முக்கிய அறிவித்தல்

சாவகச்சேரி பிரதேச சபை
பொது நூலகம்

நீங்கள் எடுத்துச் செல்லும் புத்தகத்தில் கிறுதல், வெட்டுதல் கிழித்தல், அழித்தல் அழுக்குப்படியவிடல், எழுதுதல், கிறிடுதல், பக்கங்களை மடித்தல்மற்றும் ஊறுபாடுகளைச் செய்ய வேண்டாமெனக் கேட்டுக் கொள்கிறோம். புத்தகங்களை நீங்கள் எடுக்கும் போது இத்தகைய குறைபாடுகளைக் கண்டால் நூலகப் பொறுப்பாளரிற்கு உடன் தெரிவிக்கவும் அல்லாவிடில் நீங்கள் எடுத்துச் செல்லும் புத்தகம் நல்ல நிலையில் இருந்ததெனக் கருதப்படுவதுடன் ஊறுபாடுகளிற்கு நூலகப் பொறுப்பாளரினால் விதிக்கப்படும் தண்டத்தையும் நீங்கள் ஏற்க வேண்டிய நிர்ப்பந்தமும் ஏற்படும்.

குறிப்பிட்ட நாளுக்குப் பிந்தும் ஒவ்வொரு நாளிற்கும் 50 சத வீதம் குற்றப் பணம் அறவிடப்படும். பொது நூலகத்தின் சிறப்பான சேவைக்காகவும், வாசகர்களின் நலனிற்காகவும் தங்களின் ஒத்துழைப்பு மிகவும் அவசியமாகத் தேவைபடுகின்றது.

விசேட ஆணையாளர்,
சாவகச்சேரி பிரதேச சபை

HOUSECRAFT AND HYGIENE

THE GRAIN SERIES

HOUSECRAFT AND HYGIENE

FOR STANDARD VII

BY
MERCY E. DE SILVA

THE UNITED SOCIETY FOR CHRISTIAN LITERATURE
1, CONSISTORY BUILDINGS, FRONT STREET, COLOMBO 11
1952

AFFECTIONATELY DEDICATED
TO
Miss H. M. PARK, B.A.
FOR MANY YEARS
PRINCIPAL OF MY SCHOOL
METHODIST COLLEGE
COLOMBO

PRINTED IN INDIA
AT THE DIOCESAN PRESS, MADRAS 7—1952. C3519.

PREFACE

I have been looking forward very keenly to this publication, because this volume completes my series of *Housecraft and Hygiene* books for the post-primary classes.

It was a long-cherished dream of mine to provide a set of books for the post-primary classes in this most important and useful subject, a careful study of which will, without doubt, prove a great boon to the womanhood of this country. The dream has now been fulfilled; and while I enjoy the inevitable self-satisfaction that is my reward, I want to thank all those who encouraged me in this effort.

I would like to emphasise and re-emphasise what I have tried to stress in other books of this series that practical work in Housecraft is of very great importance, and that the theory is only to help efficient practice.

I am particularly indebted to Mr. Herbert Gonsal, B.Arch., A. R. I. B. A., Chartered Architect, for contributing to the present volume the chapter on House Planning and Furnishing. The readiness with which he acceded to my request is an index to the genuine interest he takes in the welfare of our people.

To the Rev. Robert Lamb I offer my grateful thanks for very graciously contributing the sections

on Alcoholic Beverages ; and for going through my MSS.

Mr. M. A. J. V. Fernando has again helped me by providing the illustrations ; while Mr. E. G. Welungoda has ungrudgingly given all the clerical assistance I needed.

Finally I thank the publishers for their help and courtesy.

MERCY E. DE SILVA

CONTENTS

PART I

PART II

PART III

COOKERY

PART IV

SICK NURSING

PART V

FIRST AID

LIST OF ILLUSTRATIONS

PART I

PHYSIOLOGY AND HYGIENE

In Standard VI we learnt that our bodies are made of numberless cells arranged in groups, each group of cells doing its own special work. The cells make body tissue and the tissues form systems.

The various systems are :—

(*a*) The Bony System.
(*b*) The Muscular System.
(*c*) The Respiratory System.
(*d*) The Digestive System.
(*e*) The Circulatory System.
(*f*) The Absorptive System.
(*g*) The Excretory System.
(*h*) The Nervous System.

We have already learnt about the Bony, Muscular, Respiratory and Digestive Systems, in the previous class. We shall next study the Circulatory System.

1. THE CIRCULATORY SYSTEM

The Blood is a tissue and consists of minute cells called corpuscles floating about in a liquid called Plasma. These corpuscles are of two kinds—red and white. The *Red Corpuscles* are elastic and can pass through the narrowest capillary or tube

through which blood travels, and at the same time they are able to glide over each other. They originate from the red marrow found in long bones.

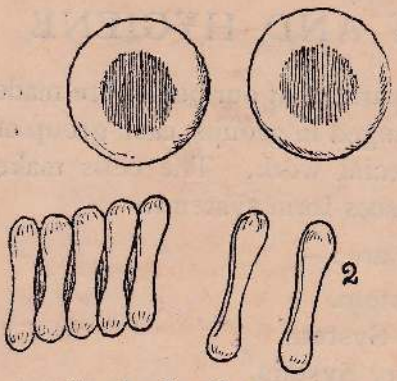


FIG. 1.—RED CORPUSCLE
1. Corpuscle seen from above.
2. Side view (magnified 1600 times).

Each red corpuscle is a round biconcave disc thin in the centre and thick at the edges. When viewed sideways it is more elongated. (Fig. 1.) Each disc consists of a frame-work called stroma. In the meshes of the stroma is hœmoglobin. This hœmoglobin has a great affinity for oxygen. When it is filled with oxygen it is known as *oxyhoemoglobin* and when not, *reduced hoemoglobin.* The red blood corpuscles collect oxygen and bring it to the tissues of the body and take away the waste products from them. In the lung-cells this waste matter is eventually got rid of and a fresh supply of oxygen taken in exchange.

White Corpuscles have no definite shape but can take any shape they like. They are larger than the red corpuscles and fewer in number. To every 500 red corpuscles, there is one white. Each is composed of a soft jelly-like mass called protoplasm with a nucleus in the centre. (Fig. 2.) Many of

them change their shape and move about very actively. As the amœba envelops food so these corpuscles wrap themselves around microbes and impurities in the blood. These leucocytes or phagocytes as the white corpuscles are called, fight against the disease germs and if victorious envelop and destroy them. If they are weak they are defeated and we get the disease. For this reason we must keep our phagocytes strong.

