour, flavour, viscosity and ability to coagulate make eggs very valuable in food preparation. They may be used as:

A **main dish**, e.g., eggs in ambush, omelettes. Because of their high protein content, eggs may be used alone or in combination with other ingredients as a main dish. When used in place of meat, two eggs should be used as one portion.

An **enriching agent** as in cakes, ice cream and puddings. The colour, flavour and nutritive value of dishes are improved when eggs are added as an ingredient. In baked foods, eggs improve the browning quality of the outer crust and give a creamy yellow colour to the inside. The nutritive value of these dishes is also improved due to the high protein, vitamin, mineral and fat content of eggs.

A **thickening agent** as in custards and sauces. Because of the ability of eggs to coagulate when heated, it is an excellent ingredient for thickening otherwise liquid dishes.

A **binding agent** as in fish balls and croquettes. The coagulating property of eggs also causes dry ingredients to bind together when heat is applied.

A **coating agent** as in fish fingers, potato balls. The use of beaten eggs on the outside of foods that may fall apart during cooking is also due to the property of eggs. Coatings also help to prevent overcooking of foods.

As **a lightening agent** as in swiss rolls, meringues and soufflés. The leavening action of the egg is due to its ability to trap air and form a foam as it is beaten. When this foam is heated, the air expands and the egg stretches then coagulates to form a light porous structure. Egg white is more efficient as a leavening agent because it forms more stable foam.

An **emulsifier**. The yolk of an egg acts as an emulsifying agent. Its proteins surround tiny globules of fat and keep them separate. The yolk also contains a fat-like substance lecithin which stabilises emulsions. Eggs act as an emulsifying agent in many foods, including cakes, and mayonnaise.

A **glaze**. In addition to providing a golden colour, eggs give a sheen to baked products such as pastries and breads.

A **garnish**. The contrast in the colour of the white and yolk of sliced or wedged eggs, helps to improve the appearance of salads, meat loafs and other dull looking dishes.

A **clarifying agent**. The beaten white and crushed egg shells can be used to trap and assist in the removal of tiny foreign particles that may be present in wines.

Methods of cooking eggs

Eggs can be cooked in a variety of ways, e.g., baking, frying, boiling and poaching. In each case, the egg may be hard cooked or soft cooked.

Grading of eggs

Most eggs are graded for quality and size. The quality of the egg depends on its freshness which is checked by the candling process. During candling, the egg is passed before a strong beam of light which makes the inner structure visible. This allows defects such as thinning of the white and growth of the embryo to show up. The very fresh eggs are graded AA followed by grades A, B and C.

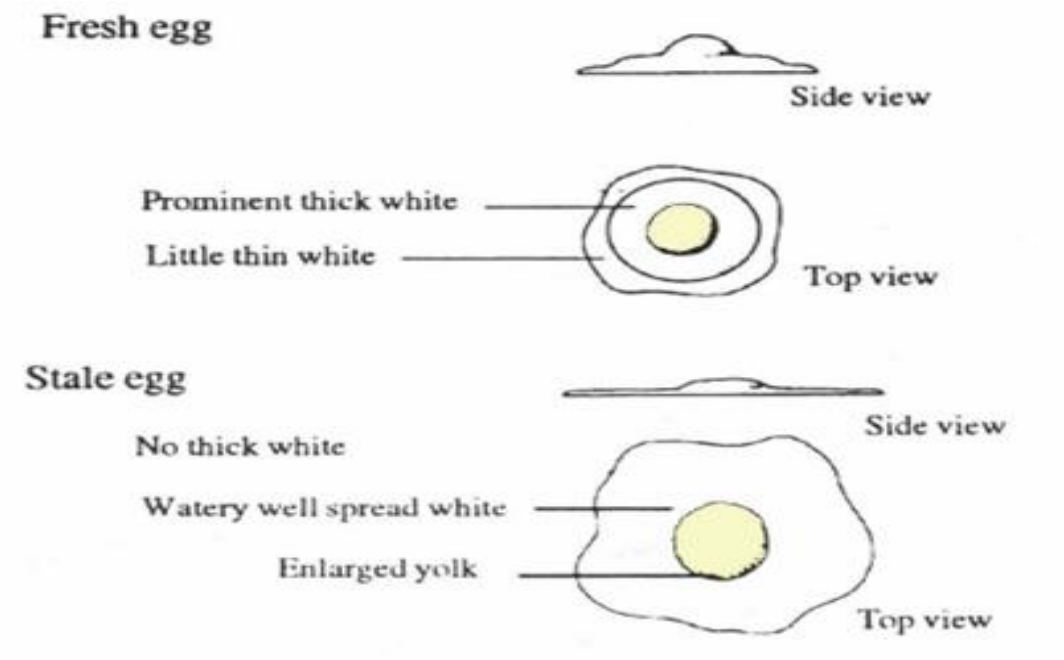


Figure 11-2 Structure of fresh egg and stale egg

The size is classified on the basis of weight per dozen as indicated in the following table

Size or Weight Class	Minimum Net Weight per Dozen (Ounces)
Jumbo	**30**
Extra	**27**
Large	**24**
Medium	**21**
Small	**18**
Pee-Wee	**15**

Unites States weight classes for shell eggs.

Testing eggs for freshness

The freshness of an egg is determined by the thickness of the white, size and position of the yolk, the weight, the size of the air space and the density of the shell.

As an egg gets stale, several changes take place:

1. Water moves from the white into the yolk, causing the yolk to appear flat and enlarged.

2. The yolk membrane weakens, causing it to be easily broken.

3. The thick white becomes thin, causing the yolk to be off centred.

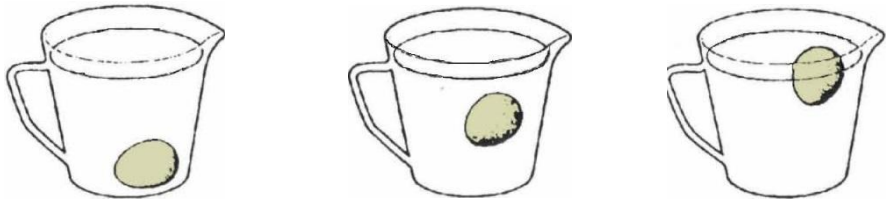
4. The size of the air space increases, causing the egg to become lighter.

5. Moisture is lost through the shell due to evaporation.

6. A foul odour is produced that is due to the reaction of sulphur with phosphoric acid and the production of hydrogen sulphide.
   One test for freshness that can be done at home is the brine test.

The brine test

Place eggs in a saline solution (1oz. salt to 2 pt. water). Eggs will sink, if they are fresh. They will remain suspended, if they are not quite fresh and they will float if they are stale.



Fresh egg Partially stale egg Stale egg

Figure 11-3 Testing an egg for freshness

Storage of eggs

Eggs should be carefully stored as they deteriorate quickly.

Rules for storing eggs

1. Store eggs in a cool place, e.g., the refrigerator.

2. Keep eggs in a covered container as the pores in shells allow the absorption of odours and the entry of bacteria.
3. Avoid washing eggs before storing. Washing destroys the protective cuticle that helps to maintain the keeping quality of the egg.

4. Store eggs with the blunt end up to avoid strain on the chalazae.

5. Store left over whites in a tightly covered container in the refrigerator. Yolks will keep for several days, if they are covered with water and kept in the refrigerator.

Preservation of eggs

The preservation of eggs is based on the principle that as air enters the egg, it takes bacteria to contribute to its deterioration. Some techniques used for preserving eggs are:

Coating - Eggs are coated with a special egg varnish or melted paraffin wax.

Freezing -Eggs are broken and the white and the yolk may be frozen separately.

Drying -The eggs are broken, well-mixed, then roller dried at approximately 710C.

Pickling - This is done in a solution of water, lime or borax.

Packing - The eggs are packed tightly in a dry substance such as bran or saw dust.

QUESTIONS

1. With the aid of a diagram, describe the structure of an egg. Discuss the function of the:

   (a) chalazae
   (b) shell membrane

2. What are the functions of eggs in the following dishes

   (a) baked custard

   (b) mayonnaise

   (c) meat loaf

   (d) potato salad

3. Why is a dark ring sometimes seen around the yolk of a boiled egg?

4. Explain how this discoloration can be avoided.

5. With the aid of diagrams, explain how eggs can be tested for freshness at home.

6. Why do some custards curdle?

12. MEAT

In its widest sense, the term meat refers to the flesh and some internal organs of animals that are used for human consumption. It includes birds, fish, shellfish, reptiles, and mammals. Since fish and shellfish differ from other meats in many ways, they will be considered separately.

Some of the most common sources of meat in our country are obtained from domesticated animals, such as chicken, duck, cow, sheep, goat and pig.



Fowl



Duck



Cow



Sheep



Goat



Pig

Figure 12-1 Some common source of meat

In some countries**, internal organs** are known collectively as **offal or variety meat**. Those used for human consumption are liver, kidney, heart, brain, tongue, tripe (from the stomach and intestines) light (from the lungs) and sweet bread from the thymus and pancreas.

Less common sources of meat are labba, turtle, deer, iguana, powis and other hunted animals. These are known as game.

Nutritive value

Protein

Lean meat is a very good source of complete protein. The main proteins in meat are: albumin, globulin, myosinogen, collagen and elastin. These proteins are all highly digestible.

Fat and carbohydrate

Meat is low in carbohydrate but it has varying amounts of fat depending on the type and cut of meat. Lean meat has about 13% fat. Cuts with marbling and thick layers of covering fat may have up to 27% of fat.

Vitamins

Meat is a good source of the B vitamins. Lean pork, liver and kidney are rich sources of thiamin. Liver and kidney are good sources of niacin and riboflavin.

Liver, heart and kidney are good sources of Vitamin A.

Minerals

Meat is a good source of iron, phosphorous, copper, sulphur and potassium. Organ meats such as liver and heart contain much more iron and copper than muscle meat. All meats contain moderate amounts of sodium.

Water

Lean meat is composed of approximately 70% of water.

Structure of meat

Most lean meats are made up of muscle tissue, connective tissue and fat. Liver and kidney are exceptions. They contain no muscle fibres, or connective tissues and are cellular in structure.

Muscle tissue

This is the lean part of meat. It is composed of bundles of muscle fibre bound together with

connective tissues. When a large number of fibre bundles are enclosed in a sheath of connective tissues, a muscle is formed. These are held to the bones by rough gristly tissues called tendons. If we examine a chicken leg carefully, we should be able to distinguish several muscles. Also if we look at a piece of beef carefully, we should be able to see fibre bundles with our naked eye. However, a microscope is needed for us to see a single fibre. Each fibre is a tiny tube containing a solution of mineral salts, proteins and extractives. Extractives are the substances that give each type of meat its peculiar flavour.

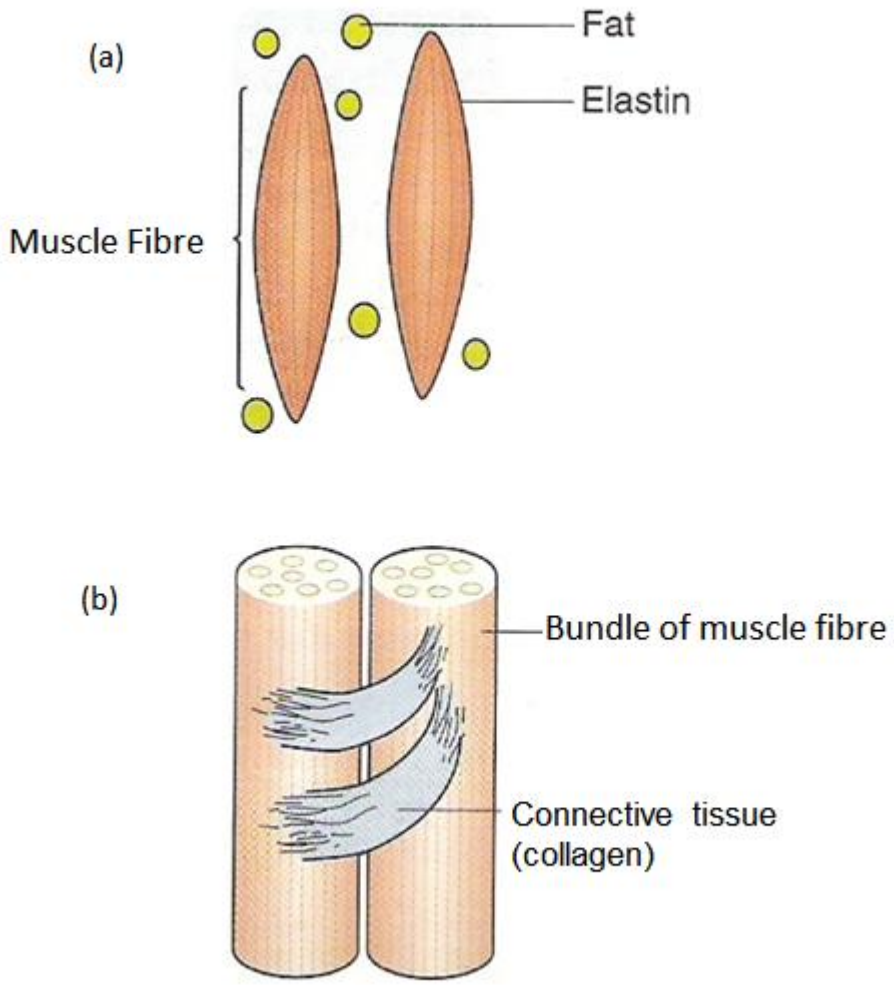


Figure 12-2 The structure of meat

Connective tissue

There are two types of connective tissue, namely **collagen** and **elastin**. Both are protein in nature. Collagen is the white to transparent tissue that holds fibres together and forms the sheath around muscles. It is converted to gelatin by moist heat. Gelatin is water

soluble and offers little or no resistance to chewing. The amount of collagen converted to gelatin during cooking increases with cooking time.

Elastin is a tough, elastic tissue that is yellow in colour. The walls of muscle fibres and the ligaments that hold bones together are made of elastin. Very little change occurs in this tissue during cooking.

Fat

A certain amount of visible and invisible fat is found in meat. The amount and kind of fat in meat vary with the kind of meat, the age and diet of the animal. Invisible fat is the fat that is distributed between cells as tiny globules. Visible fat is located between muscles, around organs and directly under the skin of the animal. The visible fat found between muscle tissues is known as **marbling**.

Inspection and grading

To get value for our money, we must be able to assess the wholesomeness and quality of meat. In the meat industry, wholesomeness refers to the safety of the product for human consumption and quality refers to grade.

In most countries meat inspection is compulsory by law. In Guyana, meat inspection is compulsory at all abattoirs and slaughter houses. Assessing the wholesomeness of meat simply means looking for a blue Mayor and City Council stamp on the meat. This stamp certifies that the animal was free from disease and was slaughtered under sanitary conditions.
Unlike inspection, grading is not compulsory. It is therefore our responsibility, to do our own grading, as we shop. To most consumers and meat handlers, meat quality or grade refers to tenderness, flavour, juiciness, texture and colour of the product.



Figure 12-3 The Mayor and City Council's meat stamp

Tenderness

Tenderness is one of the most sought after qualities in meat. This quality is largely determined by:

1. the size of muscle fibres and

2. the amount of connective tissue present.

Long, thick fibres and large amounts of connective tissues are associated with toughness, and short slender fibres with small amounts of connective tissues are associated with tenderness. The former are usually seen in older animals and very active muscles, while the latter are seen in young animals and less worked muscles. This explains why beef is tougher than veal and meat from the neck and heart are tougher than meat from the ribs and loin.

Tenderness in meat is also determined by marbling and aging. Marbling contributes to tenderness by splitting fibre bundles and breaking up connective tissue. Aging produces tenderness by allowing the partial breakdown of muscle tissue after the animal has been slaughtered.

When the animal is slaughtered, the muscles of animals stiffen due to the clotting of myosinogen, a protein in the meat juices. This condition is known as rigor mortis. When meat is cooked in this state, it is very tough. But if the carcass is allowed to hang for some time, enzymes and lactic acid act on the muscle proteins softening them. Animals that are rested before the slaughter, yield a softer meat because they produce more lactic acid than tired animals. As acid restricts bacterial growth, a high degree of lactic acid in meat also improves its keeping quality.

Juiciness and flavour

Juiciness and flavour are very desirable qualities in meat but these qualities cannot be seen. The only visible indication of these qualities is the presence of fat. Fat is associated with juiciness, because it reduces evaporation during storage and dry methods of cooking. It is also associated with flavour, because, fatty-acids are usually very flavourful. The characteristic flavour of meat is however, primarily determined by minerals salts and extractives found in meat juices. The richness of these flavours is usually determined by the animal's diet and the lactic acid content of its muscles. Meat from hard worked muscles and older animals have a stronger flavour because of their high lactic acid content.

Texture and colour

Texture refers to firmness and smoothness. Firmness is desirable because it suggests a good diet and therefore a good flavour. Smoothness is associated with short fine fibres and tenderness.

Meat colour is also a good indicator of tenderness and flavour. Dark coloured meat is usually tough, and more strongly flavoured than light coloured meat. We should note that darkness of colour may also be a sign of staleness. In the latter case, meat has a brownish hue.

The colour of bone and fat is also used for determining tenderness and flavour. Yellow fat and grey flinty bones are associated with older animals and are therefore signs of toughness and strong flavours.

Cuts of meat

Being familiar with the muscle and bone structure of animals, can also help us to recognise tender and tough cuts of meat.

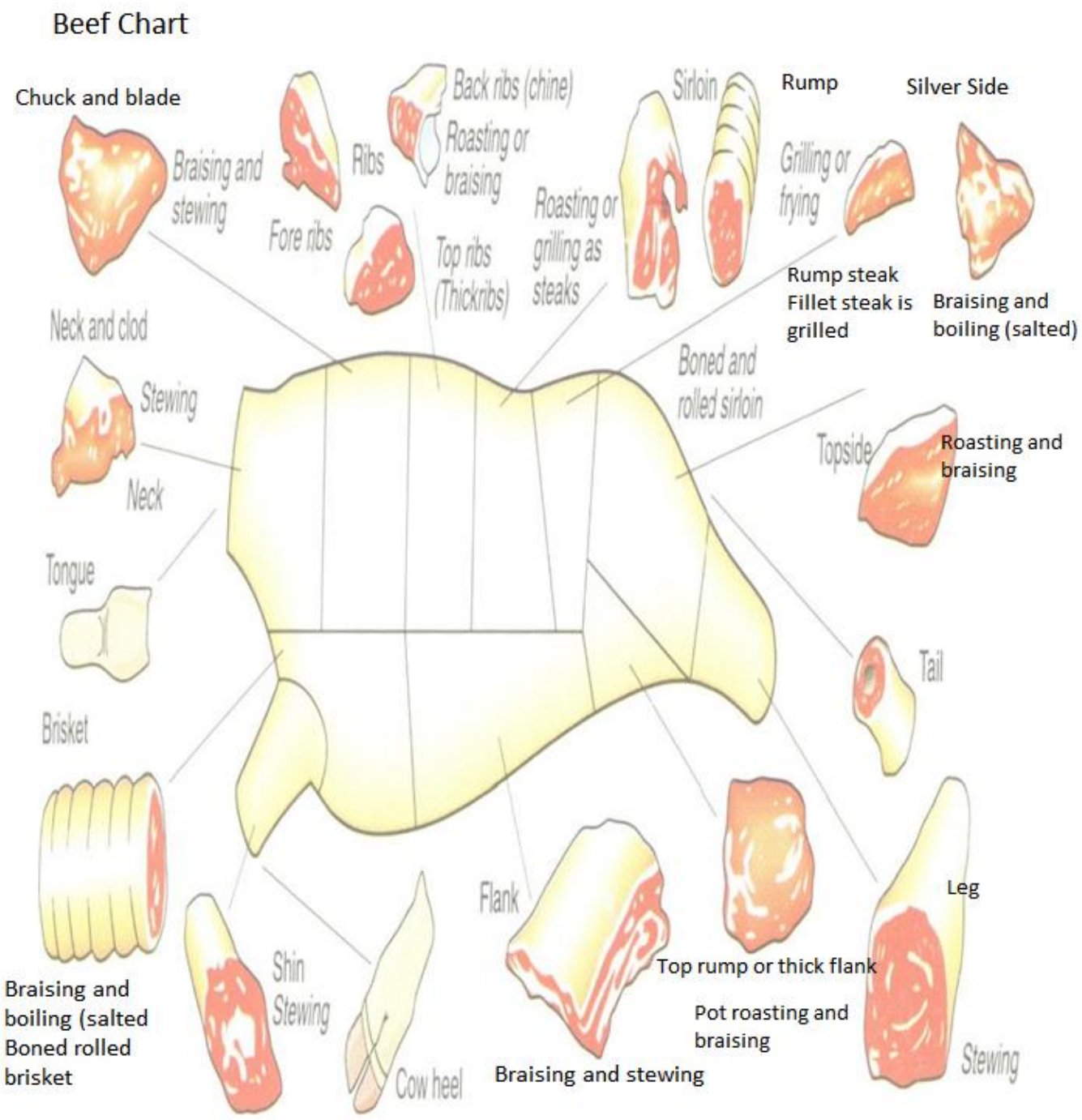


Figure 12-4 Market cuts of beef

Pork Chart

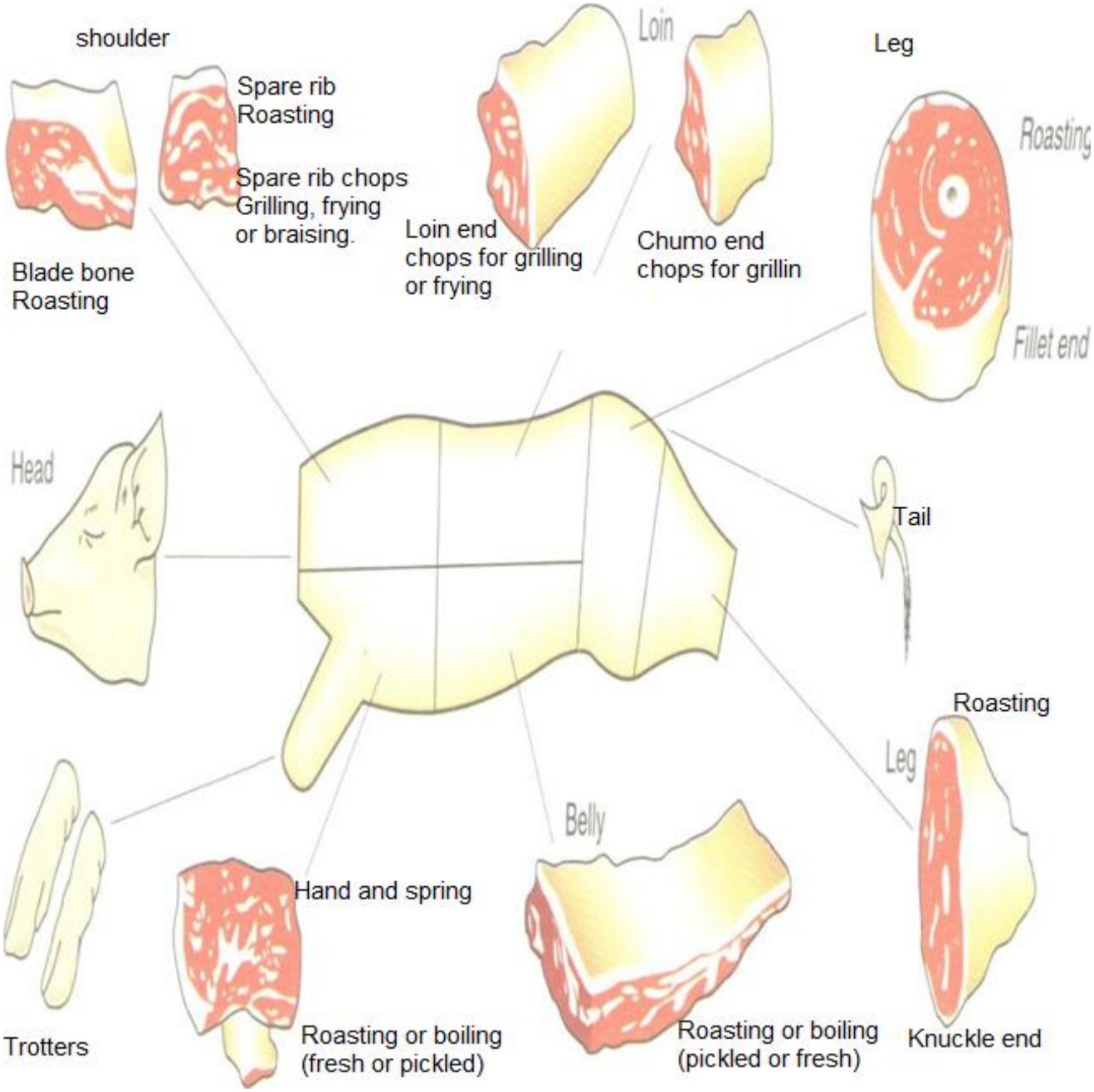


Figure 12-5 Market cuts of pork

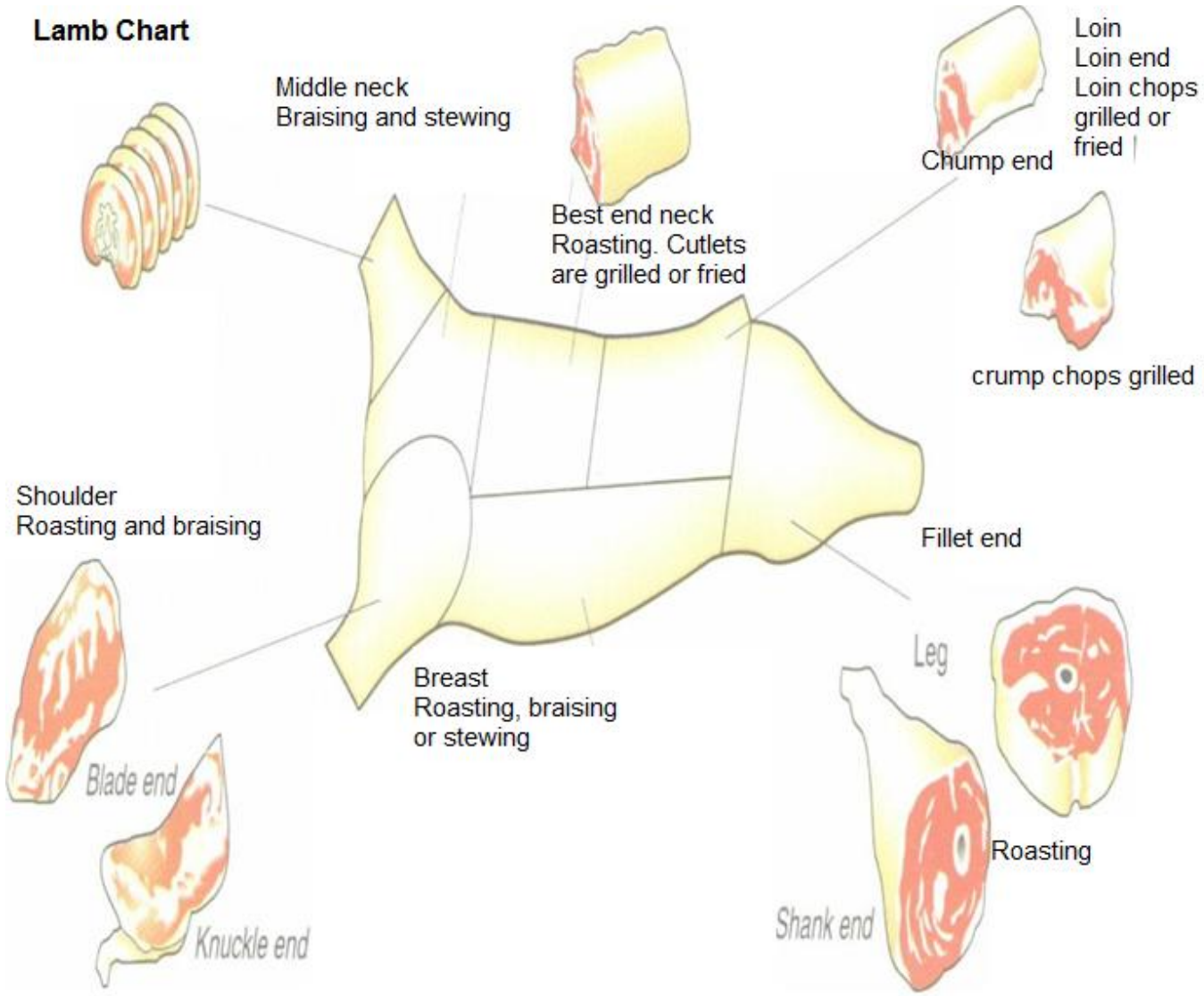


Figure 12-6 Market cuts of lamb

Processed meats

In addition to fresh cuts, meat can be bought cured, canned, frozen or dried.

Cured products include ham, bacon, salted meats, sausages and luncheon meats. Ham is usually made from the hind legs and shoulders of the pig. Bacon is made from the side and belly. Sausages and luncheon meats are made from chopped or ground meats blended with a variety of seasonings and spices. The principal kinds of sausages are fresh pork sausage, smoked and cooked sausages, e.g., frankfurters and bologna; and dry semi-hard sausages, e.g., salami.

Canned products are usually fully cured or cooked products such as ham, corned beef and stews. Most can be stored without refrigeration.

Frozen products may be raw or cooked, e.g., ground meat, and cooked meat dishes.

Dried meats may be prepared by sun or oven drying. Meats that are dried in commercial quantities are cured or cooked, then dried under controlled conditions, to allow moisture to evaporate. Tasso is a type of sun dried meat that is popular with Amerindians and other inhabitants of the interior.

Choosing meat

When choosing meat, we should be guided by the following;

1. Meat should be of a good colour. Lean meat should be bright deep red for beef, pinkish red for mutton, pale pink for pork and pinkish beige for veal.

2. Fat should be firm, not oily.

3. Flesh should be firm, moist and elastic to the touch. No liquid should be dripping from the meat.

4. Bones should be pink inside and spongy.

5. The smell should be fresh.

6. Cuts should be suitable for the method of cooking chosen.

7. There should not be too much bone and fat. Consider the cost in terms of edible portions.

Storage

The life of meat usually depends on the method of storage.

Chilled

- Solid cuts 2-4 days
- Ground meat 1-2 days
- Cooked meat 3 days -1 week

To chill, unwrap meat immediately after purchase and store uncovered or lightly covered with wax paper, in the coldest part of the refrigerator.

Frozen

- Beef 6 -12 months
- Lamb and veal 6-9 months
- Pork 3-6 months
- Ground beef 3-4 months
- Ground pork 1-3 months

Organ meats, ground meats and fish deteriorate rapidly. Always store them in the freezing compartment.

Meat cookery

Cooking produces a number of changes in meat. The colour changes from red to brown, moisture is lost, fat melts, collagen softens and elastin tends to toughen.

Preparation of meat for cooking

Flesh meats	-Sponge with a clean damp cloth and trim off undesirable portions.
Liver and Kidney	- Wash large pieces and remove outer membrane.
Sweetbread and brain	-Soak in water to remove blood. Remove blood vessels and excess connective tissues.
Heart	- Wash in warm water and remove large blood vessels.
Tongue	-Wash, pre-cook in water, remove skin and cut out roots.
Tripe	-Wash and scrape.

Tenderizing m e a t

The surest way to make meat tender is to cook it by a method suited to its quality. However, there are several ways of increasing the tenderness of meat before it is cooked. This can be done by physical or chemical treatment.

Physical treatment involves pounding, scoring, grinding or any other process that breaks up connective tissues and or shortens meat fibres.

Chemical treatment involves the use of either acids or protein splitting enzymes. Acids work by converting collagen to gelatin. These are rubbed on meat as in marinating, or added to cooking water. Enzymes are either injected into the animal before the slaughter, or painted on the surface of the meat a few minutes before it is cooked. Enzymes work by partially digesting meat proteins. Some enzymes commonly used are papain from papaw, bromelin from pineapple and ficin from figs.

Methods of cooking

Meat can be cooked by dry and moist methods. Originally, only tender cuts were cooked by dry heat. The common belief was that tough cuts needed moist cooking to convert collagen to gelatin. Recently, it has been discovered that low oven temperature (160^0 C or 325^0F) and long cooking times are just as effective in converting large amounts of collagen to gelatin. It is therefore possible for us to cook some not-so tender cuts of meat by dry heat.

On the contrary, moist cooking is still considered to be more suited to tough cuts than it is to tender cuts. Experiments have shown that whereas moist cooking tenderizes tough cuts, it seems to toughen tender cuts.

Cooking methods selected for offal should also reflect their tenderness. Heart, kidney, tongue and tripe are tough and require long moist cooking. Brain, sweet bread, liver and kidney are tender and may be prepared by dry cooking methods.

Roasting and baking. For years, the searing method has been a favourite roasting technique. This method, is a favourite, because the high cooking temperature (260^0 C or 500^0F) used at the beginning of roasting, gives a crisp, brown finish to outside fat and changes extractives to a tasty, brown, sticky substances known as osmazone. However, this technique tends to cause excessive shrinkage and toughening of meats. For a good flavour, combined with tenderness and adequate browning, the following roasting temperatures are therefore recommended.

Medium Tender cuts - 93^0C-107^0C at two hours per pound.

Tender cuts - 150^0 C- 200^0 C at 20 - 45 minutes per pound.

A higher temperature may be used at the end of the roasting time, if a richer colour is desired.

For accuracy in roasting, a meat thermometer can be used. This piece of equipment has the added advantage of assisting us to determine the degree of doneness in meats.



Figure 12-7 The meat thermometer

DEGREES OF DONENESS IN BEEF

Doneness	Internal Temperature	Inside Appearance
Rare	58^0C - 60^0C or 136^0F - 140^0F	Bright red or pink with pink-red juices
Medium	71^0C - 75°C or 160^0F - 167^0F	Greyish pink with pink juices
Well done	78^0C - 82°C or 172^0F - 180^0F	Grey brown with no juice

Veal,lamb and pork are usually cooked until well done.
Veal: 74^0C - 77^0C or 165^0F - 170^0F
Lamb: 82°C or 180^0F
Fresh Pork: 77°C or 170^0F

During roasting or baking, meats may be covered with a lid or foil, but this usually reduces the cooking time and may cause a greater loss of juices into the baking pan.

Grilling and pan baking

Grilling is suitable for tender and medium tender cuts. However, it is not recommended for fresh pork as it is difficult to achieve a well done steak by this method of cooking. During this method of cooking, the meat is put on a rack in the grill pan to keep it out of the dripping. The door of the grill is also left open to prevent the accumulation of steam. To check for doneness, pull out a bundle of fibres from the thickest part of the meat and note the colour.

Pan broiling is done in a heavy pan and the liquid fat is dipped or poured out as it is formed.

Frying

Frying is commonly reserved for tender cuts of meat. Meats may or may not be coated for frying.This method may be used as a preliminary to braising or stewing.

Braising

Braising is usually applied to medium tender cuts. This method of cooking begins with the frying or grilling of meat, then a small amount of liquid is added, the pan is covered, and the meat is allowed to simmer until tender. The length of cooking time depends on the size and type of meat. Braised meat is always well done.

Stewing

This method of cooking is used on tough cuts. (see details in chapter on stewing)

Boiling

Boiling is suitable for tough cuts and salted meats. The meat is put into just enough water to cover it; then boiled. Most cooks prefer to cook their meats at simmering point, rather than boiling point, as the lower temperature reduces shrinkage and the consequent loss of extractives. The liquid in which meat is boiled should be used in soups and gravies to make use of the vitamins and flavours that have been leached out.

QUESTIONS

1. Name three organs that are suitable for human consumption.

2. Identify three nutrients meat contributes to the diet.

3. What is marbling? How does it affect the tenderness of meat?

4. Explain why beef is tougher than veal.

5. (a) List the three main factors that are responsible for meat flavour.

   (b)The richness of meat flavour may vary from one animal to another. State two reasons for this.

6. Name and describe the two types of connective tissue in meat.

7. List three signs of freshness in meat.

8. Explain how each of the following contributes to meat tenderness:

   (a) aging

   (b) injecting the animal with papain

   (c) pounding

   (d) long slow, moist cooking

   (e) marinating

13. STEWING

Stewing is a slow moist method of cooking in a covered vessel. This method of cooking can be done on top of the cooker or in the oven. Stews that are cooked in the oven are called casseroles. Suitable foods for stewing are cheap, tough cuts of meat, vegetables and fruits. Stewing can be done in stock, water, syrup or milk.

Rules

The aim in stewing is to soften starch, cellulose and protein without causing the food to fall apart or toughen. To obtain the best results, it is important that we:

1. Allow adequate cooking time for the food being cooked.

2. Allow the food to simmer, not boil. Boiling causes rapid evaporation of water and may cause the outside of fruits and vegetables to loosen, before the heat has penetrated the food fully.

3. Use just enough liquid to cover the food. The natural juices of foods are extracted during cooking, thereby increasing cooking liquid.

4. Use a vessel with a well fitted lid. This reduces moisture loss and so lessens the risk of drying and burning.

5. Avoid reheating. This can cause overcooking.

6. Trim off as much visible fat as possible and skim off surface fat and impurities.

Advantages of stewing

1. This is an economical method of cooking as very low heat is required and cheap cuts of meat can be used. Large amounts of vegetables can also be added to supplement the meat.

2. There is less loss of flavour and soluble nutrients from food than by other methods of cooking, as the cooking liquid is used.

3. Little attention is needed.

4. May be done on top of the stove or in the oven.

Disadvantages of stewing

1. A slow method which cannot be hurried.

2. Food may lack crispness.

QUESTIONS

1. What is the name given to stews that are cooked in the oven?

2. List three foods that can be successfully cooked by the stewing method.

3. Stewing is a suitable method of cooking for low income families. Give three reasons for this.

4. Discuss the precautions that should be taken to avoid the following faults in stews:

(a) greasiness

(b) burning

(c) diluted flavours

(d) over cooking

14. FATS AND OILS

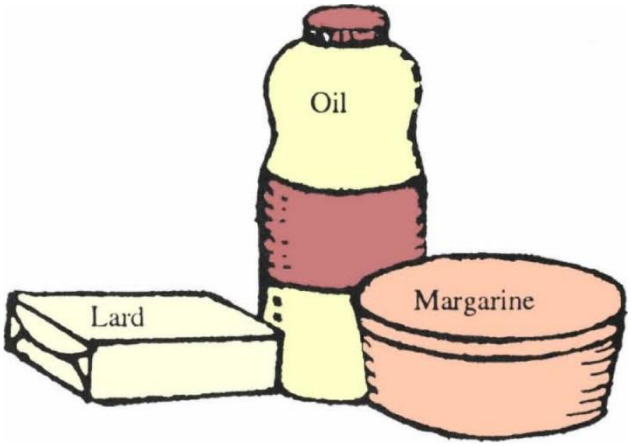


Figure 14-1 Examples of fats and oils

Fats and oils are both composed of fatty acids and glycerol. However, fats are solid at room temperature whereas oils are liquid. Originally, fats were strictly products of animal origin but the development of technology now allows food processors to convert vegetable oils into solid fats. This is done by a process known as **hydrogenation**. During this process, hydrogen gas is pumped into heated oil and the hydrogen atoms become attached to some fatty acids, changing them from unsaturated fatty acids to saturated fatty acids. Upon cooling, the oil solidifies. Generally, the more saturated fatty acids a fat contains, the more solid it is.

Fats and oils used in cooking

Butter

Butter is made from the cream of milk. To make this product, the cream is pasteurized, churned to bring together fat globules, then washed, salted and homogenized. This process blends the water and fat globules to make an even texture. The marketed product contains 85% fat. The other 15% consists of water, salt and the protein caseinogen. If a sweet or unsalted butter is desired, the salt is omitted.

Butter has a delicious flavor. However, because of its cost, it is used more as a spread than as an ingredient in food preparation. To improve its spreadability and volume, some food processors whip air into their product and call it whipped butter.

Ghee

Ghee is clarified milk fat. It is free of water and the water-soluble protein found in butter. For this reason, Ghee does not go rancid as easily as butter. In Guyana, ghee is used primarily for making roti.

Margarine

Margarine was invented in 1870, as a substitute for butter. It was originally made from a combination of meat fats and cream. Today, it may be made from a mixture of vegetable oils only, or a mixture of vegetable oils, animal fat and butter or skimmed milk. These mixtures are partially hydrogenated then fortified with Vitamins A and D to simulate butter. Margarines which have been flavoured with milk or butter are considered as table grade.

Types of margarine

Within recent years, food technologists have experimented with and produced several varieties of margarine. Some varieties available on the market are:

Cake margarine: This has special creaming properties.

Pastry margarine: This is very plastic and has a high melting point.

Whipped margarine: This has the same qualities of whipped butter.

Soft margarine: This is margarine that has been hydrogenated to a lesser degree than regular margarine. It is softer, easier to blend and more plastic, even when just taken out of the refrigerator.

Soft diet margarine: This contains about half the amount of fat which has the same volume of regular margarine and a higher percentage of air and moisture.

Two products that resemble margarine but do not bear the name margarine, are fat spread and corn oil spread. Fat spread has a very low fat content (60%) is light, creamy and very spreadable. The caloric value of this spread is 25% less than that of regular margarine.
Corn spread is made from corn oil only.

Cooking fats or vegetable shortenings

These products are also made from blends of partially hardened oils but they bear no resemblance to butter. They are bland in flavour and are plasticized to give a soft creamy consistency. Some cooking fats have emulsifiers added to them to facilitate easy blending with non-fat ingredients.

Lard

This is the purified fat of pigs. The best quality is leaf lard. This lard is much firmer than bulk lard. It is produced from the high quality fat that lines the abdominal walls and surrounds the internal organs of the animal. Like vegetable shortening, lard is white but lard can be distinguished by its characteristic flavour, low melting point and soft consistency.

Suet

Suet is the hard fat found around the internal organs of cows and sheep. Beef suet is less hard than that of mutton and the flavour is usually preferred. In some countries, this fat may be bought chopped, flaked or rendered. Rendered beef suet is known as tallow. Unlike other fats, suet needs thorough cooking to make it digestible.

Dripping

Strictly speaking, dripping is the fat collected during the roasting of meat. Unclarified dripping bears a distinctive meaty flavor, while clarified dripping is bland. To clarify dripping, submerge the fat in water and bring to the boil in an uncovered pot. Pour the fat into a clean basin and when the mixture is cold remove the hard cake of fat that forms on top of the water. Scrape away the impurities that may be clinging to the bottom of the cake. To improve its keeping quality, remove all traces of water by heating the fat until all bubbling stops.

Cooking oils

Cooking oils are prepared from the seeds or fruits of plants such as corn, cotton seed, coconut, peanut, soya bean and oil palm. In their natural form, these oils have a strong smell and taste. They do not keep well. To improve their quality, they are deodorized. Oils to be used in salad dressings are also winterized. This helps them to remain clear even when refrigerated.

Olive oil

Olive oil is oil which has been pressed from fully ripe black olives. The first pressing is marketed as olive oil. Additional pressings must be filtered to remove impurities and are marketed as refined olive oil. Neither product is bleached or deodorized.

Chief uses of fats in cooking

Fats are used for:

- Frying
- Basting
- Greasing of cooking vessels
- Shortening flour mixtures
- Incorporating air into cakes
- Improving flavour
- Improving the energy value of foods

Although fats are very useful in food preparation, care should be taken when using them. They supply twice the amount of calories as the same amount of proteins or carbohydrates. Some fats are also rich in cholesterol, a substance that is associated with heart diseases.

Suitable fats for frying

The following fats are suitable for frying:

1. Cooking fats and frying oils that contain no groundnut oil.
2. Good quality lard.
3. Bulk lard and clarified dripping.

These fats are suitable for frying because they:

- are tasteless or pleasantly flavoured even at high temperatures.
- are free of water salt and non-fat solids. When salt and water are present in frying fats and oils, they cause bubbling and spurting. Non-fat solids burn and adhere to the surface of food giving an ugly speckled appearance. These solids also lower the break down point of fats.

- breakdown at temperatures that are much higher than normal frying temperatures. A high breakdown or decomposition point is desired in frying fats and oils because as decomposition occurs, fat molecules split, giving off an unpleasant acid vapour called acrolein. This white vapour causes the nose, eyes and throat to smart. In this state of decomposition, fat is indigestible, dark coloured and unpleasant to the taste.
  As breakdown continues, some fats flow over the sides of the pan in a pale yellow foam, increasing the risk of fire. Others ignite and burn fiercely. The temperature at which fat begins to smoke is called the smoking point and the temperature at which fat ignites is known as the flash point. Some manufacturers add silicone compounds to their product to prevent decomposition. The thick yellow, gummy wax or resin seen on the edge of some frying pans is the result of a build-up of these silicone compounds.