FIG. 2.—A WHITE CORPUSCLE (HIGHLY MAGNIFIED)

The blood is composed of plasma and red and white corpuscles and varies in colour. When oxygenated it has a bright red colour but otherwise it is purplish red. Blood is opaque, this is due to the corpuscles, the plasma itself being transparent. Blood contains a small quantity of salts, chiefly sodium chloride, and is salt in taste. It coagulates when exposed to air, and forms clots, thus stopping bleeding. During coagulation the plasma separates into fibrin and a yellowish liquid called serum. The fibrin gathers up the corpuscles forming a clot and the serum is squeezed outside of it. The clot then floats in the serum. In small wounds, the clotting process soon prevents further bleeding.

The amount of blood in the body of a normal adult is 9 pints, this circulates in a system of pipes

or blood-vessels. The average number of heart beats per minute in an adult is 72.

The blood travels in three kinds of vessels: Arteries, Veins and Capillaries.

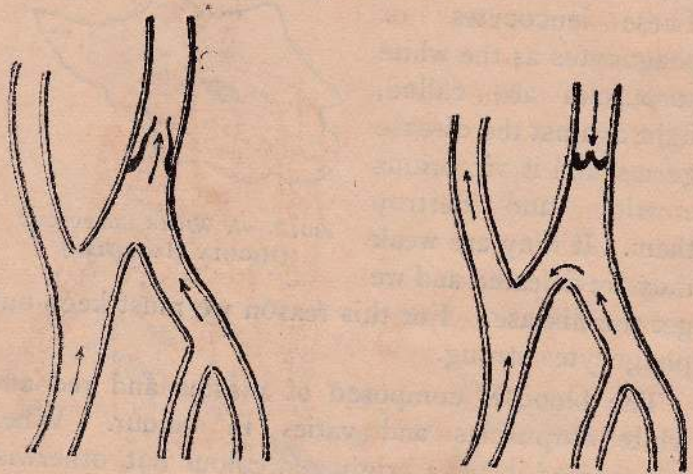


FIG. 3.—BLOOD-VESSELS SHOWING VALVE OPEN—*a*, AND CLOSED—*b*

Artery. Artery pipes are made up of three layers. The inside one is a transparent colourless membrane, the next is a muscular elastic coat, and the outside is connective tissue. When an artery has an extra quantity of blood suddenly sent into it, the elastic coat makes it possible to dilate, and afterwards to recover its normal size. These arteries carry pure blood to all parts of the body.

Veins have three coats like the arteries but they are not so elastic. At intervals, all along the veins there are valves. A valve is formed by a fold of the

inside coat of the vein. Blood going back to the heart passes over the valve (Fig. 3*a*) but if anything hinders the blood flowing forward, the valve immediately closes and prevents its return (Fig. 3*b*). The reason for this is that blood returning from doing its work in the body is laden with impurity, and must be purified and reoxygenated before it begins again to travel round the body. The veins carry the impure blood from the different parts of the body to the heart.

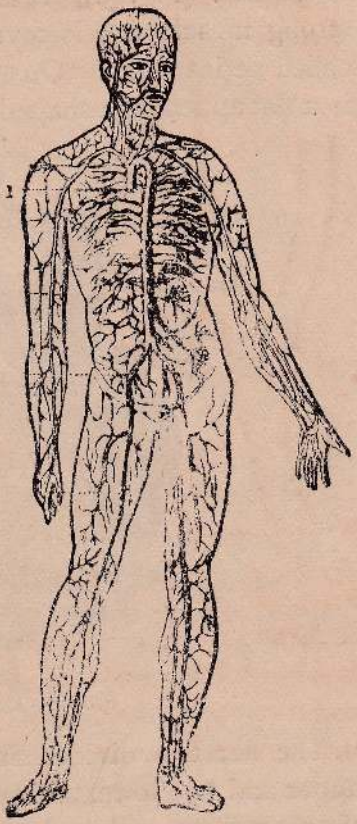


FIG. 4.—THE BLOOD-VESSELS

Capillaries. The pipe lines of the arteries are eventually narrowed down to form the tiniest and thinnest pipes imaginable, called capillaries. They consist of one, very thin layer of membrane. They are extremely small, in some cases only 1/3000th of an inch wide.

The Heart. The heart is an organ which lies in the middle of the thorax, with the apex turned

towards the left. It is conical in shape with the base or broad part at the top and the point at the lower end. (Fig. 5.) It is composed chiefly of very strong muscle and is coverd over with a membrane called pericardium. On each side of the base there is a flat appendage shaped like an ear.

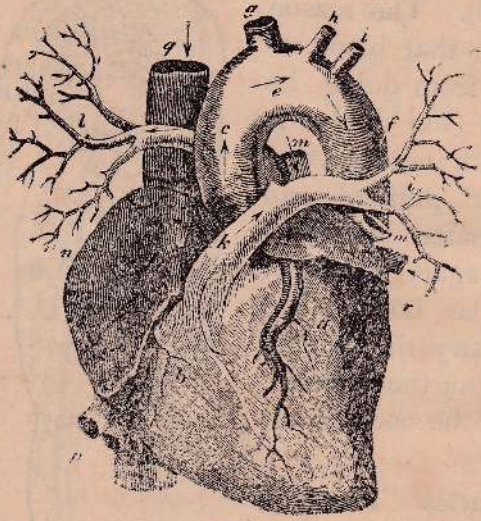


FIG. 5.—THE HEART

The heart is divided into four chambers—two upper and two lower and because the appendages are ear-shaped the upper chambers are called *auricles* from a Latin word meaning ear. The lower chambers are called *ventricles* because it is from these that the blood passes out of the heart. There is a strong wall of muscle dividing the heart down the centre into right and left sides. The auricles and ventricles

are separated by valves through which the blood passes when the valves are open.