Suitable fats for shortening

The shortness of a flour mixture refers to its tenderness and its ability to crumble. These qualities are achieved by shortening the gluten strands of flour mixtures. This is done by coating flour particles with a layer of fat so that very little of the mixture sticks together in the presence of moisture. The difference in the shortening power of fats is due to differences in their plasticity or their ability to wrap around flour particles.

Some manufacturers improve the shortening power of fats by adding more fatty acids or emulsifiers to their products.

Suitable fats for shortening are:

1. butter
2. margarine
3. lard
4. cooking fats and frying oils.

Butter and margarine are preferred primarily for their superior flavour, but lard, frying oils and cooking fats are more plastic and therefore have a better shortening power. A mixture of lard and margarine, or cooking fat and margarine, is therefore often recommended. Because of its high cost, butter is reserved for very special dishes.

Suitable fats for creaming

1. Butter
2. Margarine
3. Cooking fats

A foam of air and fat is desired in creamed cakes. This is best achieved when a plastic fat is used. Some manufacturers improve the creaming quality of their products by adding water and air.

Some chemical reactions in fats and oils

Saponification

This is the process whereby alkalis break down fats into glycerol and alkali salts or fatty acids. The latter is a soap and cannot be absorbed by the body. In some abnormal states of health, the body produces soaps in the intestines. Such persons find difficulty digesting fats. Soaps are also formed, when too much soda or baking powder is used in flour mixtures. The flavour of such mixtures is distinctly acid and they may have brown speckles throughout.

Rancidity

Rancidity is a reaction that causes unpleasant odours and flavours in fats. It is most often caused by:

- chemical reactions between fats and oxygen,
- the action of microbes - yeasts, moulds and bacteria on fat,
- the action of the enzyme lipase on fats.

Rancidity due to oxidation is accelerated by light, impurities and metals, particularly copper, iron and tin. To reduce the incidence of rancidity in fats, manufacturers may apply heat to fats and oils to destroy all enzymes and microbes. They may add antioxidants to their products.

Care and storage

At home, we can prevent rancidity by observing the following care and storage rules.

1. Keep fats and oils tightly covered. This prevents the absorption of other flavours and smells.
2. Store away from air, heat and light.
3. Avoid overheating.
4. Strain used fats before storing.
5. Store new oils and fats in clean opaque containers.
6. Avoid storing fats in metal containers.

QUESTIONS

1. Identify the function of fats in each of the following dishes: cheese straws, buttered pumpkin, queencakes.
2. Why are some oils cloudy when stored in the refrigerator? How could the cloudiness be prevented?
3. Explain the term shortening. List three fats that are known for their shortening power.
4. Give a scientific explanation for:
    I. storing fats in opaque containers
    II. straining oil after frying
    III. avoiding the use of excess soda in cake making
5. Define the term hydrogenation and name two fats that are produced by this process.

15. FRYING

Frying is a quick and popular method of cooking in hot fat. It may involve high temperatures. Some foods may contain sufficient fat to cook themselves.

Types of Frying

There are three types of frying: deep, shallow and dry frying.

Deep fat frying involves immersing the food in a pot or pan of hot fat.

Suitable foods for deep frying are doughnuts, small poultry joints, fish portions, meat fritters and potato chips.

Shallow fat frying means cooking food in just enough fat to avoid sticking to a pan. Food must be turned from time to time.

Suitable foods for shallow frying are eggs, vegetables, fish cakes, rissoles, burgers, fish, tender meat joints, e.g., Chops, cutlets.

Dry frying requires no additional fat. Fatty foods such as bacon and sausages are cooked by this method.

Suitable foods for dry frying are bacon, sausages and kippers.

RULES FOR FRYING

The following rules should be observed when frying foods:

1. Use a heavy pan, large enough to hold fat, food and basket, if used.

2. Use clean fat.

3. Heat the fat to the correct temperature. If the fat is too hot, the outside of the food will be overcooked, while the inside is insufficiently cooked. If the fat is too cool, the food will absorb it and be greasy.
4. Care must be taken not to allow a naked flame to come up the side of the pan because of

the risk of fire.

5. Do not attempt to fry too many pieces at the same time, as this lowers the temperature of the fat and causes food to absorb excess.
6. Coat foods with a starchy substance, e.g., seasoned flour, egg and bread crumbs or batter. Some exceptions to this rule are bacon, potato chips and doughnuts.
7. Foods should not be more than 3cm thick.
8. Lower the food gently into the fat, to prevent splashing.
9. Turn food with a fish slice; do not pierce the food.
10. Allow fat to reheat before frying a second batch of food.
11. When cooked, drain food on absorbent paper and serve very hot.
12. Cool and strain fat after use.

REASONS FOR COATING FOODS

Foods should be coated so as to:

- protect the food from the extreme heat of the fat and prevent it from being overcooked.
- prevent food from absorbing too much fat.
- prevent food juices from escaping.
- prevent food from breaking up.
- make food more attractive.

PREPARATION OF FOOD FOR COATING

1. Dry well before coating.
2. Apply coating evenly.

3. Do not allow pieces to overlap each other after coating.

Advantages

1. It is a tasty method of cooking.
2. Food is very attractive
3. A quick method of cooking.

Disadvantages

1. It is not a suitable method of cooking for tough or thick pieces of food.
2. There is loss of weight.
3. Fried food is difficult to digest, if not well cooked and drained.
4. Cooker and surroundings may be splashed by fat.
5. Unless ventilation is adequate, fumes remain in the air.
6. Frying requires constant attention.

QUESTIONS

1. Name five foods that are suitable for deep fat frying and five for shallow frying.
2. Describe in detail how you would prepare a meal of Fried Fish and Chips.
3. List the precautions that you can take to avoid a fire while frying.

16. FISH AND SHELLFISH

There are many varieties of fish and, to a lesser extent, shell fish in the world. They are an excellent source of protein and are used by both human and animals. Their protein is of high biological value and is easily digested. This makes it suitable for invalids, convalescents and persons with digestive problems.

Fish

Fish is usually classified under two headings – white and oily. White fish have less than 5% fat in their flesh which is therefore white. They have oil in their liver. Examples are trout, snapper and bangamary. Oily fish have more than 5% fat in their flesh which is therefore quite dark. Examples are patwa, houri and tilapia.

Shellfish

Shellfish is an animal that lives in water; has a shell and can be eaten as food. It is not a fish. Although most kinds of shellfish are harvested from saltwater environments, some kinds are found only in freshwater.
Shellfish is of three types, molluscs, crustaceans and echinoderms. Molluscs are small sea animals which live inside a hard shell, e.g., snails and cockles.
Crustaceans are soft bodied, jointed sea animals with a hard protective crust or skeleton, e.g., shrimp, crayfish, crab, lobster, oyster.
Echinoderms are not as frequently harvested for food as molluscs and crustaceans. However, sea urchin roe is quite popular in many parts of the world. An echinoderm is a sea animal that has a hard spiny shell, or exoskeleton.

Crustaceans





Molluscs





Echinoderms





Food value

Food value	Fish		Shellfish
	Oily	White	
Protein	19.0%	17.5%	15%
Fat	15.0%	0.9%	4%
Water	67.5%	80.0%	8.5%
Carbohydrate	none	None	Trace
Mineral	2.5%	1.2%	1.4%
Vitamins			

Fish and shellfish have great value in the diet since they supply:

(a) high biological value protein.

(b) minerals in the form of calcium, iodine, potassium, phosphorous, sodium, chlorine and iron. Most of the calcium is present in the bones. Iodine is only present in sea fish.

(c) Vitamins A & D. These vitamins are fat soluble and are therefore found in the flesh of oily fish and the liver of white fish.

(d) fat.

Structure

Fish is similar to meat in muscle composition, but there is less connective tissue. The fibres in fish are shorter and finer than those of meat and are packed together in flakes or myotomes with little connective tissue.

Selection of fresh fish

Since fish is a highly perishable food, it must be selected and stored carefully. These points are helpful when choosing fish.

Odour: This should be a fresh sea smell, no strong objectionable odour.

Eyes: These should be bright, clear, full and slightly bulging, not sunken

Gills: These should be bright reddish pink and moist.

Scales: The scales should adhere to the skin and be bright with sheen.

Flesh: This should be plump, firm and no imprint left when pressed with the fingers. Shell fish should feel heavy for their size. Buy crabs and lobsters alive.

Appearance: Fish should look fresh with no trace of browning or drying out of the flesh.

Selection of frozen fish

Fish is available in frozen form too. Many trawlers freeze fish just as they are caught because of the long journey to shore.

Some points to observe in the selection of frozen fish are:

Packaging: These should be solidly frozen. The wrapping material should be moisture and vapour proof and the packages wrapped tightly.

Flesh: The flesh should be firm and glossy with no discoloration or fading of the fish.

Opening: When the packet is opened, there should be no frost or ice crystals.

Forms of fish marketed

Form	Definition	Edible portion percent	Best ways to cook
Fin Fish Whole or Round, Fresh	Fish, just as they are caught, must be cleaned by taking the insides out, and the scales must be taken off before they can be cooked. The head, tail and fins may be cut off too.	45	Bake, poach, broil, fry, steam
Drawn, Fresh or Frozen	A drawn fish has been cleaned. It must be scaled and have the fins cut off before it can be cooked	48	Bake, poach, broil, fry, steam
Dressed or Pan-dressed Fresh or Frozen	A dressed fish has been cleaned and scaled. The head, tail, and fins are usually cut off too	67	Bake, poach, broil, fry, steam
Steaks, Fresh or Frozen	Steaks are slices of fish about 3/4 to 1 inch thick. They have been cut across the fish. A part of the backbone is the only bone in a fish steak. Steaks are ready to cook	84	Bake, poach, broil, fry, steam
Fillets, Fresh or Frozen	Fillets are the meaty sides of a fish. They have been cut away from the backbone. They are ready to cook.	100	Bake, poach,broil, fry, steam

Butterfly fillets Fresh or frozen	Butterfly fillets are the two sides of the fish cut lengthwise away from the backbone and held together by the uncut flesh and skin of the belly.	100	Bake, poach, boil, fry, steam
Single fillets Fresh or Frozen	A fillet cut from one side of a fish is called a single fillet. This is the type most generally available on the market. The fillets may or may not be skinless	100	Bake, poach,broil, fry steam
Chunks, Fresh or frozen	Chunks are pieces of fish cut across the fish. Chunks are larger than steaks. They are ready to cook.	100	Bake, poach, boil, steam, fry
Sticks and fingers	Blocks of frozen fish are cut in uniform sizes and ready to use.	100	Fry, poach, broil, steam
Preserved fish	This includes canned, salted and smoked fish.	67-100	Depends on method of preservation

Storage of fresh & frozen fish

It is always best to use fish the day it is bought or caught. When it is not possible to do so, it must be carefully stored.

It should be lightly wrapped in moisture proof paper and stored in the coldest part of the refrigerator. Wrapping prevents the strong odour from penetrating other foods. Frozen packaged fish can be stored in its original package and kept frozen until used.

Preparation for cooking

To clean

1. Place the fish on the table and, with one hand, hold the fish firmly by the tail. With the back of a knife, scrape from tail to head, rinsing the knife and fingers in cold water.

2. Cut off the fins with kitchen shears and trim the tail.

3. Remove the head by cutting just below the gills.

4. Slit from head to vent on the underside. Slip out the entrails, sprinkle salt in the cavity.

5. With a knife, scrape out the black skin, blood and silver swim- bladder.

6. Wash well in cold running water and dry.

TO FILLET

With a sharp knife, cut the flesh along the line of the backbone and raise fillets from the middle of the back to the sides, working from head to tail.

SKINNING FISH

Put fish on cutting board, skin side down. Hold fish in one hand by the tail end. With a straight-edged sharp knife, cut through the flesh to the skin, about one half inch from the end of the fillet. Flatten the knife on the skin, cut the flesh away from the skin by pushing the knife forward, while holding the free end of the skin firmly between fingers.

Principles of fish cooking

The flesh of fish contains very little connective tissue. Therefore, it requires only a short cooking time. High temperature is suggested. Prolonged cooking dries and toughens fish; nutrients are lost in the juices.

The size of the fish and the thickness of the pieces determine the cooking time.

TO TEST FOR DONENESS

1. Flesh becomes easy to separate from bones.
2. The flakes part easily when tested with a knife or fork.
3. The flesh looks opaque.
4. Juices that were clear become milky.

Suitable methods of cooking

Frying: This is the most popular method of cooking fish. Fish is coated with seasoned flour, egg and crumbs or batter and fried in shallow or deep fat. The coating keeps in the juice of the fish and becomes crisp during cooking.

Grilling: This is suitable for whole fish and cutlets of 25mm or 1" thickness. The flesh is scored with a sharp knife and the surface is brushed with fat. The grill should be moderately hot and fish is turned only once to prevent it from breaking.

Baking: Baked fish retains its full flavour and is not liable to flake during cooking. The fish is put on a greased oven-proof dish and covered with dabs of fat or wrapped in foil.

Poaching: This can be done on the hot plate or in the oven. Fish is cooked in milk or liquid to which salt, lemon juice or vinegar, onion and herbs are added. The liquid simmers gently and is basted over the fish.

Steaming: This is done by placing prepared fish between two greased plates or a steamer over boiling water.

Stewing: Put prepared fish in a casserole, cover with milk or stock. Cook until tender.

SERVICE

Lemon butterflies, section of lemon, parsley, bilimbi flowers can be used. Plain boiled potatoes or bread and butter also fried potatoes with fried fish. Serve white fish with a sauce to improve food value. Suitable sauces are mustard, cheese, egg curry and tomato.

HOW TO STUFF FISH

Whole: After cleaning and seasoning, fill the cavity left. Fish may be sewn with a needle and thread.

Cutlets and steaks: Remove the bone with a sharp knife. Make stuffing into a ball and press into the hole. Wrap ends of a cutlet around the stuffing. Fix with a little skewer or cocktail stick. Coat, baste with hot fat and bake.

Fillets: Spread stuffing on the skinned side. Roll or sandwich equal pieces together with stuffing.

Activities

1. Visit a local fish market and write the varieties of fresh fish available. Give examples of white and oily fish.

2. List three factors which should be considered when buying fresh fish.

3. Outline the recommended method for storing fresh fish.

17. MEAL PLANNING AND MENU WRITING

During the first four to six months of our lives, all that we need for healthy growth and development is breast milk. The frequency with which we eat is usually decided by our hunger. But as we grow older, our needs and eating habits change and we are required to make decisions about what foods are best for us and how we should eat.

Eating habits

Eating habits vary from country to country and family to family. In some instances, it is normal to have two meals a day. In others, three or even four meals may be taken. Regardless of the number of meals taken, the first is usually called breakfast because it breaks the long fast of the night. In instances when a midday meal is taken, this meal is usually given a name that is dependent on its size. If it is the largest meal of the day, it may be called dinner. If it is smaller than the evening meal, it is called lunch. The evening meal is usually called supper when it is preceded by a heavier midday meal. Two common meal patterns involving these three main meals are:

(a) Breakfast Lunch Dinner

(b) Breakfast Dinner Supper

The arrangement selected by a family usually depends on the lifestyle of its members. Arrangement (a) is often used by families that have a working mother. Arrangement (b) is often recommended to weight - conscious persons as it is believed that more time is made available for the utilization of the large supply of calories consumed at the midday meal. Brunch, tea, and snacks may replace some of these meals or be added to them.

Brunch is a heavy first meal that replaces both breakfast and lunch. It is served close to lunch time and usually consists of a variety of breakfast and lunch dishes.

Tea is truly an afternoon snack served between the midday and evening meal. A snack is a light meal taken at any time of the day.

High Tea is an early supper with a hot beverage served at the end. Cakes or other desserts may be served.

Breakfast

Although breakfast is considered to be the most important meal of the day, it is skipped more often than any other meal. Here are some reasons a great deal of importance is attached to this meal:

1. Breakfast provides much needed nourishment for the body after a long fast.
   Many people, who skip this meal, have a mid-morning energy slump. This is due to a fall in their blood sugar level.

2. As the old adage goes “A hungry man is an angry man". Breakfast helps us to be more cheerful and sociable.

3. Breakfast reduces the tendency of overeating or bingeing on junk foods.
   Many persons who skip breakfast to reduce energy intake, end up snacking excessively or gorging themselves at later meals.

PLANNING A BREAKFAST MENU

Fruit, cereal, protein food, breadstuff and beverage may be included in a breakfast menu. Depending on our income and energy needs, some of these foods may be omitted or combined to produce lighter meals.

Light Breakfast	Medium Breakfast	Heavy Breakfast
Fruit- orange juice	Fruit- Papaw slices	Fruit- cherry juice
Light uncooked protein and bread stuff- cheese sandwich	Simple cooked protein- scrambled eggs	Cereal- plantain porridge
Beverage- coffee	Bread stuff- toast	Heavy protein- pepper pot
	Beverage-Cocoa	Bread stuff- Cassava bread
		Beverage- milk

Jams, jellies and marmalades maybe included in any type of meal, if an extra supply of energy is needed.

Lunch/supper and dinner

Lunch and supper menus are usually interchangeable and both of these meals are usually smaller than dinner. In some instances, lunch is eaten away from home and may take the form of a sandwich or other handy food item. None-the-less, these meals should be balanced. A meal is balanced when it consists of one or more foods from each of the following food groups.

1. Foods from animals or legumes - meat, fish, cheese, eggs, nuts

2. Leafy green and coloured vegetables - calaloo, pak choi, bora, pumpkin, ocbro, tomato. More than one of these is recommended to ensure an adequate intake of a variety of minerals and vitamins. At least one vegetable should be served raw if no fresh fruit is served.

3. Starchy foods - flour products, ground provision and cereal grains

This combination of dishes forms the main course. If two courses are desired, an appetizer or a dessert may be added to the main course but it is more common to add a dessert. If a three course meal is desired, both the appetizer and dessert are added to the main course. Appetisers usually take the form of thick or thin soups, cocktails, or horsd' oeuvres. Desserts include fruit, sweet gelatin dishes, cakes, and puddings.

Example of a two course meal

Format	Dishes/Menu
Main course	• Curried chicken/ roti • Stir fried pumpkin
Dessert	• Fruit salad

Example of a three course meal

Format	Dishes/Menu
Appetizers	Shrimp cocktail
Main course	Baked chicken Seasoned rice Tossed vegetable salad
Dessert	Ice- cream

Tips for meal planning

Good meals do not happen, they are planned. These are some points we should always consider when planning meals.

The nutritive value of the meal

A nutritious meal is one that contains nutrients for growth and repair, energy production and maintenance. Every meal, regardless of its size should contain nutrients that help our bodies to carry out these three functions.

The needs of the diners

Age, state of health and daily activities are some factors that help to determine the nutritional needs of diners. We should therefore keep these factors in mind when planning meals.

Likes and dislikes of diners

While it would be impossible to prepare everyone's favourite dish, it is a good idea to enquire about the likes and dislikes when planning a meal. No matter how nutritious a meals is, it is of no use if it not eaten.

Meal appeal

Many nutritious meals go untouched because they are unattractive. We can make our meals attractive by introducing a variety of colours, textures, flavours and temperatures.

The occasion and time of day

To most of us, Christmas and Birthdays have a special meaning. On these special occasions people tend to look forward to a special meal. In meal planning we should also consider the time of day for the meal. Over the years we have come to regard certain dishes as breakfast dishes and others as lunch, supper or dinner items. Foods which are difficult to digest should be avoided when planning evening meals.

Time and energy

When planning meals we should also consider the time and energy required for their preparation. At weekends when we are less rushed, more complex dishes may be done. But in situations where time and energy may be lacking it would be wise to choose simple dishes.

Skills and facilities

Thought should always be given to the skill of the cook and the equipment available. It is pointless planning for baked foods when the cook does not possess the skills or facilities for baking.

Cost

Meals do not have to be expensive to be nutritious. A good planner seeks every opportunity to cut cost. Cost can be reduced in a variety of ways. One way is by using foods that are in season.

Weather/climate

It would be monotonous to eat only cold foods in hot weather and only hot foods in cold weather. However, some thought should be given to weather conditions when planning meals. In addition, winter meals should be relatively rich in calories to cater for the extra energy needs for warmth.

Writing a menu

A menu is a list of dishes to be served at a meal. In restaurants, menus may be presented in one of two forms, tabled 'hote or ala carte. The tabled' hote is a set menu with dishes that form a balanced meal. In some instances the menu offers a choice of dishes at each course. The customer's choice is however limited to one dish per course. The term "prix fixe" may be used in place of table d'hote.

The ala carte menu has all dishes individually priced. A true ala carte menu is cooked to order

and the customer should be prepared to wait for service.

Tips for menu writing

1. Write dishes in the order in which they are to be served.

2. If the dish does not have a specific name e.g., Roti, state the preparation and cooking method e.g., Fried Fish, Cucumber Slices.

3. Write each dish on a new line. This rule is waived when two dishes are served on the same plate e.g., Fish in tomato sauce.

4. Begin the name of each dish with a capital letter.

Note: menus should never indicate quantities.

QUESTIONS

1. Why is breakfast important?

2. List four points that we should consider when planning meals.

3. Study the following meals eaten by students of your class during this week. Then answer the following questions.

(1)	(2)	(3)
Plantain Chips	Pouri	Beef and vegetable burger, cherry drink
Ice cream	Banana	
Aerated drink	Lime drink	

4. How would you rate these meals for:

   (a) appearance (colour, texture, flavour, shapes)?
   (b) nutritional value or balance?
   (c) individual needs?

5. Suggest how menus one and two can be improved.

18. MAKING GARMENTS

In Guyana, many people prefer to make garments rather than buy them ready-made. These garments are personal, less expensive and fit better. There is also a wide range of fabrics and colours to choose from which add to the individual touch.

Well-fitted garments require initially, the correct use of the tape measure and the accurate taking of body measurements. This chapter takes us through the stages of body measurements, pattern drafting and an analysis of figure types.

Body measurements

Body measurements are exactly what the term says- the actual measurements in centimeters or inches of different parts of your own body. There are two reasons for taking measurements:

- to ascertain the size of the figure.
- to determine the proportions of the various parts of the figure.

It is essential, that measurements are taken accurately. Inaccurate measurements will cause an unnecessary amount of fitting and re-cutting of the garment. Here are some general rules to be followed when taking body measurements.

- Before beginning to take measurements, tie a narrow belt, cord or string around your waist to define the exact location of the waist.
- Take measurements over well-fitting foundation garments.
- If possible, have someone help you measure to ensure accuracy.
- Stand upright and as natural as possible.
- Use a tape measure that will not stretch.
- For full-length dresses or trousers, wear the type of shoes you would use to give an accurate reading for length.
- Record each measurement as soon as it is taken.
- Recheck your body measurements periodically and record any changes.

Taking body measurements.

The following is a list of measurements which would be necessary, when making a bodice and skirt. The numbers refer to the sketches in Figure 18.1.

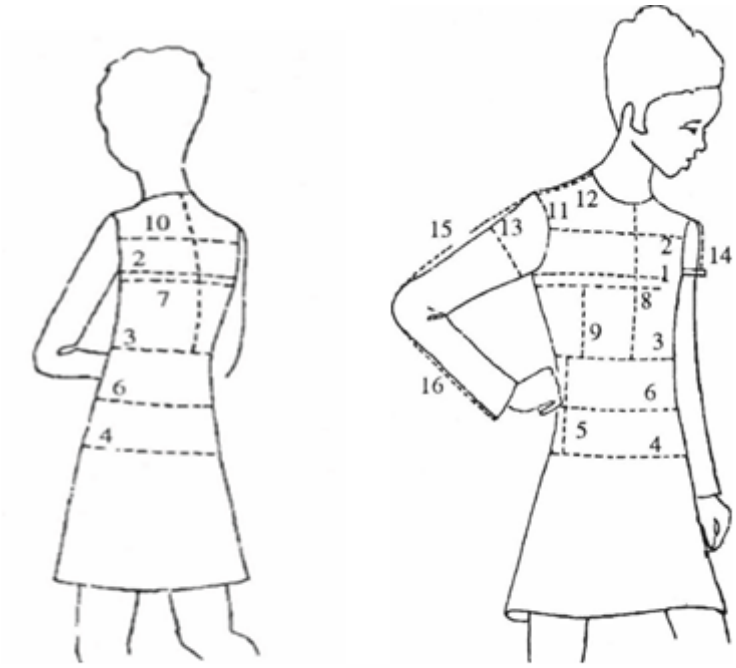


Figure 18-1 Back and front view of measurement for bodice

Bodice

1. **Bust:** Place the tape over the fullest part of the body, under the arms and slightly raised at the back to cover the shoulder blades, for position of the bust.
2. **High bust:** Place the tape directly under the arms, then straight across the back, bringing tape above the fullest part of the bust.
3. **Waist:** Place the tape around the natural waistline.
4. **Hip:** Place the tape around the fullest part of the seat.
5. **Hip depth:** This is usually 8"- 9" (20.3 cm-22.9cm) below the waist. Holding the hip measurement in position, use the other end of the tape to measure from waist to the tape measure at hip level.

6. **Upper hip:** If the proportion of hips and waist differ considerably from normal, take the upper hip measurement approximately 4" (10.2cm) below the waist.
7. **Back waist length**: Measure from nape of neck (the prominent bone at the back of the neck) to the centre back of natural waist.
8. **Front waist length**: Measure from the base of the neck at the centre front to the natural waist. This measurement should be approximately 1 ½" (3.8cm) longer than the back wait length.
9. **Bust point length:** Measure from the waist up to the bust point. This measurement is used to determine the angle and position of the bust dart.
10. **Back width:** or (across back): At approximately 4" (10.2 cm) below the nape, measure across the back, from armhole to armhole.
11. **Front width:** or (across front): Measure at the same level as the back width from left to right armhole.
12. **Shoulders:** Measure from the side of the neck to the end of the shoulder bone.
13. **Top arm girth**: Place tape around the widest part of the arm, approximately 6" (15.2 cm) below the shoulder bone.
14. **Depth of sleevehead**: Place a ruler as high as possible, under the arm of the person being measured. Measure from the shoulder bone to the upper edge of the ruler.
15. **Elbow point length**: Measure from the shoulder bone to the point of the elbow with the arm bent.
16. **Sleeve length:** Continue measurement from elbow point to just below the small bone on the outside of the wrist, with the arm straight.

Relating body measurements to pattern size

Pattern sizes are based on standard body measurements. Your pattern size depends on your horizontal body measurements - bust, waist and hip.

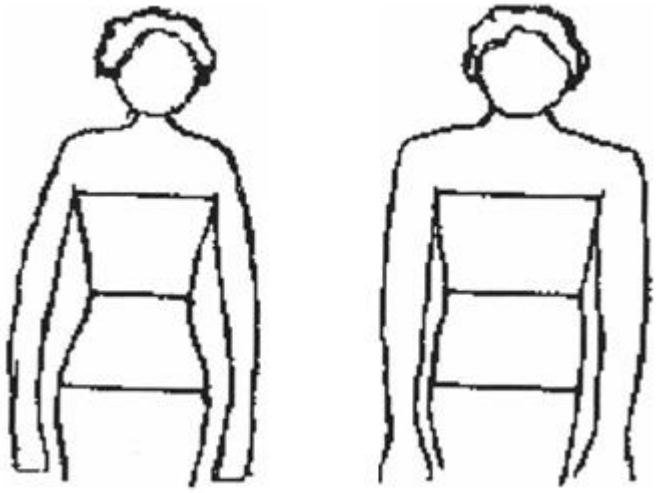


Figure 18-2 Horizontal body measurement

Drafting of skirt block

Pattern drafting is a method of obtaining patterns by working from the measurements of the figure, according to a set of instructions and drawing a shape on paper or cardboard.

It must be noted that unless the fit of the drafted block is perfect, no pattern cut from it will fit well. It is worthwhile after drafting, to make up the garment in calico, to check the fit. Any adjustment needed, must be made on the fabric and transferred to the drafted block.

Blocks are always made without seam allowances, as they are then much easier to adapt.

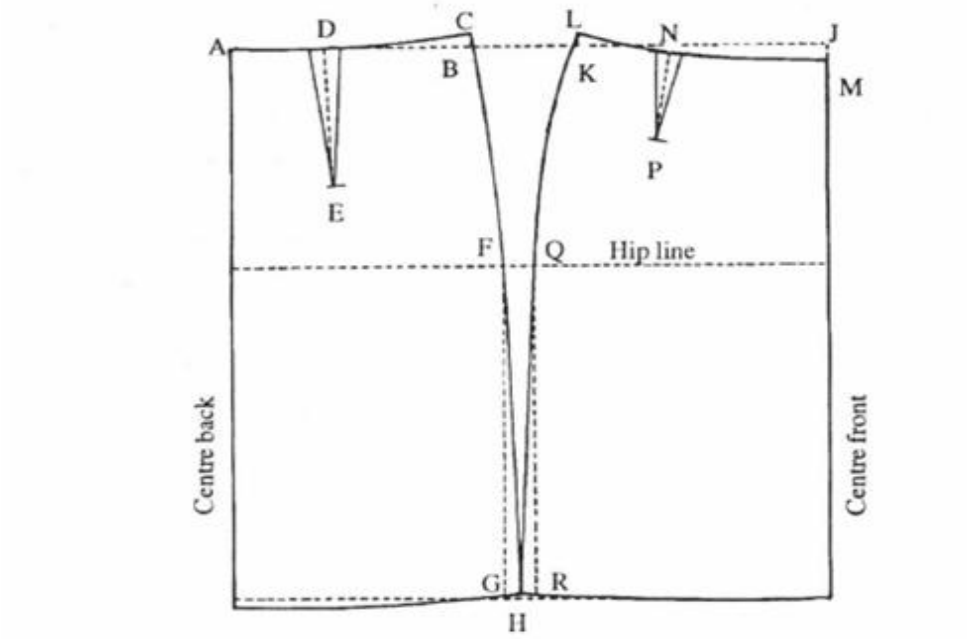


Figure 18-3 Skirt Block

Construction lines- are shown as broken lines on the diagram. Draw a rectangle measuring half of hip measurement plus 2" (5.0 cm), by front skirt length.

The left hand edge of the rectangle will be the centre back and the right hand edge will be the centre front.

Draw the hip line by measuring the hip depth less l/2" (13mm) down from the top line and squaring across. Name the hip line.

BACK

WAIST LINE

Measure one-quarter of waist measurement plus 1" (2.5 cm) from A along the top line (B). Square up ½ "(13mm) from B (C). Curve from A to C for the waist line.

WAIST DART

Measure 3" (7.6 cm) from the C/B along the waist line (D) and square down 5" (12.7 cm) from the curve (E). Measure 1/2" (13mm) each side of D and join to E.

SIDE SEAM

Measure one-quarter of hip measurement from the C/B along the hip line (F). Square down from F to the hemline (C).

Measure out 1/2" (13mm) from C (H) and join H-F. Continue the line above F for approximately 4" (10.2 cm) to serve as a guide for drawing the upper part of the side seam between F and C. The curve should follow the straight line for 2"- 3" (5cm - 6cm) and then curve to C, thus allowing sufficient room for the curve of the hip bones.

HEM LINE

Measure up 1/8" (3mm) from Hand measure down 1/2" (13mm) from the C/B, as required, according to back skirt length. Curve the hemline as shown.

FRONT

WAIST LINE

Measure one-quarter of waist measurement, plus 1 1/4" (3.1 cm) from J along the top line from the C/F line (K). Square up ½ " (13 mm) (L) and measure down 1/2" (13mm) from J

(M). Curve from L to M for the waist line.

WAIST DART

This dart should be approximately 5" (12.7 cm) from the C/F. Measure 5" (12.7 cm) from the C/F along the waist line (N). Square down 3" (7.6 cm) from the curve and mark the base of the dart (P). Measure $^{3}/_{8}$" (9mm) each side of N and join to P.

SIDE SEAM

Measure one-quarter of hip measurement plus 1"(2.5 cm) along the hip line from the C/F (Q). Square down from Q to the hemline (R). Measure out 1/2"'(13mm) from R as on the back block), and join Q-H for the side seam. Continue the line above the hip line, as on the back and curve from Q to L.

HEM LINE

Measure up 1/8" (3mm) at H and curve to the C/F on back and front (i.e. the total hem width is 2" (5 cm) greater than the hip measurement). This is the minimum hem width for any skirt, even if it is intended to appear completely straight, as otherwise it will appear to taper inwards.

If a slightly flared skirt is required, some fullness may be added at the side seams (and the line joined to just above the hip line to ensure a good line). No more than 1½"(3.8 cm) should be added at each seam. A larger amount would cause the fullness to hang in folds at the sides, instead of being evenly distributed around the skirt.

GORED SKIRT

A skirt, cut in several sections, fitting closely at waist and flaring out from hips, is called a gored skirt. Skirts may be of four, six, eight or more gores.

Adaptation of the basic skirt block to make a four gored skirt block.

BACK

1. Extend centre line of back dart to meet hemline.
2. Cut along this line from hemline to 1/8" (3mm) of part of dart.
3. Cut from the top end of dart to 1/8" (3mm) of dart point.

4. Fold away dart allowance so that stitching lines of dart meet.
5. Place pattern on a new sheet of paper. Bottom ends of blocks will spread open.
6. Add 1" (2.5 cm) extra width at the hemline of side line joining to the original line just above the hip line.
7. Add I" (2.5 cm) extra width at the CB hemline joining to the waistline.
8. Draw in hem line.

   Straight grain will fall from the centre point of waistline to the centre point of hem line.

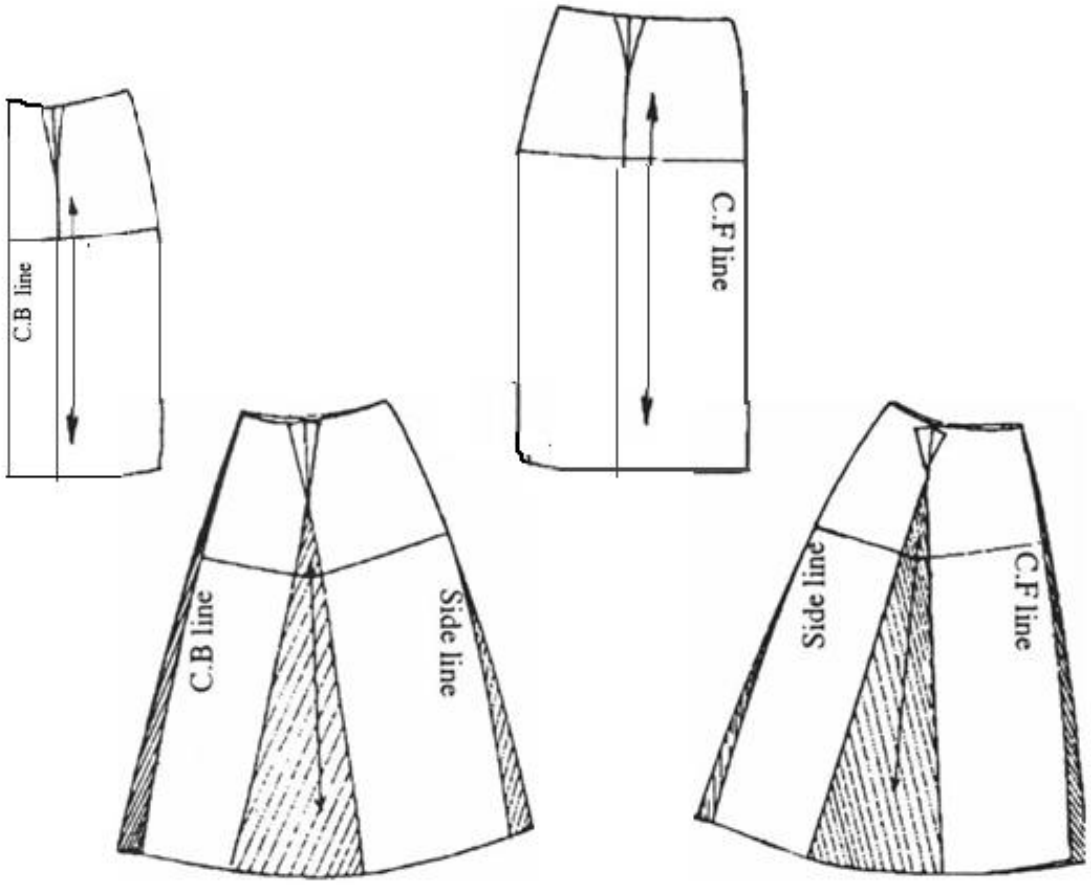


Figure 18-4 Outline back and front skirt block

FRONT

1. Extend dart to 5" (12.5cm).
2. Draw in new shape of dart.
3. Continue adaptation as for back.

ADAPTATION OF FOUR GORED BLOCK TO MAKE SIX GORES

1. Outline back and front of four gored skirt.
2. Cut out block pieces.
3. Fold blocks into 3 equal sections along hemline and waistline.
4. Cut off $^{1}/_{3}$ sections with C.B and C.F lines. The remaining $^{2}/_{3}$ will form the side front and side back gores.
5. Place C.B and C.F lines along folded edges of paper. Draw shape of entire $^{1}/_{3}$ section and cut out.
6. Open folded edges. These become centre back and centre front gores, as seen in the diagram.

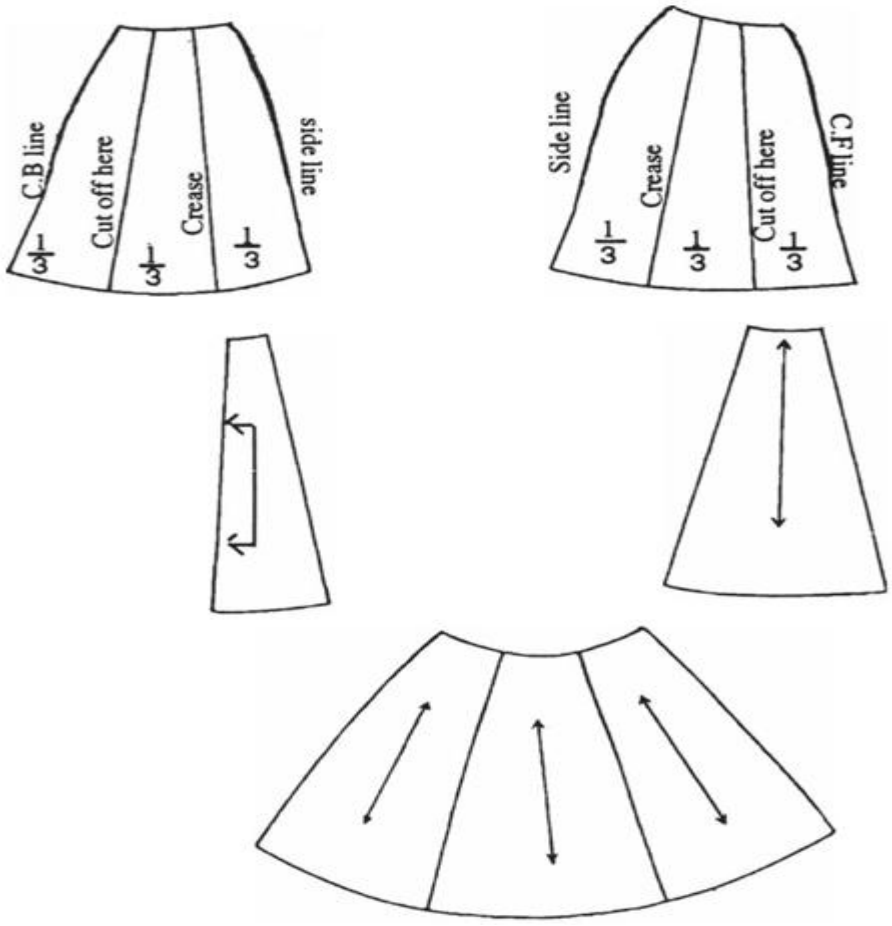


Figure 18-5

Pattern m a r k i n g

Pattern-markings are symbols found on pattern pieces which give instructions and information on the layout, cutting, joining of sections, fitting and adjustment of the garment/article to be made. They are sometimes referred to as a pattern "sign language".

Pattern companies vary on the use of symbols, but they all give a definition of symbols on the instruction sheet which accompanies each pattern envelope. Figure 18.7 shows the standard pattern markings and their meanings. Markings showing the position of pockets, tucks, pleats, button and buttonholes will appear on a pattern according to its style, but these will be identified on the instruction sheet.

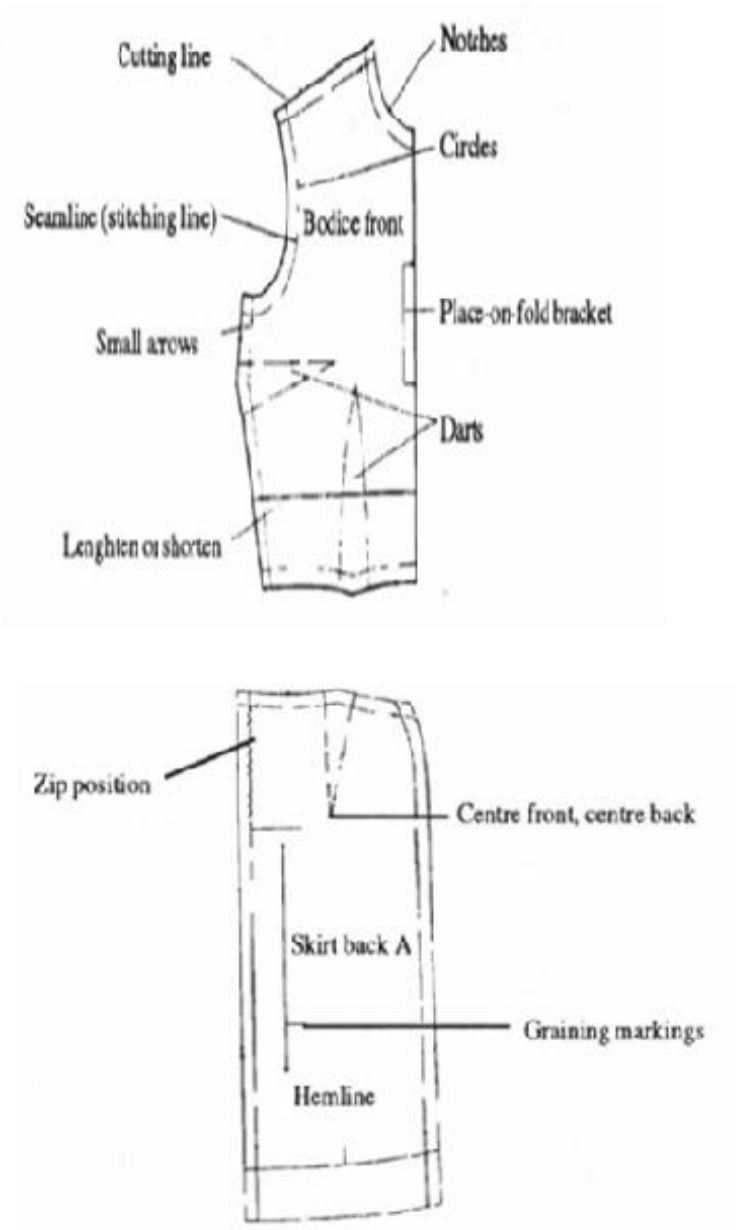


Figure 18-6 Outline for patter making

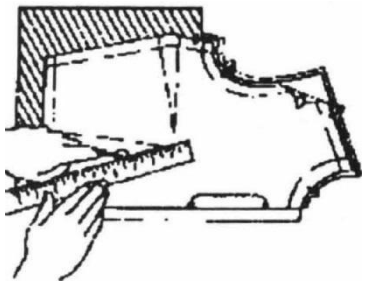
Transferring p a t t e r n m a r k i n g s

Transferring pattern markings to fabric is done after cutting out and before removing the pattern. Only the symbols which show how and where garment/article sections are joined and shaped, and where details are placed, are transferred.

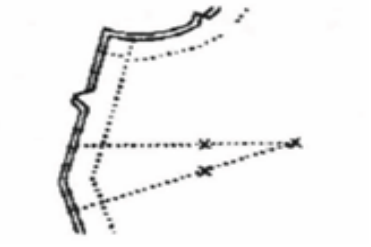
The common marking methods and their uses are discussed below. Generally, more than one method is used on a garment/article.

Dressmaker's carbon paper and tracing wheel

This is a fast method that works best on plain, opaque fabrics. It is not suitable for sheers, because marking shows through to the right side. With fabric folded wrong sides together, both layers can be marked at once, using double faced paper or two sheets back to back. With fabric right sides together, layers are marked one at a time.



(a)



(b)

Fig. 18.7 Transferring pattern using dressmaker's carbon paper

TAILOR'S CHALK OR CHALK PENCIL

This is a quick marking device. First, push pin through each symbol and both layers of fabric. Remove pattern, make chalk dot at each pin on wrong side of each fabric layer.

(c)



(d)

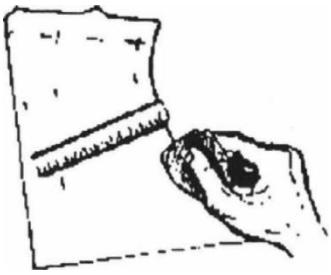


Fig. 18.7 (c & d) Marking fabric, using a tailor's chalk

For seam lines, remove pattern. Using ruler or sewing gauge, measure along cut edge of fabric, making short lines $^{5}/_{8}$ " (15mm) from cut edge.