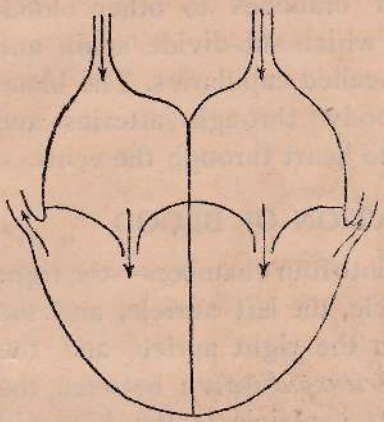


FIG. 6.—DIAGRAMMATIC VIEW OF THE HEART SHOWING COURSE OF THE BLOOD

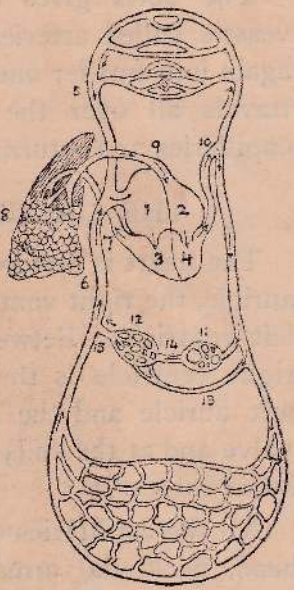


FIG. 7.—DIAGRAMMATIC VIEW OF THE CIRCULATION OF THE BLOOD

1. Right Auricle. 2. Left Auricle. 3. Right Ventricle. 4. Left Ventricle. 5. Superior Vena Cava. 6. Inferior Vena Cava. 7. Pulmonary Artery. 8. Lungs. 9. Pulmonary Vein 10. Aorta. 11. Alimentary Canal. 12. Liver. 13. Hepatic Artery. 14. Portal Vein. 15. Hepatic Vein.

At the top there are eight blood-vessels looking like tubes. The largest of these is called the *aorta*, through which blood passes out of the left ventricle. Two others entering the right auricle are the *superior vena cava* and the *inferior vena cava*. These veins bring blood to the heart from the whole body except the lungs.

The *pulmonary artery* carries blood away from

the right ventricle. There are four *pulmonary veins*, through which blood enters the left auricle.

The aorta gives off branches to other blood-vessels called arteries, which sub-divide again and again into smaller ones called capillaries. The blood travels all over the body through arteries and capillaries and returns to heart through the veins.

THE CIRCULATION OF BLOOD

The heart is divided into four chambers—the right auricle, the right ventricle, the left auricle, and the left ventricle. Between the right auricle and the right ventricle is the *tricuspid valve*; between the left auricle and the left ventricle is the bicuspid valve and at the ends of the ventricles are the semi-lunar valves.

All the capillaries of the upper parts of the body, head, neck and arms unite to form the Superior Vena Cava and all the capillaries of the lower part of the body unite to form the Inferior Vena Cava. These two veins empty the impure blood into the right auricle. When the right auricle is full of blood, its muscular walls receive a message from the brain and they contract pumping the blood into the right ventricle through the tricuspid valve. When the ventricle is full, its walls contract, the tricuspid valve close and the blood is pumped through the semi-lunar valve into the pulmonary artery. This enters the lungs and breaks up into capillaries. Here the impurities of the blood are

given out into the lungs and the oxygen from the lungs is taken in. The blood is purified in the lungs. The capillaries in the lungs now unite to form the pulmonary veins. These, carrying pure blood enter the left auricle.

When the auricle is full of blood, its walls contract and the blood is pumped through the bicuspid valve into the left ventricle. This in turn contracts, the bicuspid valve closes, and the blood is forced through the semi-lunar valve into the aorta. One branch of the aorta supplies blood to the upper parts of the body. It subdivides into capillaries which supply the head, neck and arms with oxygen.

The capillaries give the cells their oxygen and take up from the cells impurities. Eventually the capillaries unite to form the Superior Vena Cava.

The lower branch of the aorta supplies blood to the lower parts of the body. It breaks up into capillaries which eventually unite again to form the Inferior Vena Cava.

A small branch of the aorta known as the Hepatic Artery supplies the liver with blood. Another branch goes into all the abdominal organs and breaks up into capillaries there. These capillaries unite to form the Portal Vein. The portal vein full of food material enters the liver. The liver has two supplies of blood—the hepatic artery which contains oxygen and the portal vein containing good materials. These two vessels enter the liver and break up into capillaries. These unite together to

form part of the inferior vena cava. This vein unites with the vein carrying blood from the lowermost parts of the body and flows into the right auricle as the inferior vena cava.

2. THE ABSORPTIVE SYSTEM

You have already learnt that the blood vessels form a part of the absorptive system absorbing the mineral salts, sugar and peptones. There is another system called the lymphatic system which is concerned with absorption.

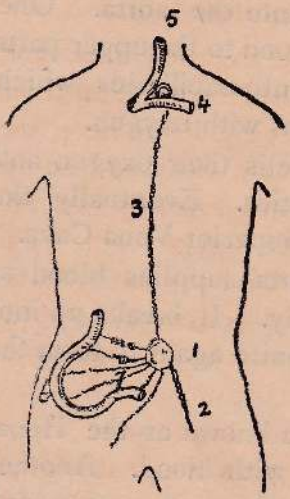


FIG. 8.—THE ABSORPTIVE SYSTEM

1. Receptaculam Chyli. 2. Main Lymphatic Vessel to lower limb. 3. Thoracic Duct. 4. Subclavian Vein. 5. Left Jugular Vein. 6. Loop of Intestine. 7. Intestinal Lymphatics.

The fats after being acted on by steapsin in the pancreatic juice, and by the bile, are digested or broken up into fatty globules. This digested fat termed chyle is taken up by lacteal vessels in the *villi*. From the lacteals it passes into the lymphatic vessels which are really a continuation of the lacteals.

The lymphatics open into the Receptaculum Chyli or Receptacle for the Chyle which lies in the pelvic region. Another kind of fluid termed lymph is also

brought by the lymphatics into the Receptaculum Chyli. The name 'lymph' means clear water and this fluid resembles blood plasma.

Lymph fills the spaces outside the blood vessels and between the cells of the body. It comes from the blood and oozes through the capillary walls. In the lymph spaces, as they are called, it bathes and nourishes the cells. It also picks up waste or used-up matter in these spaces. It passes into the lymphatics and flows at last into the blood.

The two kinds of fluids—the digested fats, and the lymph after it has bathed the tissues—find their way into the Receptaculum Chyli. From here, the mixture passes along the Thoracic duct and enters the blood stream at the junction formed by the left subclavian vein with the left jugular vein. The lymph from the upper part of the body is collected by the right lymphatic duct and conveyed into the junction formed by the right subclavian vein with the right jugular vein.