TAILOR'S TACKS

This takes the most time and effort. They are best suitable for sheer or delicate and multi-coloured fabrics on which neither tracing paper nor chalk will make sufficiently distinct marks. It is worked by hand and is used to transfer individual markings to double fabric.
Using double thread, make a small stitch through all layers, leave an end, make another stitch in the same place, leave a loop, cut off thread, leaving an end. Continue to the end of the symbol. When completed, gently part the two layers of fabric and cut between the threads.

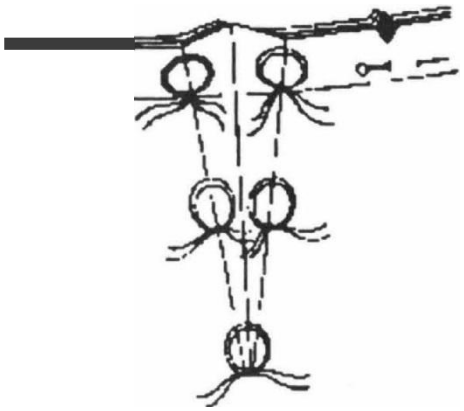


Fig.18.7(e) Example of tailor's tacks

This is a practical way to transfer markings such as pocket placement. Symbols must be seen on the right side with tracing paper.

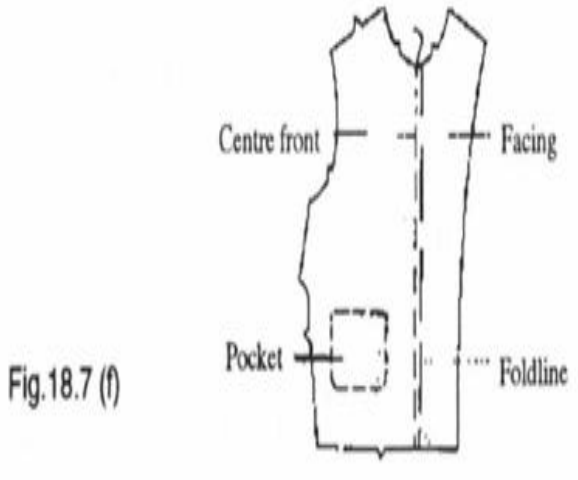


Fig.18.7 (f)

Figure types

Figure types refer to the proportion of one's body.

Do you know your figure type? Are you short, tall, fat, thin, average, square shouldered, round shouldered, bulging or drooping? Eating balanced meals, exercising regularly and practising good posture at all times will greatly help to improve and/or maintain your figure type.

Individual vary in shape, so commercial patterns and ready – made clothes are made to fit standard categories of body builds, known as figure types.

Overall height is one indicator of figure type, but far more reliable are length of torso and position of bust, waist and hips. The sketches in Figure 18.8 represent four standard figure types. The dark bands indicate the total range of measurements for bust, wait and hips. When comparing your figure with the standard types, take special notice of difference in back, neck-to-waist length and the distance from shoulder level to apex of bust.

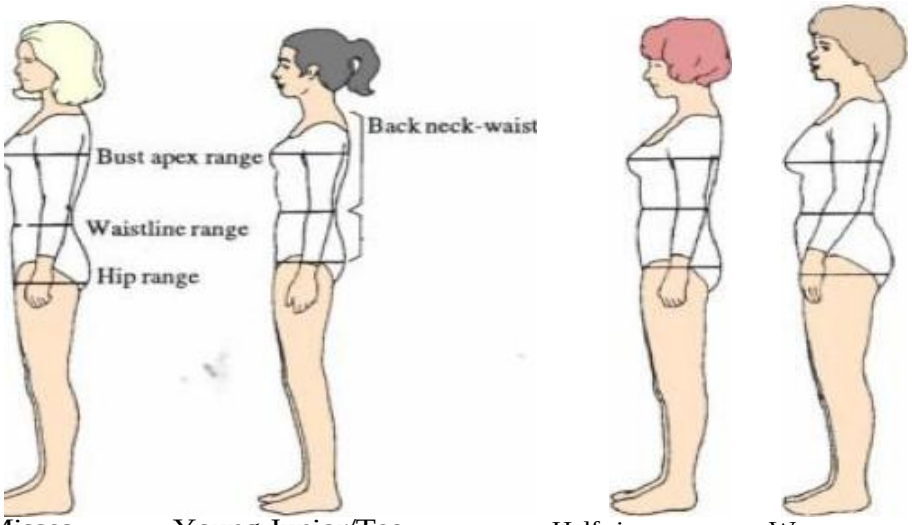


Fig. 18.8(a) Examples of figure types

Figure variations

Figure types vary from the normal average- based on a perfect or near perfect relationship between height, back, waist length and weight in many ways.

Variations range from short and slight build to tall, stout and heavily boned structured ones.
Figures of average, short or tall height, are additionally divided by an unequal distribution of weight in proportion to height. This weight may also be disproportionately spread on either top or lower parts of the body. Postures such as erect, swayback or wide round shoulders, increase the variety of figure types.

Always identify your figure type, before choosing the pattern size. The patterns designed for that figure, will fit you best with little or no alterations.

You should try to look your best at all times. Emphasise or highlight good body features and disguise or conceal others. This can be done by making good use of line, pattern, colour and texture.

Choosing styles to suit figure types

Styles are created from lines.



Fig. 18.8 (b) Example of silhouette created from lines

Outlines create the silhouette.

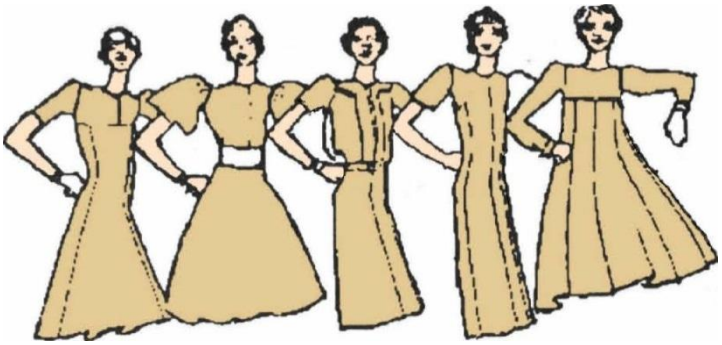
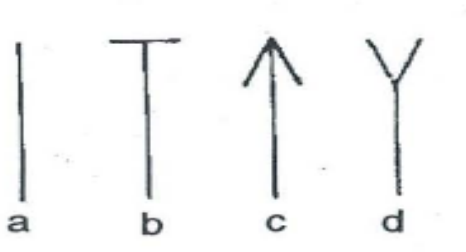


Fig. 18.8 (c) Lines creating structure in silhouette

Inside or structural lines such as seams, darts, pleats and waistlines create detail.



Lines

Lines give direction to a design. They create movement in a design. Lines may be horizontal, vertical, diagonal or curved.

- **Vertical lines** lead your eyes from top to bottom and give an illusion of height, dignity and strength.
- **Horizontal lines** carry the eye across from side to side and give a feeling of relaxation.
- **Diagonal lines** are slanted and suggest activity and excitement. They are not common, so they attract attention.
- **Curved lines** are lines that are slightly bend. They create the appearance of softness and fullness.

Fig. 18.8 (d) Illustration of lines

They are all of the same length but each can be used in garment construction to create an illusion of different heights. Look at the effect these lines can create when used as detail lines on garments.

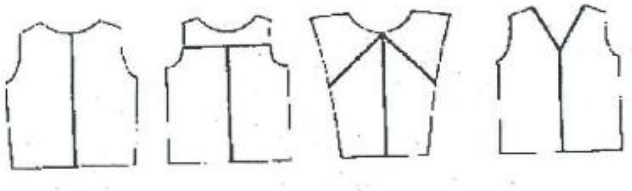


Fig. 18.8 (e) Examples of how lines create illusions

- Line A allows the eye to travel upwards without interruption. An illusion of height is created.
- Line B shortens the figure since the eye stops at the top of the line and moves sideways.
- Line C shortens the figure further, as the eye is drawn downwards.
- Line D gives the best illusion of height, as the eye continues to travel upwards from the top of the line.

Lines used in clothing

The main lines used in clothing may be either **structural** or **decorative**.

- **Structural lines:** these are lines that are formed when pieces of the garment are sewn together. Examples are seams and darts.
- **Decorative lines:** these are lines that are applied to the garment to add interest. Laces and buttons on garments form decorative lines.

Choosing the right style to complement the figure is very important to achieve a good overall look. Never choose a style because you like it or because it looks well on someone else. Choose it because it suits your figure type.

TO LOOK SLIMMER USE:

- Vertical pattern lines to take the emphasis away from the body width.
- Straight styles such as princes line, gored skirts, fitted sleeves which divide up the garment mass.
- The same colour from top to bottom.
- Vertical stripes, running from top to hem of fabrics.

TO LOOK TALLER USE:

- Bold uniform colour, from top to bottom.
- Vertical pattern lines and stripes, from top to hem line.
- Long hem line.
- V-shaped necklines.

TO LOOK SHORTER USE:

- Horizontal stripes or lines to create an illusion of width.
- Separate colour and line at waist, two-piece outfits, contrasting blouses and skirts.
- Short hemline.

TO ADD EXTRA CURVES USE:

- Fullness wisely in appropriate places- puffed sleeves, top and bottom flounce dresses and skirts, gathers set into yokes.
- Unstitched pleats and tucks have a similar effect to gathers.

Choosing fabrics for different styles

Fabrics should be chosen with the age, body size and figure type of the individual in mind.

- Small designs suit small figures. They can be used to flatter larger figure shapes.
- Large designs emphasise large shapes. They are suitable for adults. They dwarf a small figure.
- Vertical stripes can be used to make a plump person look slimmer.
- Horizontal stripes can be used to make a tall, thin figure look shorter.
- Narrow stripes are most suitable for juniors and can be used vertically to give length, or horizontally to give width.
- Wide stripes add width and are most suitable for tall and thin adults.
- The effects of checks, plaids, border, one-way and all-over designed fabrics should

first be studied, then used to create flattering styles for the age, size and figure type of the individual.

Selecting fabric/garment of suitable colour and texture for the individual

Everyone has a range of colours which suits him/her and these are controlled by three body features. The:

- tone of your skin.
- colour of your eyes.
- colour of your hair.

WHEN CHOOSING COLOURS:

- Check the colour against your skin, hair and eyes. Start with a basic colour and add colour with accessories.
- Choose dark shades, if a slimming effect is needed.
- Choose strong bright colours to attract attention to size and shape.
- Use black, white or grey to bring out the brightness in colour.
- Choose tints, if an enlarged effect is needed.

Texture

Texture refers to the feel or appearance of the fabric. The texture of fabric can be soft, stiff, rough, smooth, hard, shiny, dull, ribbed or hairy. Texture adds bulk and increases size.

- Bulky fabric gives an increase in width to the body.
- Shiny fabric reflects light and flatters only a good shape.
- Stiff fabrics give an appearance of increased width.
- Pile weave fabrics produce an effect of richness and depth in colour.

The illustrations show the effect of line, pattern colour and texture on different figure types.

(A)



(B)



(C)



(D)

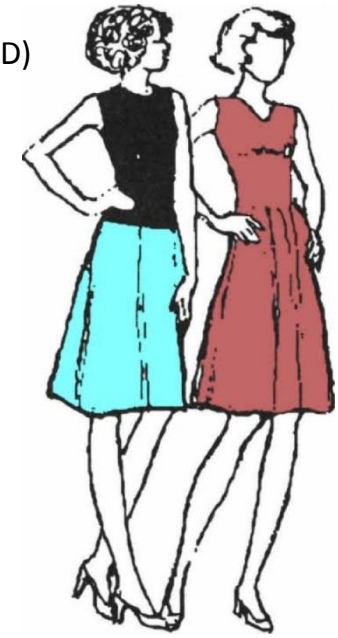


Fig.18.8 (e) Fabric, colour and texture suitable for the individual

A - Plaid may have various effects on a figure depending on its pattern and colour contrast. In general, the wider the spaces between vertical bars and/or the greater the colour contrasts, the more enlarging the effect.

B - Stripes running vertically can make a figure look wider than similar stripes horizontally arranged.

C - A small print on a large figure, or a large print on a small one, creates too great a contrast.

D - Contrasting solids, divide the figure horizontally, at the point where colours meet.

Activities

1. Learn to take accurate body measurements by taking your friend's body measurement.
2. Collect different brands of commercial patterns and compare the kinds of markings used.
3. (a) Collect as many samples of coloured fabrics. Place different samples against your

skin and see the effects in the mirror.

(b) Discuss the suitability of a colour for a particular student and note its effect on her skin, eyes and hair.

4. Using the fabric samples as basic colours, choose accessories to suit them.

5. Look through fashion books and note the effects of style, fabric and colour on different figure types.

6. Draw and cut out the outline of any figure type. Sketch and cut out garments, showing designs using straight, curved, horizontal, diagonal, zigzag and S- lines. Identify the design which best suits the figure type. Give reasons for your choice.

19. MAKING A SKIRT

Preparation of pattern

- Have someone take your personal body measurements needed for making a skirt.
- Make reference to Chapter 18 for information on drafting of skirt block. Do so with the guidance of your teacher.
- Cut out the pattern pieces and adapt them to make the style of your choice.

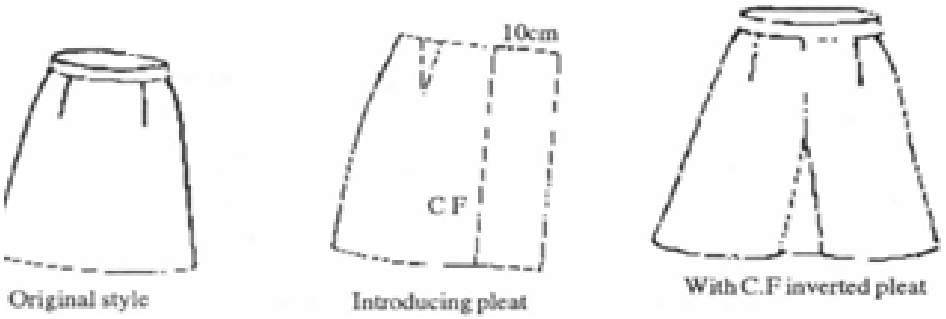


Figure 19-1 Some basic skirt styles

1. Trace around the front skirt block on a sheet of paper.
2. Insert C.F pleat and pleat width measurement parallel to the existing C.F line as shown in Fig. 19 (a).
3. Do same with back skirt block, if required.
4. Put in pattern markings on adapted pattern pieces.
5. Add seam allowances.

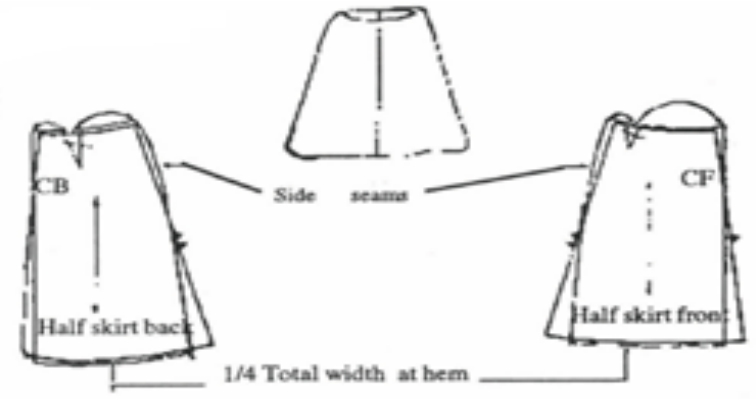


Fig.19.1 (b) Gored skirts

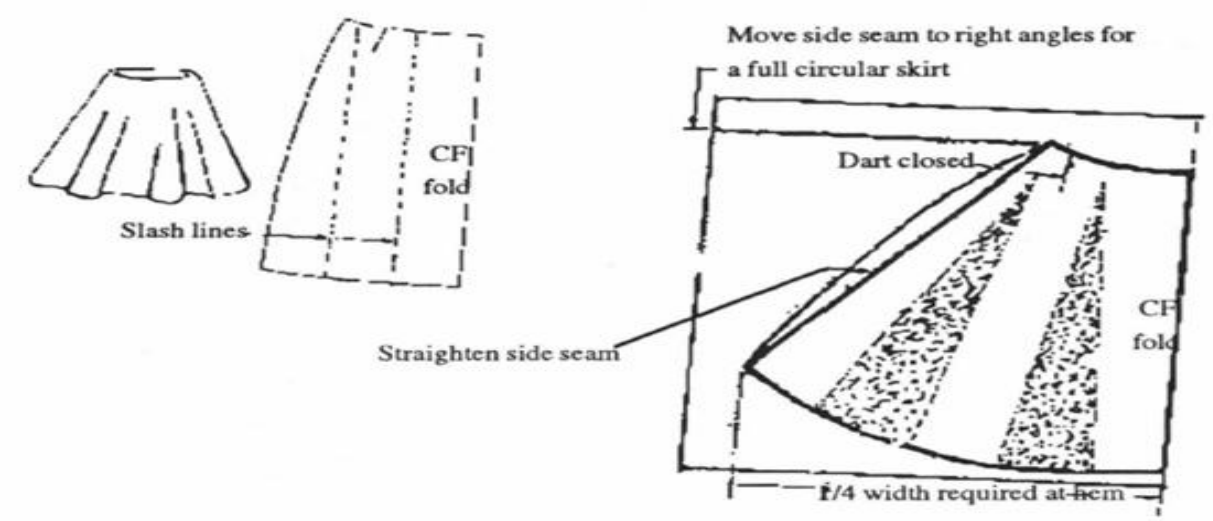


Fig. 19.1 (c) Flared skirts

Flared skirts fit smoothly at waist and flute towards the hem.

1. Fold the basic skirt block, back and front, in two or more folds, parallel with the C.B and C.F. Cut along the folds from hem almost to waist line.

2. Place each slashed block onto a large piece of paper with C.F and C.B level with a straight edge. Spread sections evenly at the slashes to give a quarter of required hem width. Close the dart, so that the waist fits without them.

3. Mark round the new shape. Remove the curved hip lines on the side seams.

4. Add seam allowance.

5. Label pattern pieces. Put in pattern markings and cut out.

ESTIMATING AMOUNT OF FABRIC NEEDED FOR SKIRT

Cut a sheet of paper the width of the fabric you plan to use - 45" (115 cm) or 60" (150cm). Work out the most economical way to place the pattern pieces unto the paper 'fabric'. Measure the length of paper used. Buy that length and width of fabric to make your skirt.

Preparation of fabric

See Book 1 Chapter 15 for information on pressing and straightening of fabric. Do same to your fabric.

Laying out and cutting of garment pieces

- Fold the fabric crosswise or lengthwise to make two thicknesses.
- Lay out fabric on a clean, flat cutting surface.
- Arrange pattern pieces on fabric-straight grain parallel to selvedge or warp. Arrangement varies according to fabric width, figure size and fabric design.
- Pieces which should not have a seam must be placed to a fold of fabric.
- Position the largest pieces first, then fit the others. Put the pieces as close as possible, making sure that they are all placed on the correct grain of the fabric.
- Fabrics with a nap or one-way design should have the pattern pieces laid out in the same direction.
- Fabrics with large pattern motifs should be centred on the front and back of the garment.
- Checks and stripes should match at the side and centre seams. Move pattern pieces so that corresponding notches line up on the same check or stripe. See Fig. 19.2 for illustration on the laying out of pattern pieces on plain, one-way design and stripe or check fabrics.

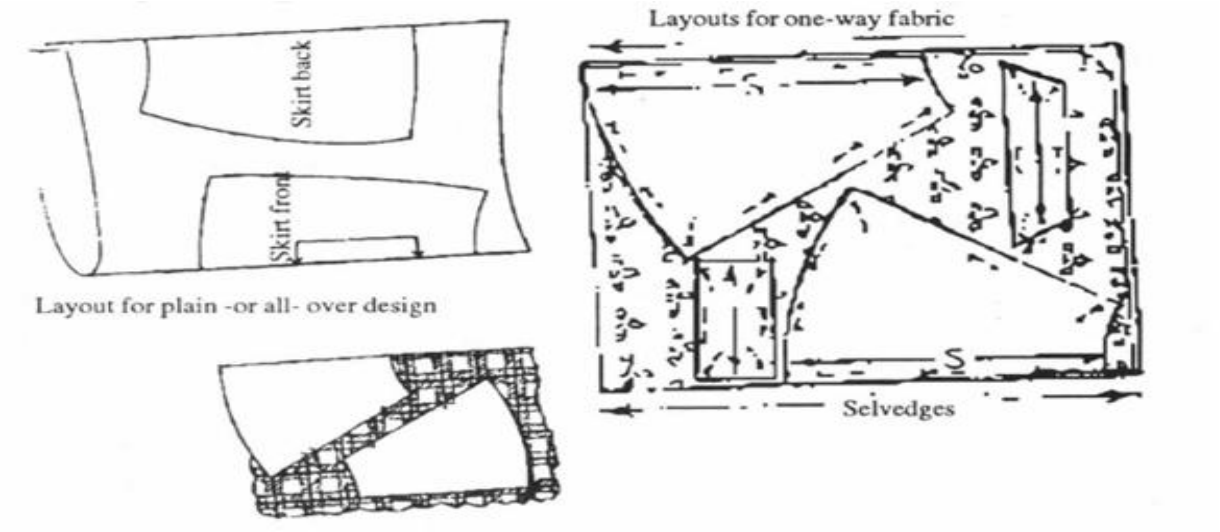


Fig. 19.2 Laying Out and cutting garment pieces

TRANSFERRING PATTERN MARKINGS

Apply any method discussed in Chapter 18 to transfer markings from skirt pattern pieces to fabric.

MAKING UP THE GARMENT

PROCESS TO BE USED

Seams

Disposal of fullness- darts, pleats and gathers

Openings

Notions- fastening

Attaching waist band

Hem

SEAMS

Join skirt seams together, using flat open seam. Refer to Book 2 for information on the making of the seam and methods of neatening seam edges.

Disposal of fullness

DARTS

A dart is a stitched fold,tapering to a point at one or both ends.

Darts are used to provide shape. They can be curved or straight.

They are normally worked on the wrong side but they can also be worked on the right side to create a decorative feature.

Slashed darts used on heavy fabrics are pressed flat open. Darts on medium weight fabrics are pressed to one side. Those on light weight fabrics are pressed with allowance, distributed equally on both sides of stitching line.