A lymphatic is sometimes interrupted in its course by having to pass through a lymphatic gland —a mass of lymphoid tissue containing white corpuscles. As the impurities taken by the lymph from the lymph spaces pass through these glands, the white corpuscles destroy them. The lymphatic glands therefore act as filters. The lymphatic vessels resemble thin walled veins. Like veins they are also provided with valves directing the lymph towards the blood stream.

The valves are arranged at such short distances from each other that when full, the lymphatics present a beaded appearance.

3. THE EXCRETORY SYSTEM

As a result of the active chemical changes in the tissues of the body produced by oxidation or 'burning', various impure and poisonous substances get into the blood stream. These poisons must be

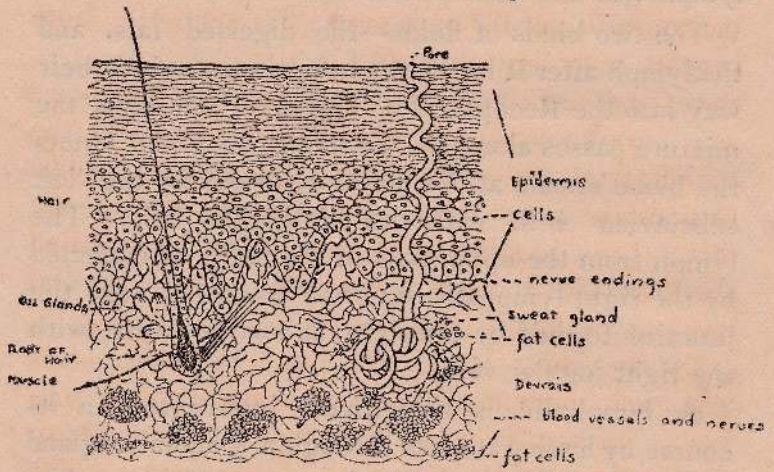


FIG. 9.—SECTION OF THE SKIN (HIGHLY MAGNIFIED)

eleminated from our bodies. The special organs of the body which get rid of waste matter are :—the skin, the lungs, the kidneys and the large intestines.

The Skin. The skin serves as a protection to the softer tissues underneath. It is made up of an

outer layer called the epidermis and an inner layer called the dermis. (Fig 9.) *The Epidermis* is really the protective layer; it is waterproof. The epidermis varies in thickness in different parts of the body, being thickest on the soles of the feet. Nails and hair are specialized parts of the epidermis. There are no blood-vessels and no nerves in the epidermis and it is made up of a number of little cells which are flat at the surface but get rounder as they approach the bottom. As the top cells get old and peel off, new cells from beneath push their way up.

On the surface of the epidermis are tiny holes which are known as pores. These are really the openings of the sweat or perspiration glands. Besides the pores there are little hairs seen on the skin. Their beginnings or roots as they are called are found deep down in the skin in the second layer or dermis. (Fig. 9.)

In the deep layer of the epidermis, *Retē Mucosum*, there is a colouring matter called pigment. In dark people, the pigment is dark; in fair people it is light and it is really the pigment which gives the colour to the skin. In the section of the skin highly magnified (Fig. 9) we see the epidermis and the dermis.

The Dermis or the inner part of the skin is thrown up into the epidermis like little fingers. Unlike the epidermis the dermis is made up of a net-work of blood-vessels and nerves. Lying

amongst these are sweat glands, oil glands, roots of hairs, bands of muscle and deeper down fat cells. The sweat glands are coiled up tubes in the dermis but as the tubes approach the epidermis they come up in a corkscrew fashion. They separate impurities from the blood vessels which surround them and from sweat which is sent out of the pores. Sweat is really water, soluble salts and a little urea from the blood.

Oil glands or sebaceous glands are attached to the roots of the hairs. These glands too are surrounded by blood vessels. They separate substances from the blood and make a kind of oil which is sent up to the surface of the skin, to keep the skin soft and bright. The roots of hairs are enclosed in coverings or sheaths which are formed by the epidermis dipping down into the dermis. The roots are nourished by food brought by the blood. Attached to each hair is a band of muscle which keeps the hair at an angle. Sometimes these muscles contract and the hairs are straightened, so that they 'stand on end'.

In the deeper part of the dermis there are cells filled with fat. In fat people these cells are full and swollen and in thin people they are not quite full.

The nerves of the skin possess little twisted ends which have the power of conveying sensations of touch.

To help the skin to function properly the pores of the skin must be kept open. Oil, sweat, dirt and

dust which may block them should be removed by washing with soap and water. Hot water may be necessary if the skin is very dirty.

The perspiration excreted by the sweat glands comes to the surface of the skin and there the water in it evaporates. In the process of evaporation heat is extracted from the body and the temperature lowered.

The skin therefore has four great uses. It is a protective covering to the tissues and organs of the body. It is an excretory organ. It is an organ of touch. It helps to regulate the heat of the body.

THE LUNGS

In Standard VI we learnt about the lungs and respiration. We learnt that the air passes through the nose and mouth and enters the windpipe or trachea. From thence the air passes through the right and left bronchi into the still smaller tubes of the lungs, the bronchioles. A single bronchiole at its extreme end becomes a number of little closed chambers called Infundibula. Each infundibulum is divided by a number of incomplete walls into a series of communicating cavities called alveoli. Thus the lungs consist of these numberless air-spaces bound together by elastic tissues. The branches of the pulmonary artery, which carry the impure carbonic acid gas divide up into capillaries which spread out in a net-work round the air-cells. The air in the air-cells is full of oxygen gas and owing

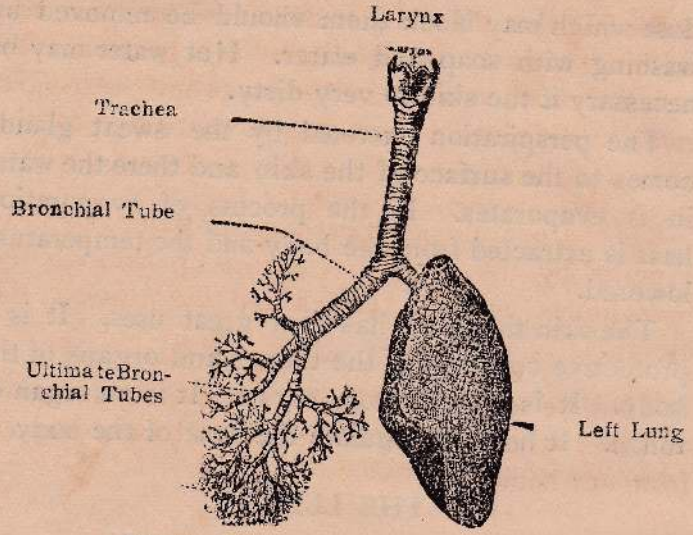


FIG. 10.—LEFT LUNG AND AIR TUBES

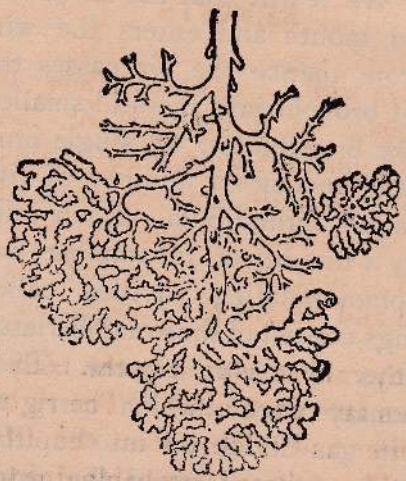


FIG 11.—A GROUP OF AIR CELLS AT THE END OF A BRONCHIAL TUBE

to the fact that the walls of the alveoli are thin and exchange of gases through the walls is possible. The carbon dioxide is taken by the lungs and the oxygen given to the blood to be taken to all parts of the body to nourish the various tissues of the body.

This carbon dioxide together with water vapour is expelled by the lungs. It passes up through the bronchioles, bronchi trachea and out through the mouth.

Thus we see that the lungs are excretory organs and they send out carbon dioxide and water vapour from our bodies.

KIDNEYS

The kidneys which are two in number are situated in the abdomen on either side of the vertebral column in the lumbar region, right against the body wall. In front they are covered over with peritoneum, the back being attached to the body wall. Each kidney is four inches long and two and a half inches broad and weighs five ounces.

The kidneys are so placed in the body that their concave sides face each other. The right kidney is slightly shorter and thicker than the left and is a little lower, this position is probably due to the downward extension of the large right lobe of the liver.

The kidney is covered over with a thin fibrous tightly fitting capsule which can be readily peeled off from a healthy kidney.

At the hilus, the depression at the middle of the concave inner edge, may be seen the *Renal Artery* entering the kidney carrying pure blood and the *Renal Vein* leaving it, carrying away impure blood. Nerves, lymphatics and a tube known as the *ureter* are also found here. The *ureter* is a tube fourteen inches long which runs from the kidney into the bladder carrying away the urine secreted by the kidneys. The ureter enters the bladder obliquely so that a little flop is formed acting as a kind of valve allowing the urine to pass into the bladder but not back again. The bladder is a muscular organ lined internally with mucous membrane. Its front surface is covered over with peritoneum. It stores up the urine and discharges it at intervals.

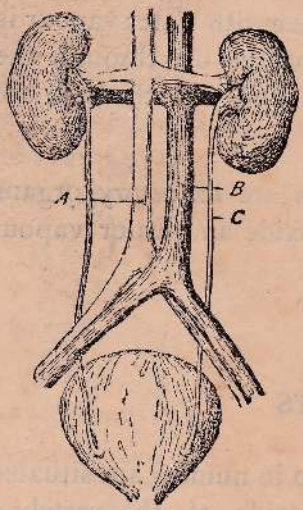


FIG. 12.—THE KIDNEYS AND THE BLADDER

A. Renal Artery; *B*. Renal Vein; *C*. Ureter, the tube through which urine flows to the bladder.

The substance of the kidney is made up of a number of minute tubules. These are convoluted in the outer part and straight in the inner. The

tubules are lined externally with cells wich extract from the blood the subtsances which form urine. One of the substances it separates is called urea—a waste product which the body must get rid of. The urine separated by the tubules is carried by the ureter down into the bladder.

Healthy urine is a clear pale yellow fluid consisting of water, urea and some salts, one of which is common salt.

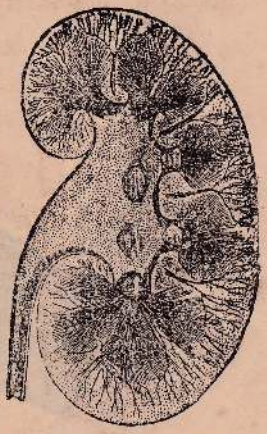


FIG. 13.—A SECTION THROUGH THE KIDNEY

Note the clusters of tiny tubes—in these the poisons and waste matters are removed from the blood as it flows through them.

LARGE INTESTINE

By the time the intestinal contents reach the large intestine most of the nutritive substances they contain have been absorbed, but a certain portion still remains and is taken up as it passes through the colon. The most noticeable change that takes place in the large intestine is the absorption of water. As this is taken up into the blood the residue becomes more and more solid and it passes out from the end of the intestine as fæces.

Thus the intestine is an organ of excretion getting rid of the refuse of food after all the nourishment is taken from it.

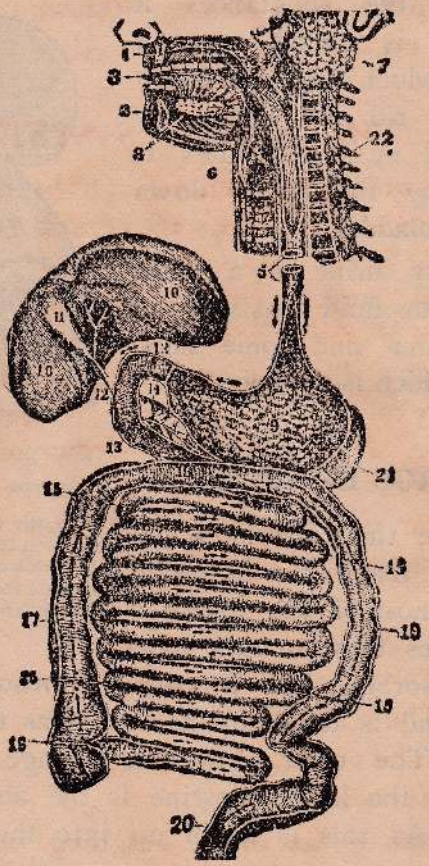


FIG. 14.—THE ALIMENTARY CANAL WITH THE INTESTINES AT THE LOWER PART

13. Beginning of the Intestines; 14. Pancreas; 15. Small Intestine; 16. Junction of the small and large Intestine where the appendix is found; 17, 18, 19. Large Intestine; 20. Rectum.