MAKING A SIMPLE DART

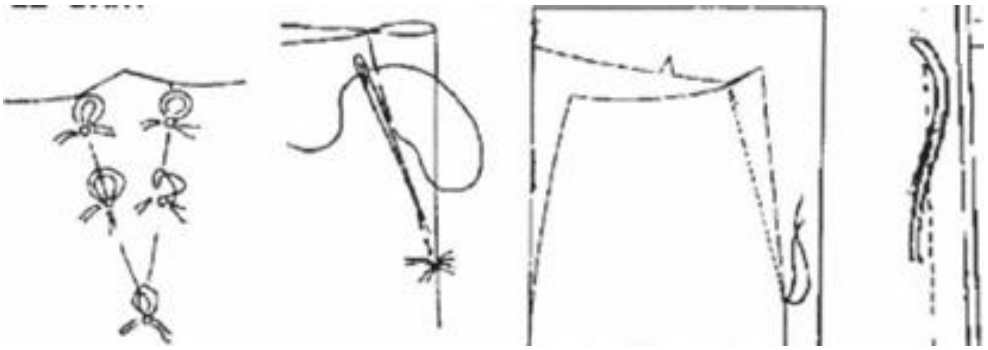


Fig. 19. 3 (a) Steps in making a simple dart

1. Mark the position of the dart.
2. Fold the dart in half, matching the markings carefully.
3. Tack the dart, starting at the raw edge and tapering it to a fine point.
4. Remove tailor's tacks and machine stitch, starting at the raw edge. Fasten off ends.
5. If the fabric is bulky, or dart made with a deep fold, cut down the fold and press out flat. Neaten edges.

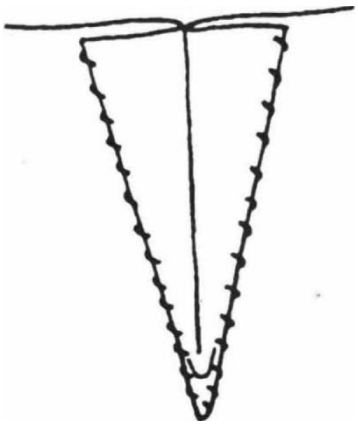


Fig. 19.3 (b) A finished dart

Pleats

A pleat is a fold on fabric, stitched down, left loosed or pressed into a crease.

All pleats are based on three main types: knife, box and inverted. Pleats are used to give extra width to garments.

Each pleat consists of three layers of fabric, so for each pleat, three times the finished width is needed, plus the distance required between pleats, if any.

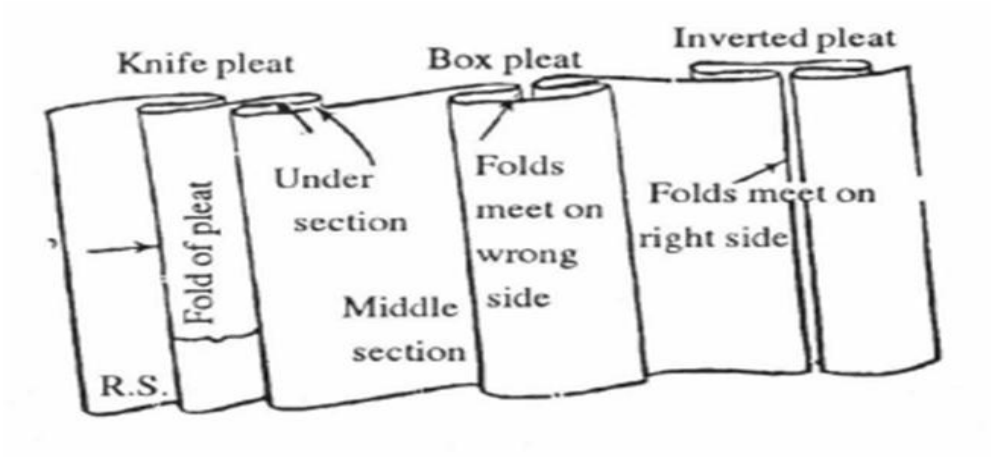


Fig. 19.4 Types of pleats

KNIFE PLEAT

The folds of knife pleats face the same direction along the whole pleated section.

1. Mark the position of the pleats on the right side of the fabric, using tacking. Use a contrasting colour thread for the fold lines and the pleat edge line.

2. Working from the right side, fold the pleats along the marked lines. Hold pleats in position, using pins, then tack.

3. Stitch to obtain desired effect.

BOX PLEATS

Box pleats have two folds of equal width, forming each pleat. The folds turn away from each other on the right side of the fabric with the underneath pleats meeting at the centre to form an inverted pleat on the wrong side. A box pleat is really two knife pleats made from opposite directions. See Fig.19. 4.

INVERTED PLEATS

Inverted pleats are the reverse of box pleats. The inverted pleat is on the right side of the fabric with the box pleat being formed on the wrong side. See Fig. 19.4

Gathers

Gathers are formed by drawing up a piece of fabric by means of rows of stitching. It is one of the most useful and easily worked methods of reducing fullness. It is a more even form of drawing in fullness.

It is most suitable for soft and fine fabrics and can be used on skirts, sleeves, frills, flounces and fullness set into yokes.

Gathering is worked near the edge of a piece of fabric which will then be joined to an ungathered piece. Allow up to twice the width of fabric for gathering, as is required for finished width.

Gathering can be done by hand, using evenly spaced rows of running stitches, or on a machine, using the longest stitch length available.

GATHERING BY HAND OR MACHINE

1. Work two rows of small running stitches or loose machine stitch 1/4” (5mm) apart, just outside the seam line. Do not fasten off the ends of the thread.

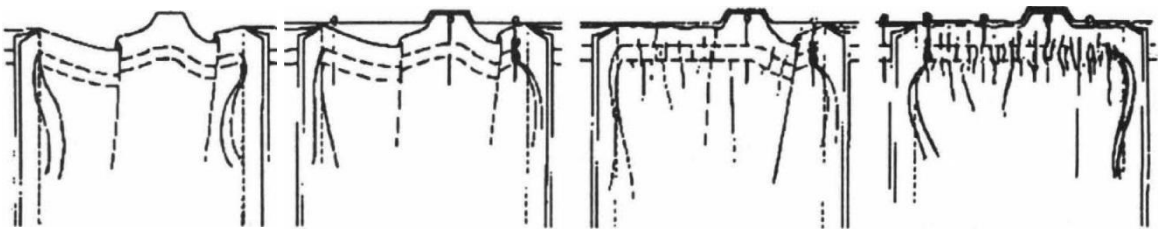


Fig. 19.5 Gathers by hand and machine

2. Pin centre of section to be gathered to centre of ungathered section.

3. Pin ends of ungathered section to ends of sections to be gathered. Pull up the two rows of gathering threads so that gathered sections fit ungathered sections. This allows for an even distribution of gathers.

4. Tack and stitch along seam line.

5. Snip the gathering threads and pull them out.

Openings

- Openings are neatened slits or partly open seams found on garments.

- They are usually worked, to make it easy for one to put on and take off garments. They can also be used for decorative purposes.

- Openings are closed, using fastenings.

SKIRT OPENING

The seam opening is the most popular opening used on skirts. The opening is closed, using either a zip fastener or button and button holes.

The opening can be made on the side seam or the centre, front or back seam. This is often done on a flat open seam.

Leave required length of opening in one seam, then stitch the remainder of the seam. Neaten the entire length of the seam.

Fastening

When an opening is completed and pressed, the fastening can be attached.

FASTENING SHOULD BE:

- Sewn on to double fabric
- Sufficient in number to keep the opening closed.
- Sewn exactly opposite one another to ensure the opening lies flat when fastened.
- Suitable for the garment, fabric, position of the opening and age of the wearer.
- As inconspicuous as possible, unless used as decoration.

SKIRT FASTENERS

Zips- The most commonly used feature for openings.

Use nylon zips on nylon and synthetic fabrics and metal cotton-backed zips on cottons and other natural fabrics.

Light-weight zips are used on light-weight fabrics and heavy-weight zips on heavy fabrics. Open-ended zips are useful on jackets.

Zips are available in a variety of colours, weights and lengths. Match the colour of the zip with the colour of the garment. Choose a length of zip to match the length of the opening.

INSERTING A ZIP USING THE CENTRED METHOD

The easiest method of inserting a zip, is to place it in the centre of the seam with equal amount of fabric on each side.

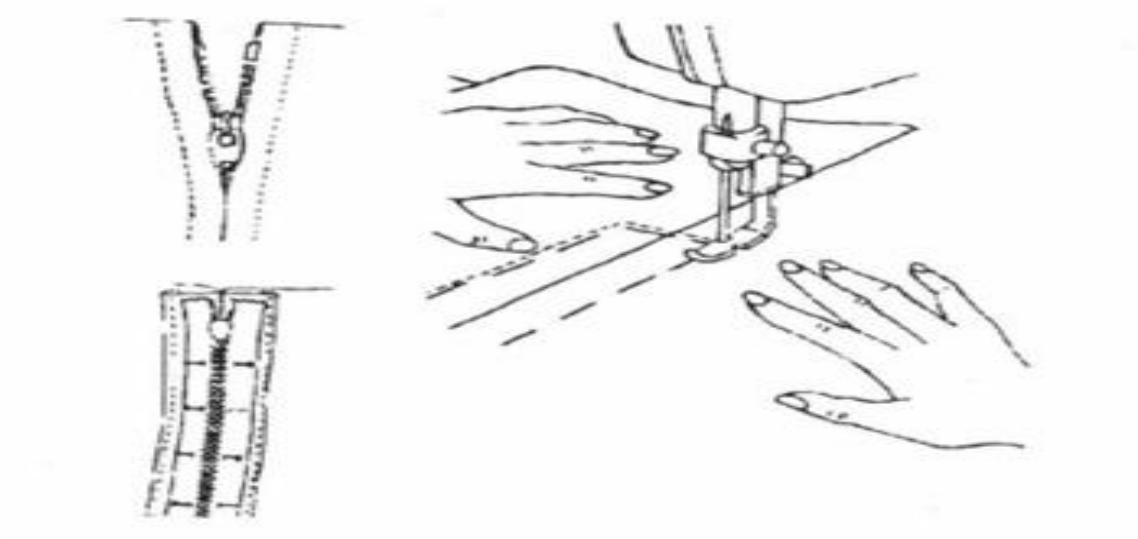


Fig 19.6 (a) Inserting a zip – Centred method

1. Press the neatened seam and tack it together along the fold lines. Mark the end of the opening with a pin.

2. Pin the zip in position with the teeth centred over the seam.

3. Tack l/4" (5mm) from zip teeth and remove the pins. Stitch close to the tacking, using a zipper foot. Begin at the top and stitch down one side. Pivot the fabric and stitch across the bottom, then continue up the other side.

4. Remove the tacking.

INSERTING ZIP USING THE LAPPED METHOD

A zip inserted by the lapped method lies behind a flap formed by the seam allowance on one side of the seam.

1. Neaten and press the seam.

2. Working from right side, place the zip under the seam opening.
   Pin and tack close to the teeth as shown in Fig. 19.6 (b)

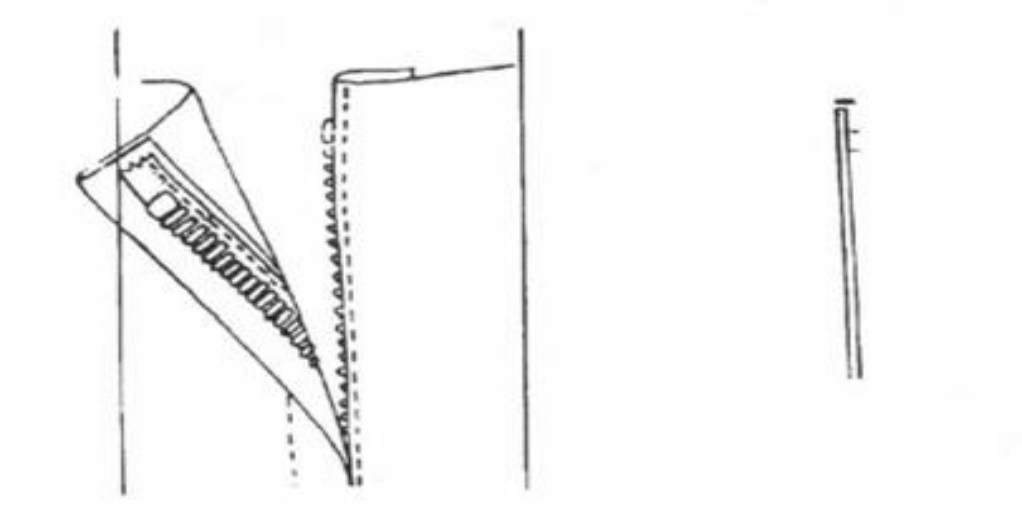


Fig. 19.6 (b) Inserting a zip – Lapped method

3. Lap the opposite seam allowance over the zip teeth, making sure that they are completely covered. Pin and tack in position 3/8” (l cm) from the fold.

4. Machine stitch as for centred zip. (Step 3) Fig. 17.6 (b)

Attaching waistbands

The best finish for the waist line of a skirt or a pair of trousers is a waistband. It should fit close to the body and be firm enough not to crease during wear.

The width of a waistband is governed by the style of the garment, the fabric and the figure type.

A wide waist band emphasises a narrow waist on a slim figure. A narrow width should be used for a plump figure.

The band should be stiffened by interlining, so that it will keep flat and give it strength.

METHOD OF STIFFENING AND ATTACHING STRAIGHT WAIST BAND

1. Prepare waist band and interlining as shown in illustration 19.7 (a)

2. Place right sides together, using notches and tailor's tacks to match the skirt. Pin and machine on the fitting line.

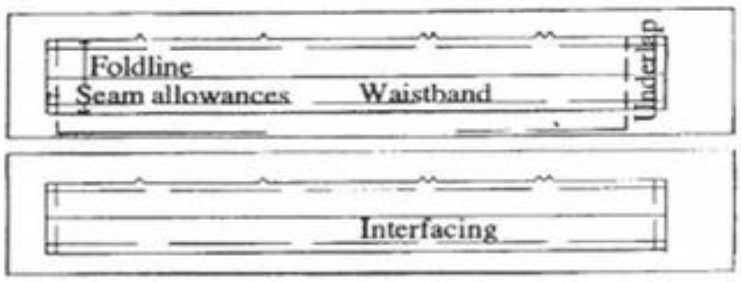


Fig.19.7 (a) Attaching a waist band

3. Press the seam open to flatten it then trim turnings separately. Press both turnings upwards.

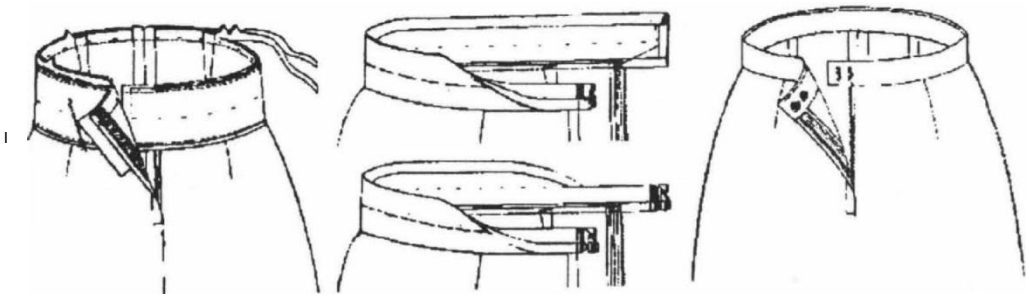


Fig.19.7 (b) Attached waistband

4. Fold the waistband in half. Bring the folded edge to cover the line of machining. Pin, tack and machine from right side along seam line formed with skirt and waist band. If waist band is finished by hemming on wrong side, bring folded edge to the line of machining and hem.

Hems and hemming

A hem is a finish used for bottom edges of garments and household articles. There are three basic forms.

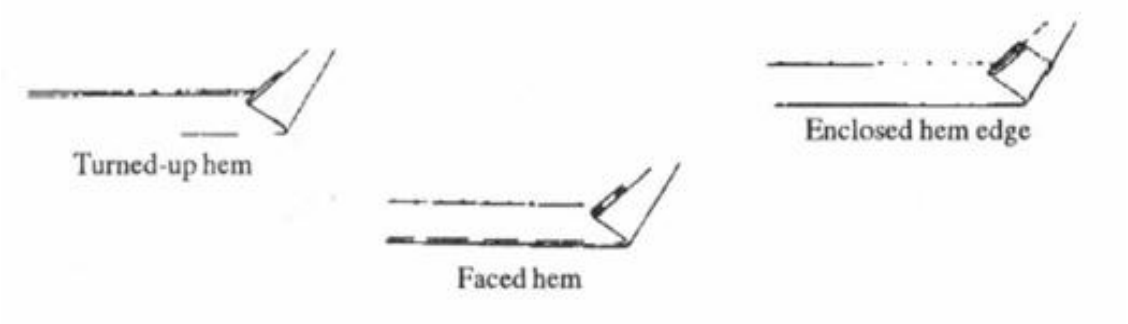


Fig. 19.8

(a) Forms of hems

Marking the hemline

Except for some pleated styles marking the hemline is done after the garment has been completed.

Use either method illustrated in Fig. 19.9 to mark the hemline of the skirt.

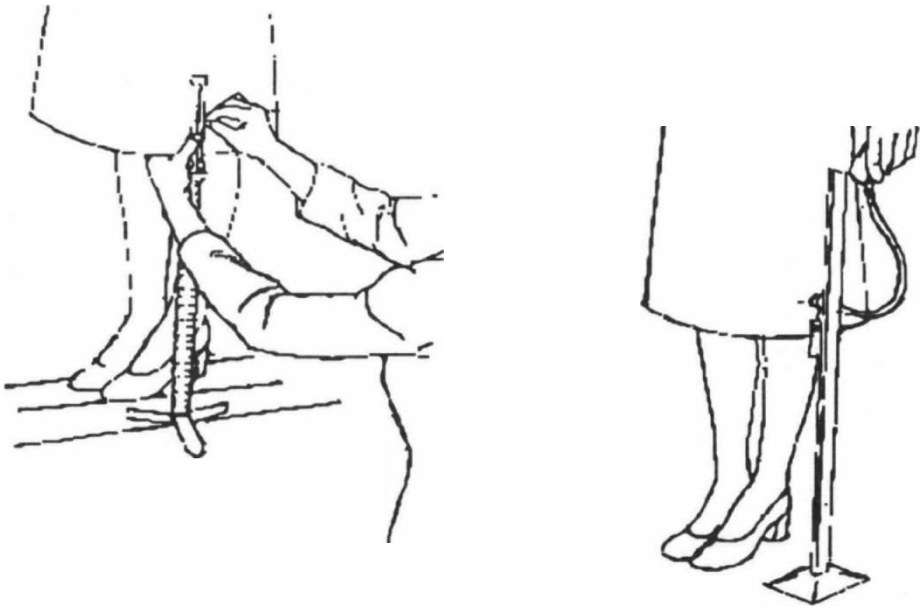


Fig. 19.8 (b) Marking of the hemline

TURNED UP HEMS

In a turned-up hem, the hem allowance is folded inside the garment, then the hem is secured by hand or machine hemming or fusing.

The shape of the hem, straight or curved, usually determines how much should be turned up. The straighter the edge, the deeper the hem allowance; the more it curves, the shallower the allowance.

Always finish hems by hand, if an invisible finish is desired on the right side of the item.

Working of hem stitch on skirt.

1. Fold ¼" (5mm) under along the raw edge and press.

2. Turn up marked hem allowance. Match the seams and centres of panels carefully. For hems on flared or gored skirts, work two rows of gathering to reduce fullness.

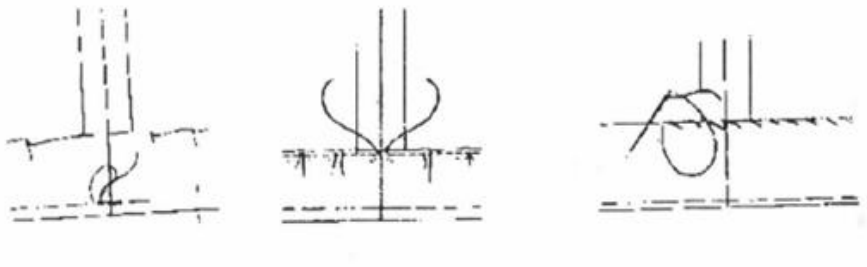


Fig. 19.8 (c) Finishing hemlines

3. Pin the hem edge in place, tack and finish with hem stitch. Refer to Book 2 for working of hem stitch.

4. Remove the tacking and press the hem.

The following fastenings can be used on the waist band.

BUTTONS AND BUTTONHOLES

These are used to close/fasten overlapped openings. Button holes can be worked on most fabrics, providing the right type of buttonhole is made.

Button loops are much more decorative and can be substituted for button holes, if appropriate to the style of garment. Button loops are best suited for an edge-to-edge opening but can also be used for an overlapped opening.

BUTTONHOLES

There are three methods of making buttonholes: hand worked, machined worked and bound.

- Always make the buttonholes before attaching the buttons.

- Horizontal shaped buttonholes are worked when there is a strain in that position
- waist bands, cuffs.

- Vertical buttonholes should be used to fasten loosely fitting garments and as a decorative feature, as the button tends to come undone, if the opening is put under strain.

- Calculate the size of the buttonhole by measuring the diameter of the button and add 1/8" (2.5mm) so that the button can slip in easily.

- Choose thread to match the fabric.

- Position the button hole at least half the diameter of the button from the edge of the opening.

HAND-WORKED BUTTONHOLES

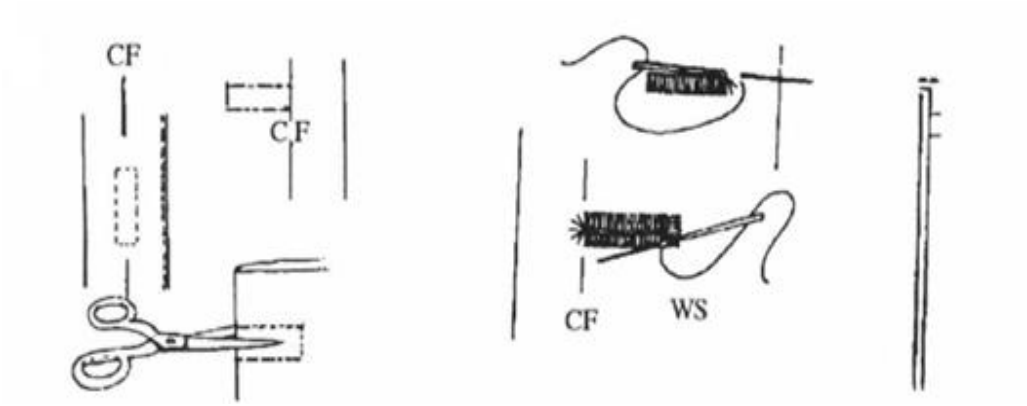


Fig. 19.9 Making buttonholes

1. Mark the position and size of the buttonhole with lines of tacking as shown in Fig. 19.9

2. Cut along the centre thread of the button hole, folding in half to start the cut. Work buttonhole immediately after cutting.

3. Starting at the end, furthest from centre front. Work buttonhole stitch along the edge, working from left to right.

4. At the end of the slit, work five, seven or nine overcasting stitches in a semi-circle, with the middle stitch being in line with the button hole.

5. Work along the second side of the slit in the same way as the first.

6. Work a bar of satin stitches across the end of the buttonhole to the depth of both rows of button hole stitches. Whip the bar on the wrong side to fasten off.

7. A vertical button hole is worked with either two round or two square ends.

MACHINE-WORKED BUTTONHOLES

1. Mark the position and size of buttonholes with tailor's chalk.
2. Work the buttonhole, following the instructions in your sewing machine hand-book.
3. Cut through the centre of the buttonhole, using a small sharp pair of scissors or seam ripper.

BUTTONS

Buttons are available in a wide selection of sizes, shapes, colours and materials. Some are flat pierced with two or four holes and others have shanks/loops underneath.

The purpose of the shank is to make a space between the fabric and the button to allow for the thickness of the overlap when the button is fastened. The button will not stay fastened, if stitched without a shank.

Buttons should be attached at least half their diameter in from the edge of the garment, using strong matching thread.

ATTACHING BUTTONS WITHOUT SHANKS

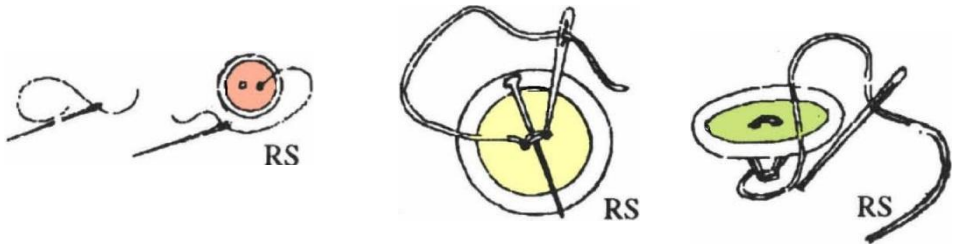


Fig. 19.10 (a) Attaching buttons – without shanks

1. Fasten on thread at the required position of button with a small back stitch.
2. Place centre of button over fastened thread, bring thread through a hole in the button.
3. Stitch in and out of the holes over a pin, as shown, leaving the thread fairly loose under the button.

4. Bring needle out between button and fabric- after making the final stitch in sewing on the button. Remove pin and pull button to the end of the long stitches formed.

5. Wind the thread tightly round the threads, until it forms a firm shank, then bring the needle through to the back of the fabric.

6. Fasten off, as shown in illustration.

ATTACHING BOTTONS WITH SHANKS

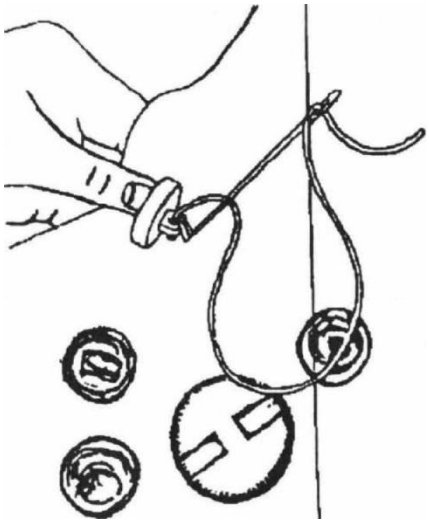


Fig. 19.10 (b) Attaching buttons – with shanks

1. Secure the thread as for button without shanks.

2. Hold the button at right angle to the fabric and stitch through the loop of the button and the fabric several times.

3. Take the thread through the wrong side and fasten off as for button without shank.

Hooks and eyes

Hooks and eyes are used where an extra fastening is needed on an overlap or an edge-to-edge opening, for example, on a waistband or at neck line.

Hooks and bars are used and sewn in the same way as hooks and eyes.

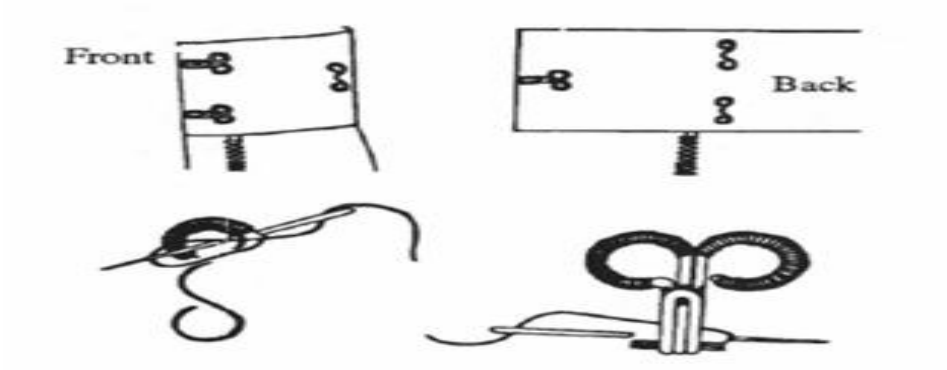


Fig.19. 11 Attaching hooks and eyes

ATTACHING

1. Place the hook on the underside of the underlap, so that the eye or bar is hidden when fastened. Attach it to the garment by working button-hole stitches.

2. Oversew the neck of the hook to the fabric to keep it flat.

3. Position the eye to match the other side of the opening and attach it with button-hole stitches worked through the two smaller loops.

Velcro

Velcro also called 'touch and close' fastening, is used to fasten overlapping openings. It consists of two strips, one covered with tiny hooks and the other with soft loops. When the strips are pressed together, the hooks go into the loops causing the two layers to stick.

Velcro comes in different widths and in various colours and can be purchased according to length required.

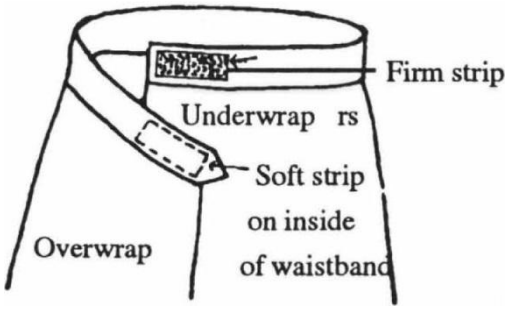


Fig. 19.12 Attaching Velco

ATTACHING

1. Cut the fastening strip to the required length and separate the two strips.

2. The hook section should be attached to the over wrap and the looped section to the under wrap. Machine stitch around the edge of velcro for both pieces.

20. FIBRE TO FABRIC

Introduction to man-made and synthetic fibres

The term man-made fibres is self-explanatory. It is used to describe all the textile fibres not of natural origin.

There are two main classes of man-made fibres:

1. **Regenerated cellulose fibres**- made by changing existing vegetable materials such as wood pulp and cotton linters into chemical fibres by a chemical treatment.

2. **Fully synthetic fibres**-made from chemicals. The molecular structure of oil or coal tar chemicals is built up to form chemical fibres.

There are three main ways of changing the chemicals into fibres:

1. **Wet spinning**-the feeding of the fibre forming chemical from a spinneret (a nozzle with fine holes) and setting the filaments in a bath of diluted acid or other chemicals.

2. **Dry spinning**-the fibre forming chemical is dissolved in a volatile solvent which evaporates in warm air after the filaments leave the spinneret.

3. **Melt spinning**- the melting of a hard plastic chemical and forcing it through the spinneret, then cooling it to solidify the filaments.

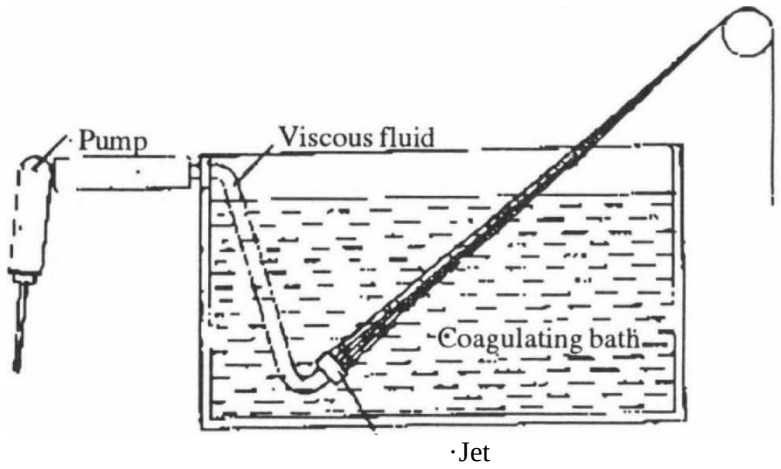


Fig. 20.1 (a) Chemical coagulating in a liquid-Wet spinning

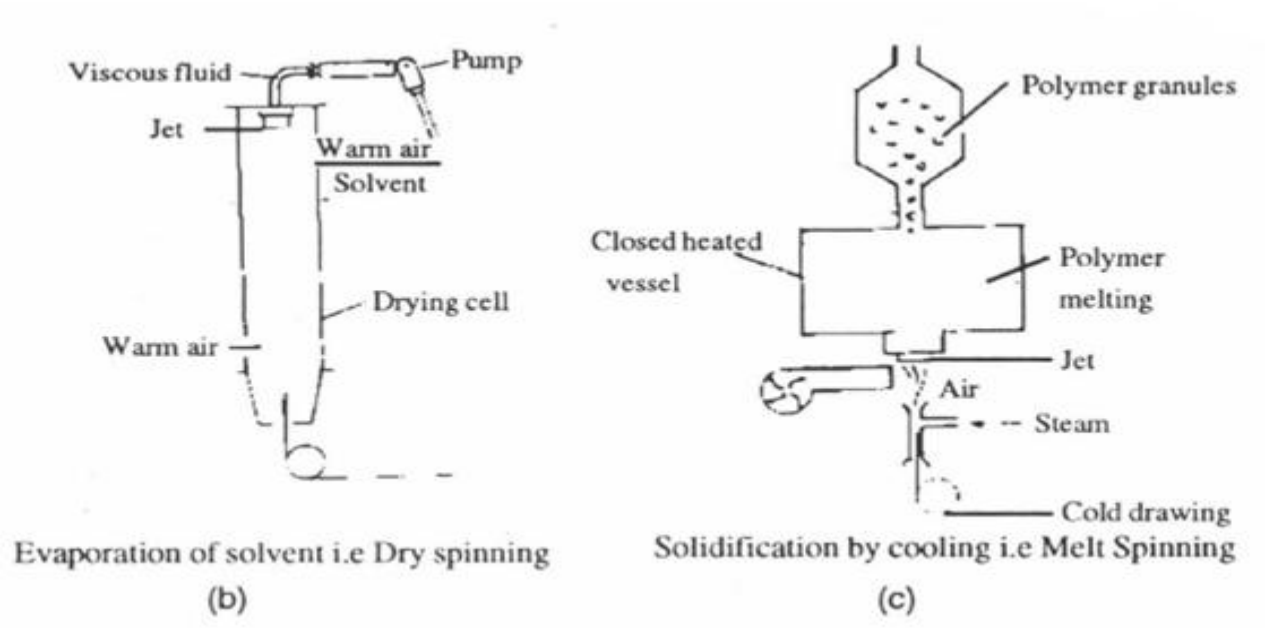


Fig. 20. 1 Methods of making synthetic fibre

Note: See Book 1, page 129, for information on the groups of man-made fibres.

Rayon as a textile fibre

HISTORY OF RAYON

Man first got the idea of making fibres from watching the silk worn spinning liquid filaments of silk through holes in its head. Many attempts were made to produce a fabric similar to silk by artificial means.

In 1884, a Frenchman, Count Hilaire de Chardonnet, made the first artificial silk fabric from nitrocellulose fibres. It was very shiny but unfortunately, it was too flammable and expensive to produce.

In 1890, it was discovered that regenerated cellulose filaments could be produced by taking a solution of cellulose dissolved in cuprammonium liquid into a coagulating bath. This process was developed into a commercially viable process and is presently used to produce rayon fabrics.

In 1892, three paper technology chemists - Cross, Bevan and Beaddle invented another process of converting cellulose into a regenerated fibre. In this process, the cellulose is converted to cellulose xanthate which can be dissolved and gives a solution known as viscose. When the viscose is placed into an acid bath, the cellulose is regenerated.

In the 1930s, it was discovered that rayon staple fibres could be made to resemble wool or cotton by spinning the fibres on the worsted and cotton system. Today, rayon staple fibre is the most widely used man-made fibre.

Rayon Production

Rayon fibres are produced from vegetable substances by chemical means. Wood- pulp or cotton lint is chemically regenerated into:

- Viscose rayon
- Cellulose acetate
- Triacetate
- Modified rayon

The flow chart shows the basic process in the production of rayon yarns.

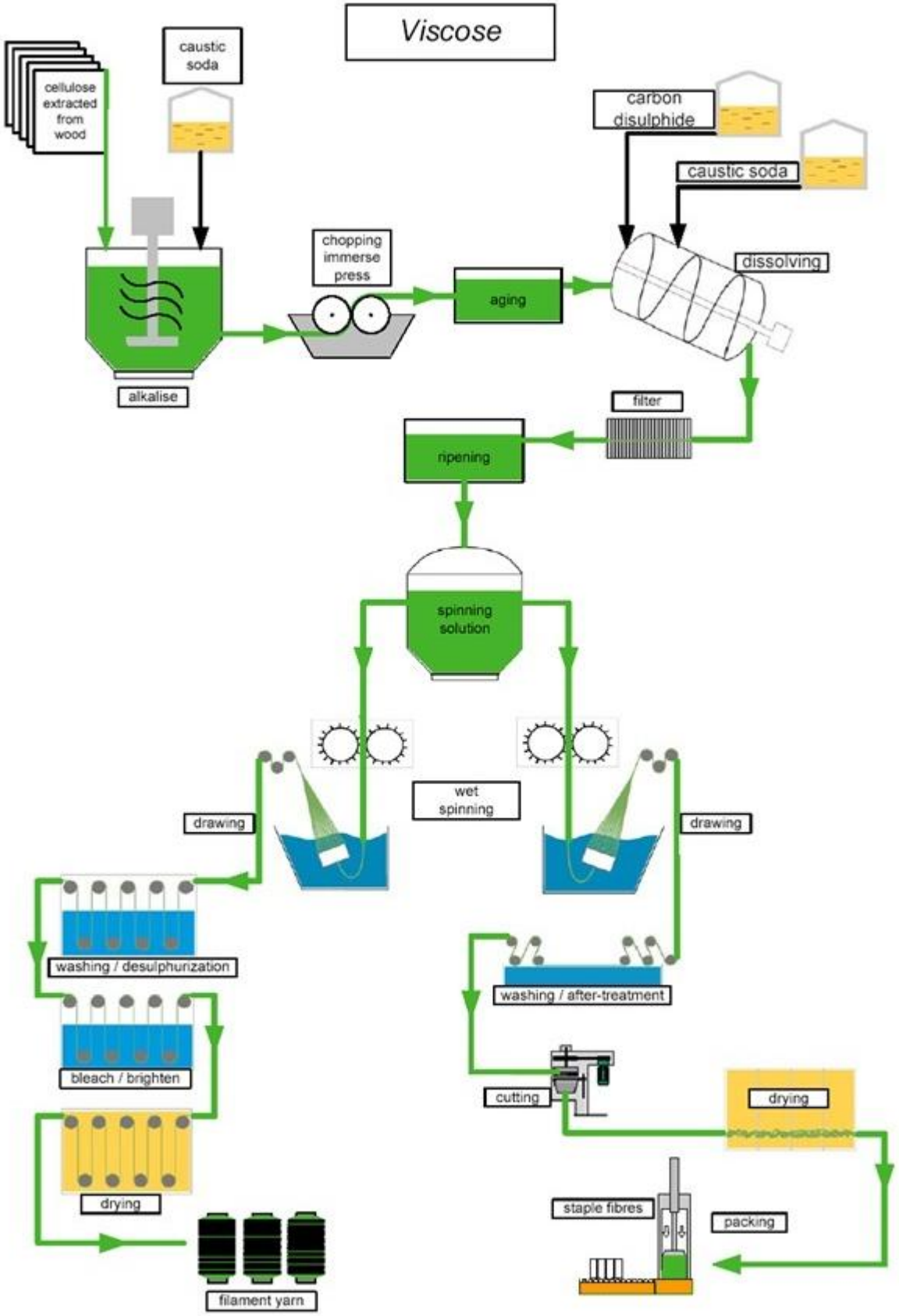


Fig.20.2 (a) Production of viscose rayon

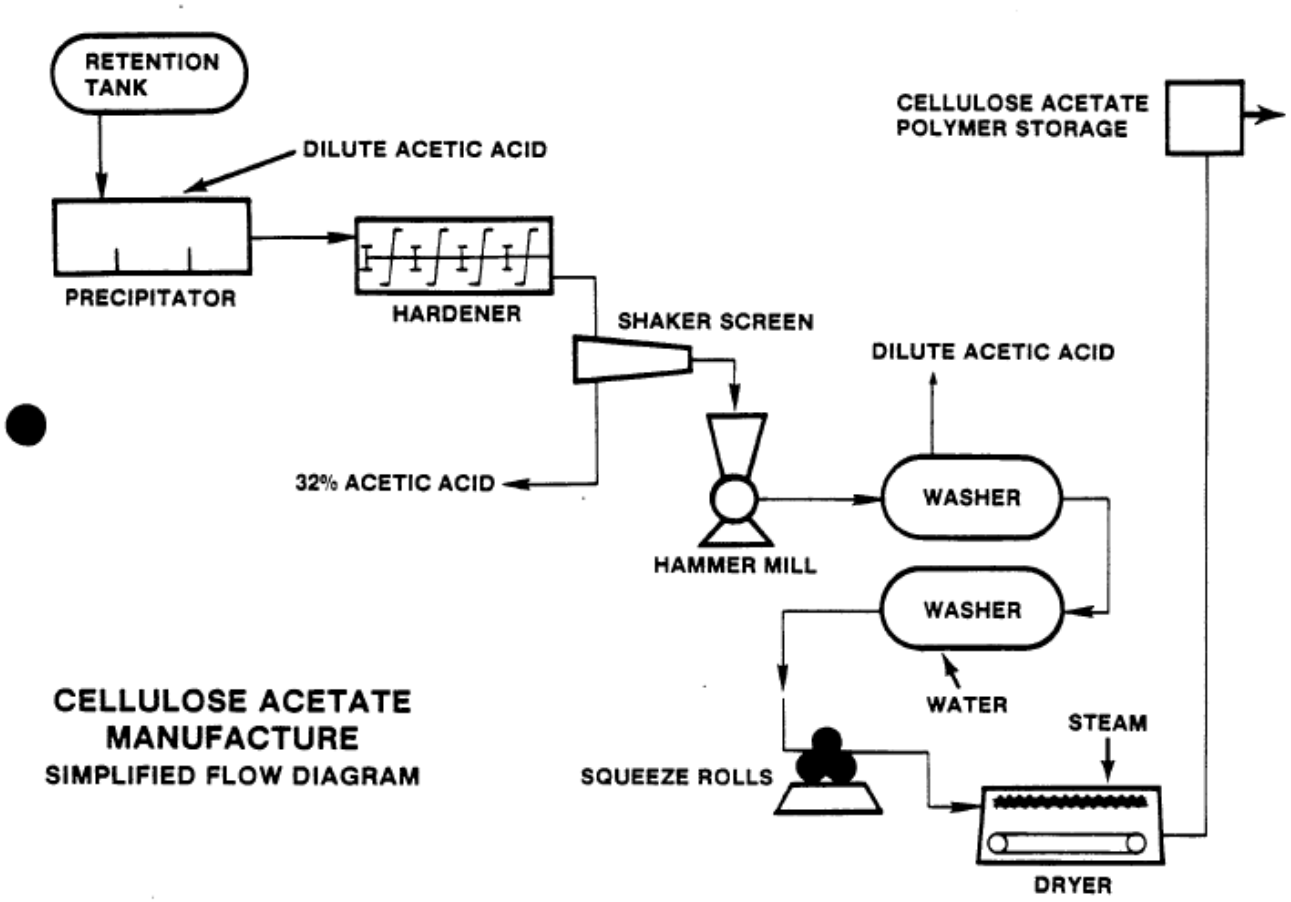


Fig.20.2 (b) Production of Cellulose acetate

PROPERTIES OF RAYON

Viscose rayon

- absorbs moisture easily; is suitable for wearing in hot weather.
- absorbs dyes well and is dye fast.
- is weak and even weaker, when wet.
- being cellulose, is attacked by mildew, is damaged by acids and strong alkalis.
- is best washed in mild soap or soapless detergent and warm water. Dry cleaning is recommended for some types, owing to its weakness when wet.
- should be ironed with a cool iron, while damp.
- has a good lustre, resembling silk, because of its continuous filament.

- is often blended with wool to reduce the cost of woollen items (because it is a stable fibre).

- has qualities similar to cotton but is not as sturdy as cotton.

CELLULOSE ACETATE:

- is very resilient and somewhat elastic.

- is a poor conductor of heat.

- dries quickly because it is not very absorbent.

- absorbs dyes readily.

- will not stretch or shrink in washing.

- will cause permanent creases if rubbed, twisted or wrung (being a smooth fibre); does not absorb dirt readily.

- should be ironed damp on the wrong side with a cool iron only, (because acetate is a thermoplastic fibre, it melts with warmth).

- tends to stick to the skin, when worn in hot weather; is more expensive than viscose.

Some rayon fabrics are sharkskin, crepe, garbardine, grosgrain, serge, taffeta, satin, velvet, net.

SPECIAL FINISHES APPLIED TO IMPROVE VISCOSE RAYON FABRICS

Calendering	- A finish which adds smoothness to the fabric.
Embossing	- A permanent decorative finish which produces raised designs on the surface of the fabric.
Napping (spun rayon)	- A finish which gives the fabric thickness and softness. It improves the resemblance of the fabric to that of wool.
Stiffening	- A special treatment which gives body to the fabric.
Pre-shrinking	- A finish that minimises the tendency of fabrics to shrink.