All excretory organs should function well if we are to be healthy. If any one organ does not do its work properly extra strain is thrown on the other excretory organs.

4. THE NERVOUS SYSTEM

All the wonderful machinery of the body would be at a standstill without some central guiding and controlling force. Thus the nervous system or the system of nerves controls and co-ordinates the working of all the various parts which go to make up the body. By its action the regular work of the circulatory and respiratory systems, the voluntary movements of the limbs, the unconscious working of the digestive organs, the intelligent perception of the eye, ear, nose and other sense organs are carried on. The nervous system consists of three portions :—

(1) The central nervous system.
(2) The sympathetic nervous system.
(3) The peripheral nervous system.

The central nervous system consists of the brain and spinal cord.

The brain is an organ weighing over 3 lbs., greyish white in colour, and furrowed in many directions on the surface. It is encased in the cranium or brain box and, through a large hole, the foramen magnum, in the base of the skull is continuous with the spinal cord.

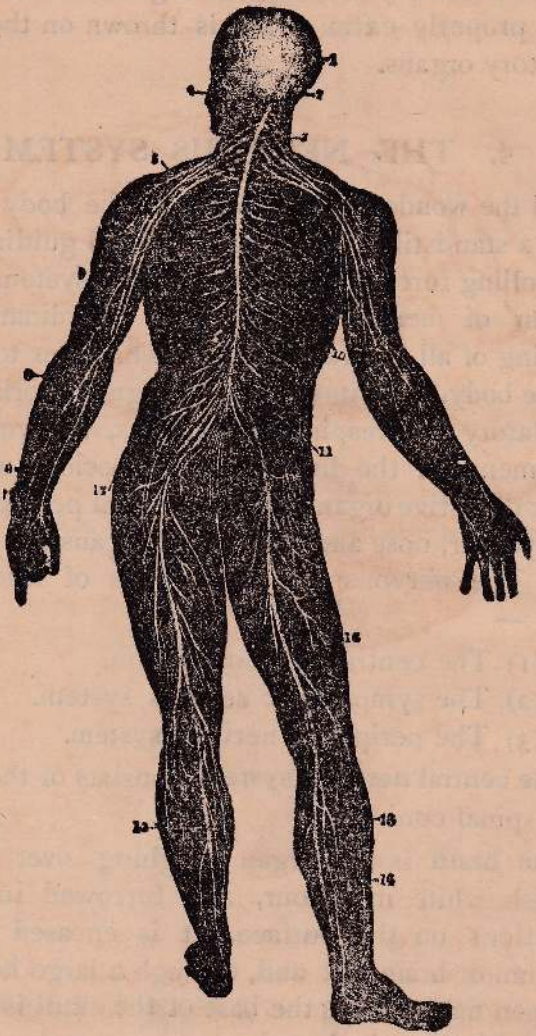


FIG. 15.—THE NERVOUS SYSTEM

To protect it from shock, the brain is wrapped in membranes between some of which fluid is secreted to form a kind of water-bath.

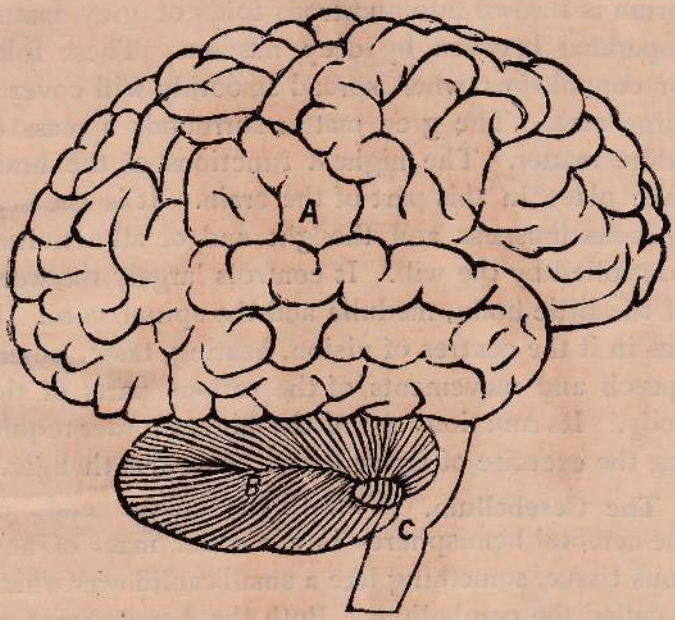


FIG. 16.—THE BRAIN

A. Cerebrum; B. Cerebellum; C. Medulla oblongata.

The brain is divided into:—

(1) The cerebrum or large brain.
(2) The cerebellum or little brain.
(3) The medulla oblongata or the swollen upper end of the spinal cord in the skull.

The Cerebrum forms the largest of the brain divisions and is divided into two hemispheres called the right and left hemispheres by a deep fissure running from the front. The surface of the cerebrum is thrown into numerous folds of grey matter separated between by deep fissures. These folds or convulsions when spread smoothly will cover a large area. The grey matter surrounds a mass of white matter. The highest functions of the brain take place in this part of the brain. It is the seat of consciousness and thought and of all activities controlled by the will. It controls largely the work of the little brain, medulla and the spinal cord. It has in it the centres of vision, hearing, taste, smell, speech and movements of the various parts of the body. Its functions are of the highest order requiring the exercise of the will and conscious thought.

The Cerebellum. Beneath the hinder ends of the cerebral hemispheres is a smaller mass of nervous tissue, something like a small cauliflower which is called the cerebellum. Both the hemispheres of the cerebrum and cerebellum are combined, with each other by bands of white matter.