Water repellency - A special treatment which prevents fabrics from absorbing water readily.

Crease-resistant - A finish that minimises the tendency of fabrics to crease and helps them to shed wrinkles.

SPECIAL FINISHES APPLIED TO IMPROVE ACETATE

Embossing, napping, water repellency and wrinkle resistance finishes are applied for the same purposes discussed for viscose rayon.

Moireing -A special permanent finish which gives an attractive, lustrous wavy design on fabrics.

Sizing -A special finish which gives stiffness and body to fabrics.

Heat setting - A permanent finish which causes fabrics to maintain/retain crease and shape.

USES OF RAYON FABRICS

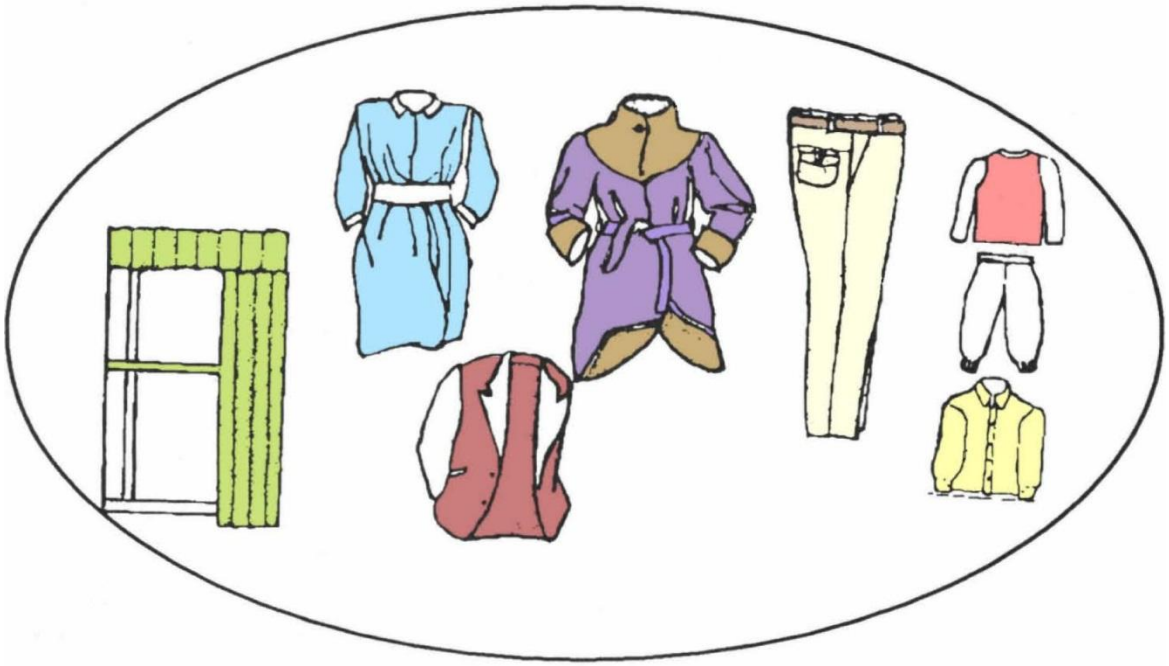


Fig. 20..3 (a) Viscose rayon

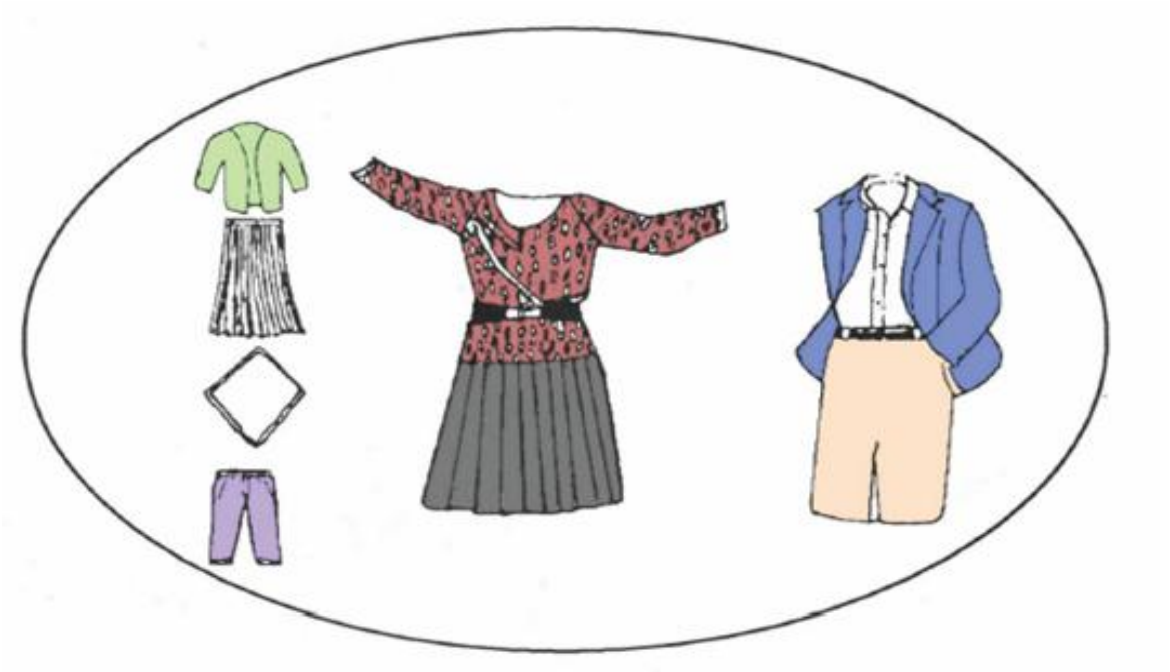


Fig.20.3 (b) Cellulose acetate

CARE OF RAYON

- Warm wash
- Cold rinse
- Short spin
- Do not wring
- May be dry cleaned
- Cool iron

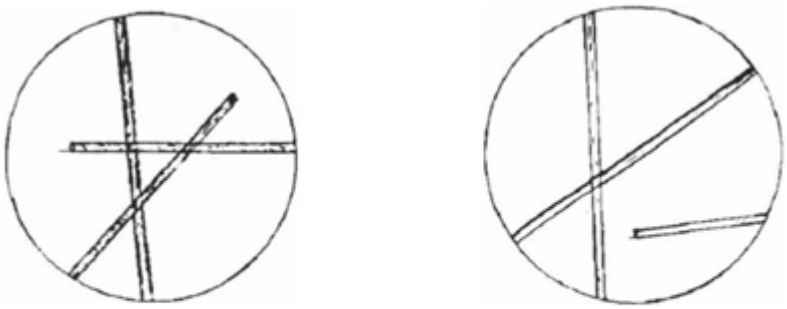
IDENTIFYING RAYON

Burning

Viscose rayon gives off a smell similar to that of burning paper. It burns readily, producing a yellow flame, white colour smoke, leaving a greyish white ash and the fabric crinkled.

Acetate rayon gives off a smell similar to that of vinegar (acetic acid). It burns slower than viscose. The fabric puckers, curls and fuses into an irregular black residue that hardens when cooled.

Microscopic



Viscose rayon
(a)

Acetate rayon
(b)

Fig. 20.4 Microscope view of rayon fibres

Chemical

Viscose - When placed into a 30% solution of sulphuric acid, the fibres become blue-black.

Cellulose Acetate - When placed into a solution of acetone, the fibres dissolve.

Activities

- Collect samples of fabrics which look like rayon. Do some tests to find out whether they are rayon.
- Do further readings on the production of rayon, then compare the basic difference(s) in the manufacture of viscose and acetate rayon.
- Visit the fabric store and check to see the other fabrics that are usually blended with rayon. Suggest reasons for the blends.
- Visit garment shops in your community, identify rayon garments and compare the prices of similar garments made from natural fabrics. Suggest possible reasons for differences in cost.
- Collect pictures of garments and articles which can be made from rayon. Mount them

in your Clothing Project Book.

Fabric finishes

Our study of textiles so far has been limited to the production of fabrics. Grey fabrics, produced through the different fabric construction processes, only satisfy a small amount of the demand for textiles in the market. As textile consumers, a larger proportion of our demand is for "finished goods", a term used in the textile industry to describe fabrics which have been dyed or printed, fixed, stentered and calendered. These processes make them attractive.

Whenever colour is applied, whether it is by piece dyeing, screenprinting, batik or tie and dye, the process is said to be a finishing process. The finishing process gives fabrics different decorative appearances, depending on the process used. When the exercise is carried out manually on short lengths in an art studio, the fabrics are often exclusive and more expensive. When finishing is done in a mechanised industry, larger quantities are produced at a less expensive price.

Dyes and pigments

Colours are applied to fabric either by the use of dyes or pigments.

DYES

Dyes are chemical substances which form a bond with the textile fibre. A dye penetrates the fibre, holding on to the fibre structure. It is therefore very important that the dye is suitable for the fibre type, for effective dyeing to take place.

When a fabric is printed with a dye, the colour appears on the right and wrong side of the fabric, with the wrong side being only slightly paler than the right side. This is as a result of the chemical bond formed between the dye and fabric. Fabrics with printed colour, seen only on the right side, have been printed with pigments.

Types of Dyes

Direct or substantive dyeing is normally carried out in a neutral or slightly alkaline dyebath, at or near boiling point, with the addition of either sodium chloride or sodium sulfate or sodium carbonate. Direct dyes are used on cotton, paper, leather, wool, silk and nylon.

Basic dyes are water-soluble dyes that are mainly applied to acrylic fibres, but find some use for wool and silk. Usually acetic acid (vinegar) is added to the dye bath to help the uptake of

the dye onto the fibre. Basic dyes are also used in the coloration of paper.

Mordant dyes require a mordant, which improves the fastness of the dye against water, light and perspiration. The choice of mordant is very important as different mordants can change the final color significantly. Most natural dyes are mordant dyes. The most important mordant dyes are the synthetic mordant dyes, or chrome dyes, used for wool; these comprise some 30% of dyes used for wool, and are especially useful for black and navy shades. The mordant, potassium dichromate, is applied as an after-treatment. It is important to note that many mordants, particularly those in the heavy metal category, can be hazardous to health and extreme care must be taken in using them.

Acid dyes are water-soluble dyes that are applied to fibres such as silk, wool, nylon and modified acrylic fibres using neutral to acid dye baths. Attachment to the fibre is attributed, at least partly, to salt formation between the dye and the fibre.

Disperse dyes were originally developed for the dyeing of cellulose acetate, and are water insoluble. The dyes are finely ground in the presence of a dispersing agent and sold as a paste, or spray-dried and sold as a powder. Their main use is to dye polyester but they can also be used to dye nylon,cellulose triacetate, and acrylic fibres. In some cases, a dyeing temperature of 130 °C is required, and a pressurised dyebath is used.

PIGMENTS

A pigment is made up of particles of substances which are held together by a suspension. A pigment only holds to the surface on which it has been printed. Very little, or no colour, is visible on the wrong side of the fabric. Pigments are best suitable for printing.

THE METHODS OF APPLYING FINISHES

Piece dyeing: A fabric is piece dyed when the entire fabric is immersed in a dye solution, normally referred to as a dye bath. This process will produce fabrics in one colour or solid colour as we often say.

Fibre type	Suitable dye
Cellulosic (cotton linen)	• Direct (water-soluble compounds)
Viscose rayon	• Basic plus a mordant
Protein (wool, silk)	• Basic • Acid
Rayon (acetate, triacetate)	• Disperse
Nylon, Polyester, Acrylic	• Disperse

Most dyes suitable for art work or domestic purposes are prepared and sold, ready for use. Those used in industries, and all our indigenous dyes, require special chemical additive substances to ensure that the colour remains fixed and fast on the fibres.

Tie and dye: Tie and dye is a manual process done in a form of resist dyeing.

1. Knot or pleat or pinch and tie sections of the fabric to prevent dye from penetrating those areas.

2. Immerse the tied fabric in cold or hot water dye solution. The tied sections will retain the original colour of the fabric, while the other areas will absorb the dye.

3. More colour can be applied by allowing the tied fabric to dry, then tying some new dyed areas and immersing the tied fabric in another dye solution. The original colour will be under the sections tied first, the second colour will remain under the second section and a third colour

from the last process. Tying and dyeing may be continued until all areas are exhausted by tying.

4. The fabric is then washed to remove excess colour.
5. All tied sections are undone to reveal a multi-coloured tie dyed fabric. A final washing may be done before hanging in a shade to dry.

Note: Fabrics must be washed to remove all sizing before dyeing.
Always commence with the lightest colour and proceed to the darkest. This principle is also applied in printing.

SOME METHODS OF TYING

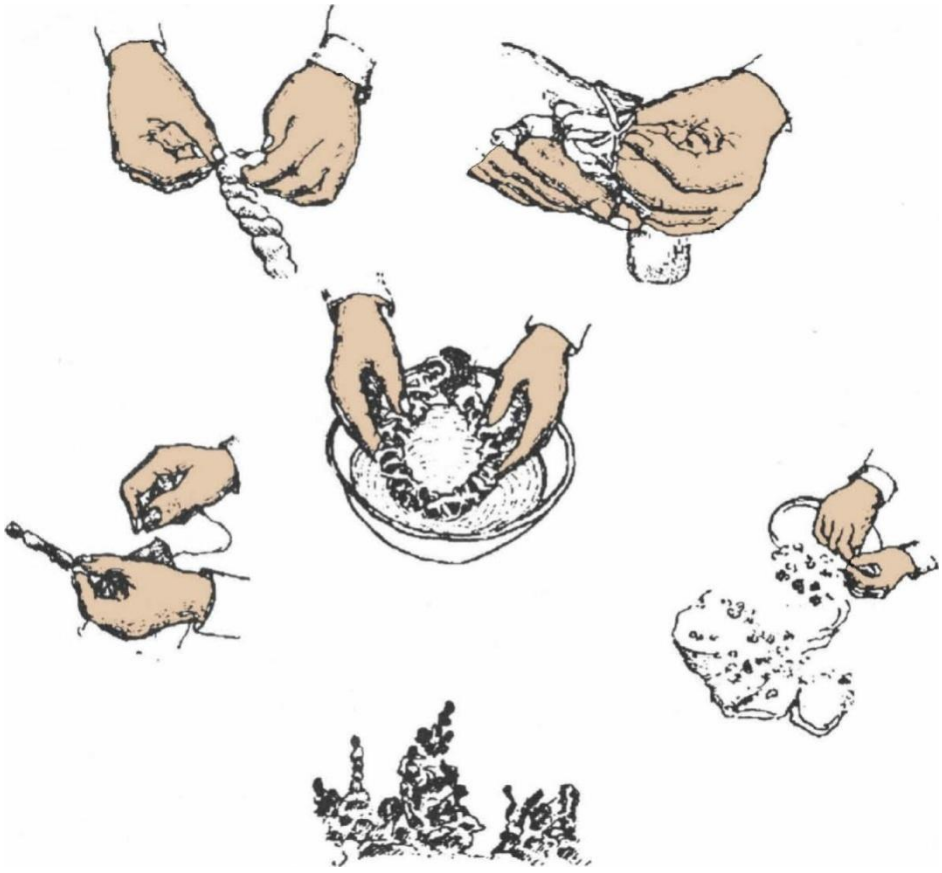


Fig.20.4(c) process of tie dyeing

A design plan may be used to achieve successful results.

FABRIC PRINTING

Fabric printing is a process of applying colours to fabric surfaces in specific areas. There are different methods of fabric printing:

1. Roller Printing
2. Screen Printing
3. Block Printing
4. Stencil Printing



Screen printing



Roller printing



Block printing

Fig.20.5 Methods of Fabric Printing

Certain basic preparatory stages are common to all, regardless of which ever method of printing is used.

(1) There must be a motif.

(2) The motif must be arranged in a form suitable for repetition, e.g., square repeat, reverse repeat, half-drop repeat, border repeat.

(3) The scale of repeat must be well organised considering the width of fabric to be printed, so when completed, the motifs and fabric unite to form a complete work of art.

(4) The dye must be thickened so that colour can be applied, without spreading beyond the limits of the motif.

(5) The colour has to be fixed by a steaming process which allows colour to penetrate the fibres as the paste is softened.

ROLLER PRINTING

(1) The design is engraved on rollers, each colour to be printed is done on a separate roller.

(2) The engraved roller is rotated in a colour paste.

(3) The excess colour is removed with a blade.

(4) Fabric to be printed is passed over the rollers and the etched out motifs are printed on the fabric.

(5) The dye is later fixed and fabric washed to remove excess dye.

SCREEN PRINTING

Screen printing may be done manually or by a mechanical process.

(1) The designs or motifs are applied to the screen, blocking out the areas where no colour is required. Each colour to be printed is done on a separate screen.

(2) The fabric is placed on a table and screens positioned over it.

(3) Colour paste is poured on the screen and forced through the mesh, printing the design

on the fabric.

(4) Fabric is next steamed to fix dye, as in roller printing.

BLOCK PRINTING

Block printing is a method of printing done manually.

1. The design is cut on blocks made from line, wood or root vegetables. Fruits or vegetables with interesting designs on their cross sections may also be used.

2. The block is dipped in thickened dye then stamped unto the fabric.

3. Fabric may be steamed or ironed to fix the dye.

STENCIL PRINTING

Stencil printing is similar to screen printing, but while screen printing may be done mechanically, stencil printing is done manually.

1. Stencil is cut on cardboard or any firm non-absorbent material.

2. Stencil is placed over fabric and stenciled design painted in.

3. Dye is fixed by steaming or ironing.

BATIK

Batik is a resist method of colouring fabric. Melted wax is often used as the resist because wax and liquid cannot mix.

- The design or motif required is drawn on the fabric in wax which dries instantly.

- The fabric is then immersed in a cold dye solution. Areas where wax was applied will remain white, while the remainder of the fabric will absorb the dye.

- More colour may be applied by covering dyed areas in wax and repeating the process in another colour, after the first colour is dried.

- Fabric is then boiled for two or three minutes, or the wax may be ironed off on absorbent paper.

- Printed fabric is now ready for use.

Note: A flour paste may be used as a resist, but this takes time to dry. The dye for this form of resist must be thickened and painted on. Additional colours may be added as is done with wax. Flour resist is a little more difficult to remove than wax. It has to scraped off and thoroughly washed.

BATIK WORK

Fabric painting is a manual process of applying colour to fabric.

It is similar to painting on paper. Paints suitable for fabrics have to be used, instead of water colours.

Fabrics printed by this method are often very expensive. It offers scope for creative expression with an individual touch.

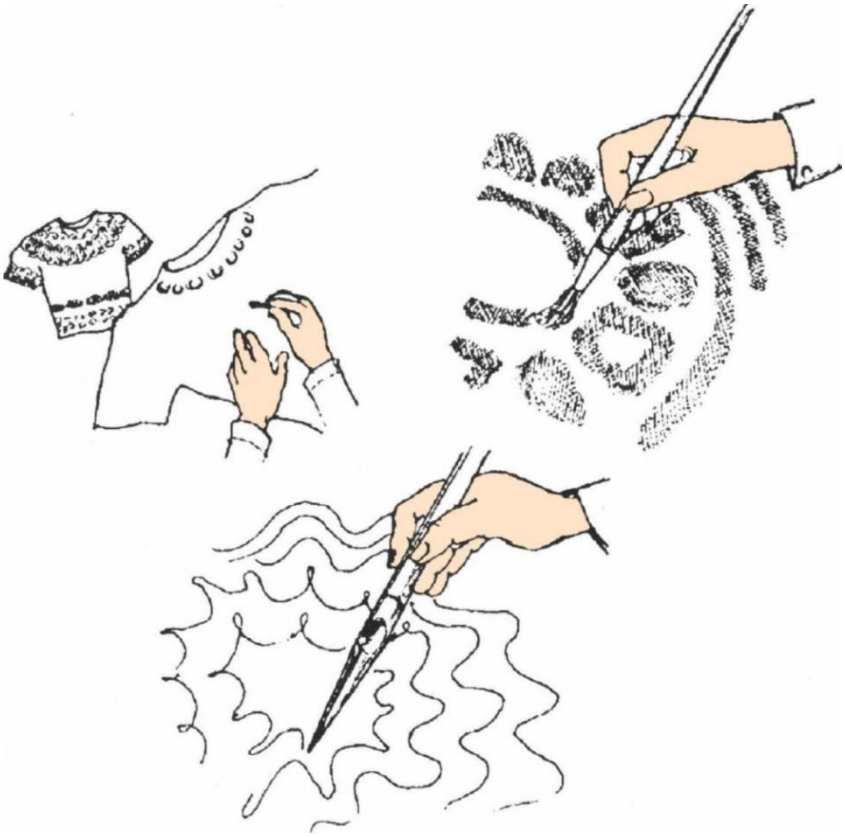


Fig. 20.6 Batik

Activities

1. Using pieces of cotton fabrics, do some activities with tie and dye. You can try some plants, berries or fruits for colour instead of synthetic dyes.

2. Melt a piece of candle and allow it to drip on cotton fabric. Immerse the fabric in some dye solution. Follow the instructions for removing wax.

3. Try some printing using stencils and blocks. Use a little starch to thicken the dye.

4. If you are good at painting, try some fabric painting. Remember you will need fabric paints.

5. Iron the pieces that have to be fixed. Place them between unprinted newsprint or pieces of plain coloured cotton fabrics to protect the ironing board.

6. Mount your pieces in your clothing book.

Glossary

Acroleina	- white acrid vapour given off as fat. It is decomposed by overheating.
A La Carte	- a menu which has a list of dishes with their individual prices.
Chalaze	- cordlike structure that holds the yolk in the centre of the egg.
Collagen	-the white transparent tissue that holds fibres together.
Elastin	-the tough yellowish tissue that forms the walls of muscle cells.
Emulsifier	- a substance that holds oil or fat particles in suspension.
Extractive	- a substance that gives meat its peculiar flavour.
Flash point	- the temperature at which fat ignites
Hydrogenation	- the adding of hydrogen to a substance, e.g., oil. This process causes oils to harden.
Marbling	- visible fat laid down between muscle tissue
Meat	- the flesh and some internal organs of animals
Menu	- a list of dishes to be served at a meal

Offal or variety meat- internal organs that are used for human consumption

Plasticity	- the ability of fat to wrap around flour particles
Rigor mortis	- the stiffening of muscles due to the clotting of proteins after the animal dies.
Smoke point	- the temperature at which fat begins to smoke
Stewing	- a slow moist method of cooking in a covered vessel
Stock-	- the liquid in which bones, vegetables or scraps of meat have been simmered gently for a long time.
Table d'hote	- a set menu with dishes that form a balanced meal

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