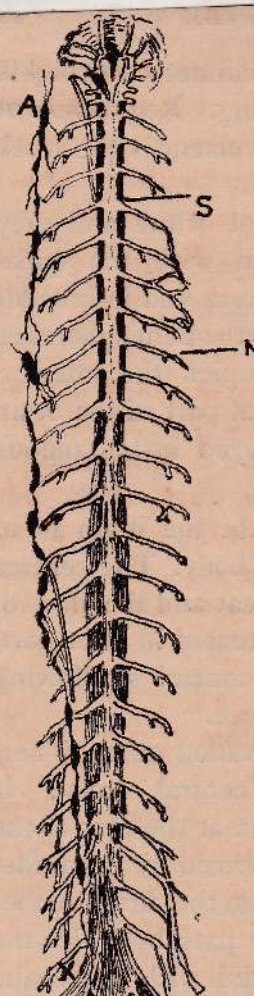
The chief function of the cerebellum is to help the large brain in controlling the muscles of the body. The muscular movements in walking or dancing and all similar movements are brought about at the right time, with due force and in proper succession, only by the agency of this part of the brain. Alcohol prevents the cerebellum from working

efficiently, so a drunken man cannot control his muscles and staggers when walking. Regulation or co-ordination of all muscular movement is the work of the cerebellum.

Medulla oblongata is a mass of white and grey matter which connects the brain with the spinal cord. It is about an inch in length and is broader above where it is continuous with the hemispheres of the brain. Its grey matter occupies the interior. The medulla oblongata is the vital part of the brain and if it is removed or destroyed instantaneous death results.

The chief function of this part of the brain is to control the vital functions of the body. The centres for regulating breathing, heart-beat and the flow of blood in the blood-vessels are situated in this part. Besides these, the centres that control swallowing and vomiting are also situated here.

The Spinal Cord is a thick-walled tube of nervous tissue containing a tiny central canal. It passes from the medulla oblongata at the base of the skull down through the cavity formed by the arches of the vertebræ and ends opposite the first lumber vertebra. The spinal cord is the path by which the nerves of the body are connected with the brain, and in the spinal cord itself are the centers of various action. The cord has its grey matter on the inside and the white matter outside. Large nerves (31 pairs) proceed from the spinal cord, on ts right and left side throughout the whole length



of the cord. These nerves connect with almost every part of the body.

Nerves are small white cords of highly specialised substance. The nerve itself is like a telegraph wire. It only transmits messages along it either to or from the spinal cord. The message is called an *impulse*. When a muscle contracts it does so because it has received an impulse which has travelled from the brain along a nerve. A nerve is made up of several microscopic threads called *nerve fibres*, each of which is connected at one end with the *nerve cell*. Nerve cells are seldom found singly and they are generally grouped together in certain parts of the brain and spinal cord.

Nerve tissues are divided into (a) *grey matter* composed chiefly of nerve cells, (b) *white matter* made up entirely of nerve fibres.

FIG. 17.—THE SPINAL CORD AND ITS NERVES AND THE SYMPATHETIC CHAIN ON ONE SIDE

S. Spinal Cord; F. Terminal fibres of the cord; N. Spinal Nerves; A—X. Sympathetic chain showing connection with spinal nerves

A Nerve ending is the actual termination of a nerve whether this be in a muscle, or in the skin or in some other tissue. Impulses may travel along nerves in either direction, i.e. from brain or spinal cord to distant parts and from distant parts to brain and spinal cord. In the former case we call the nerve *motor nerves* or *efferent nerves* and in the latter *sensory nerves* or *afferent-nerves*.

Thus a motor nerve is a nerve conveying an impulse from the brain to a muscle or a gland with the result that something is done. A sensory nerve is one which conveys impressions from the outside world to the brain. This impression travels along the nerve as an impulse from the skin, the internal organs or the organs of special sense, e.g. eye, ear, nose, etc.

Apart from the brain there are a few other parts of the nervous system which contain nerve centres that control the work of the body. The chief of them is the spinal cord in which are situated a large number of centres of what is called *Reflex action*. Usually this action does not rouse our consciousness. At the same time it is not necessarily an unconscious action. If your hand touches the hot chimney of a lamp you feel the pain but the jerking of the hand is done involuntarily. Some reflex actions can sometimes be controlled by the will.

The closing of the eyelids to lubricate the eyeball or to protect it from injury is usually an unconscious

reflex action. To a certain extent we can make it conscious and controlled but it is with difficulty.

Reflex actions take place quicker than conscious voluntary acts.

Sympathetic nervous system consists of a number of ganglia or knots of nervous matter which give off nerve fibres. The chief portion of this system comprises a double chain of ganglia situated one half on each side of the vertebral column and extending from the skull to the pelvis. These chains of ganglia and their branches constitute the sympathetic nervous system. They control the internal organs.

Peripheral nervous system consists of a series of prolongations of nervous tissue from the brain and spinal cord by means of which the central nervous system is placed in communication with all the tissues. These nerves issuing from the brain or spinal cord break up into branches which in turn break up into smaller branches, and these again into still smaller ones till every corner of the organism is reached. These nerves some of which are afferent and others efferent carry impulses backwards and forwards through the whole nervous system. Even during sleep when the higher centres of the brain are resting constant messages are being transmitted from the medulla oblongata to the circulatory, respiratory and excretory systems, regulating and controlling their functions.

We have learnt about the various systems of the body and their functions in this book and in the Standard VI book. It would be more complete if we learn something about the protection we may give to the protective tissue, the skin which covers the whole body. The skin not only covers the body but also regulates its heat. Clothing helps in this function and so we shall deal with this subject in the next chapter.

5. CLOTHING

Some of the materials which we use for clothing are cotton, linen, wool, silk and artificial silk or rayon.

We use clothing for protection against cold, heat, wind, rain and injury ; for regulation of bodily heat ; for decoration and for decency.

Cotton. The most suitable material for use in the tropics is *cotton*. It is obtained from the fluffy down of ripe cotton pods. The fluff is spun into thread and then woven into material.

Our bodies make heat and in a warm country like Ceylon, we want some of this heat conducted away. Cotton materials being good conductors of heat allow it to pass freely.

In warm countries we perspire a great deal because it is one of the ways in which the body tries to get rid of the heat and therefore our clothes get soiled readily. We want a material which is

inexpensive, durable and which will wash well and look well after washing. Such a material is cotton. It is also fairly light in weight.

Cotton has two disadvantages. It absorbs odours readily and it does not absorb moisture.

Linen is woven from the fibres of the flax plant. When these plants are of a certain height, they are pulled out of the earth, moistened and allowed to rot on damp soil. The fibres which are left behind are beaten, combed and bleached and woven into material. Linen is even a better conductor of heat than cotton. It looks well, is light in weight, and is comfortable to the skin when worn.

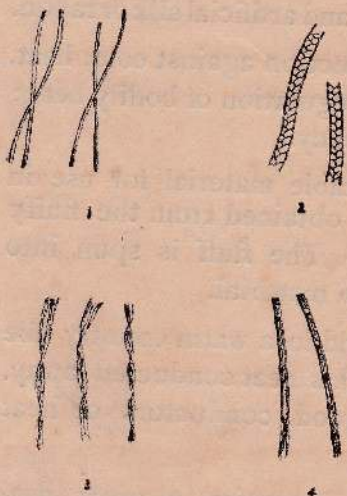


FIG. 18.—FIBRES USED IN CLOTHING

But it is very expensive, is a bad absorbent of moisture and is not durable in Ceylon. The method of washing used here ruins the fibres.

Wool is the natural covering of animals in cold and temperate climates. The fibres are woven into materials. Being a bad conductor of heat it retains the heat of the body. It is suitable for cold countries where the heat needs to be retained.

In warm countries when worn, it sets up irritation of the skin but in cold countries it acts as a gentle skin stimulant.

Woollen materials are expensive and need great care in washing but since it is worn in countries where perspiration is not profuse, a few garments will be sufficient.

Wool is a good absorbent of moisture. When worn as coats or jerseys after strenuous exercise, it prevents chills.

The fibres absorb the moisture instead of allowing it to evaporate into the air. The heat is kept in and the body prevented from chilling.

Silk. Genuine silk is made from fibres spun by the silk worm, out of a gelatinous substance secreted by its glands.

It is a bad conductor of heat and keeps the heat in; therefore it is suitable for use in cold countries.

It looks well; is very light in weight. It absorbs moisture and does not absorb odours. It is more expensive than cotton and is not very easy to wash.

Artificial Silk or Rayon. This is made from cellulose obtained from plants and treated chemically. It is a good conductor of heat. It allows sunlight and air to penetrate into our skin. It is fairly cheap, but it is not very durable.

The following table will explain the relative values of the materials, linen, cotton, silk and wool. The texture and colour of material should be taken

into account. An ideal material should fulfil the following conditions.

(1) It must be a good conductor of heat in the Tropics.
(2) It must be cheap.
(3) It must wear well.
(4) It must wash well.
(5) It must look well after it is washed.
(6) It must be light in weight.
(7) It must not absorb odours.
(8) It must absorb moisture.

——	Linen	Cotton	Silk	Wool
1. Good conductor of heat ...	× × × ×	× × ×	× ×	×
2. Cheap ...	× ×	× × × ×	× × ×	×
3. Wears well ...	× × ×	× × × ×	× ×	×
4. Washes well ...	× × ×	× × × ×	× ×	×
5. Looks well after wash ...	× × × ×	× × × ×	× ×	×
6. Light in weight ...	× ×	× ×	× × × ×	× × ×
7. Does not absorb odour ...	×	× ×	× × ×	× × × ×
8. Absorbs moisture ...	×	× ×	× × ×	× × × ×

For protection against cold it is not the colour of the clothing that counts but the material and the texture.

For protection against heat the colour counts. The best protection against heat is white. Then comes grey, yellow, pink, blue and last of all black.

PART II

THE HOME

1. PLANNING, BUILDING AND THE FURNISHING OF A HOME

By HERBERT E. GONSAL, B. ARCH.,

A.R.I.B.A., *Chartered Architect.*

The present day home in which you live, with its comfort, order and beauty was not the creation of a day. It took men many, many ages before they were able to approach the ideal of a real home as we know it to-day.

At first man not knowing the way to build, took shelter in rock caves from the inclemency of the weather. He also lived under the shelter of large trees and possibly on its branches as this was a means of protection from the prowling beasts of the wild. The next step was the hut of wattle and daub which was soon after followed by the tent made of skins and raised on posts.

From these humble beginnings domestic architecture, or the art of building homes, as it is understood to-day has had its rise. The wonderful buildings which are in evidence in the world developed

very gradually throughout several hundreds of years as the needs of civilized man became more and more complex.

The present age is distinguished not only for the great variety and number of large public buildings but also for the wonderful efforts which have been made by man to create healthy, useful and beautiful homes.

It is not generally known that in every large city two-thirds of the buildings are homes and it is for this reason that architecture mainly concerns itself with serving the comforts and needs of the community through the home.

The designing and planning of all types of buildings is the special study and business of the architect. Before any building is built a plan or drawing has to be carefully prepared. In this plan the architect indicates the relative positions of the various rooms, their dimensions, the positions of doors, windows and other openings, the position of the building in relation to its site and other essential information.

Such a drawing has first to be set to scale. This is necessary as the dimensions of a large area such as a plot of land or the various parts of a house cannot be drawn to actual size as they are too large to place conveniently on paper ; all its parts are therefore reduced to some given ratio. It is usual to set up plans of houses to a scale of 8 feet to an inch. This means that an inch is divided into

eight equal parts, each intended to represent a foot, (See Fig. 19.)

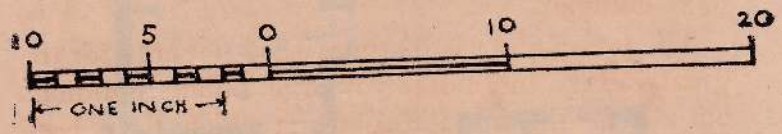


FIG. 19.—SCALE OF 8 FEET TO AN INCH

In this diagram an inch is shown divided into eight equal parts, each part is intended to represent a foot.

In preparing a plan it is necessary to show clearly the dimensions of all the various parts. As this is not easy to indicate in one drawing, it is customary to draw out different views. The design of a house and its method of construction cannot be properly represented without (1) a view of the front (Front Elevation), (2) a view of the end (Side Elevation), (3) an idea of the various rooms and their relative positions (plan), and (4) a view such as would be obtained if certain parts were cut away (Sections).

The illustration in Fig. 21 is the Front Elevation of a small bungalow, it shows the height and width of the building, with the position and sizes of the front window openings and the door way. The distance from the front to the rear of the bungalow, and the internal arrangements cannot of course be seen from this drawing. The plan in Fig. 20 shows this clearly, it is really a view of the bungalow from above assuming that the upper part of the

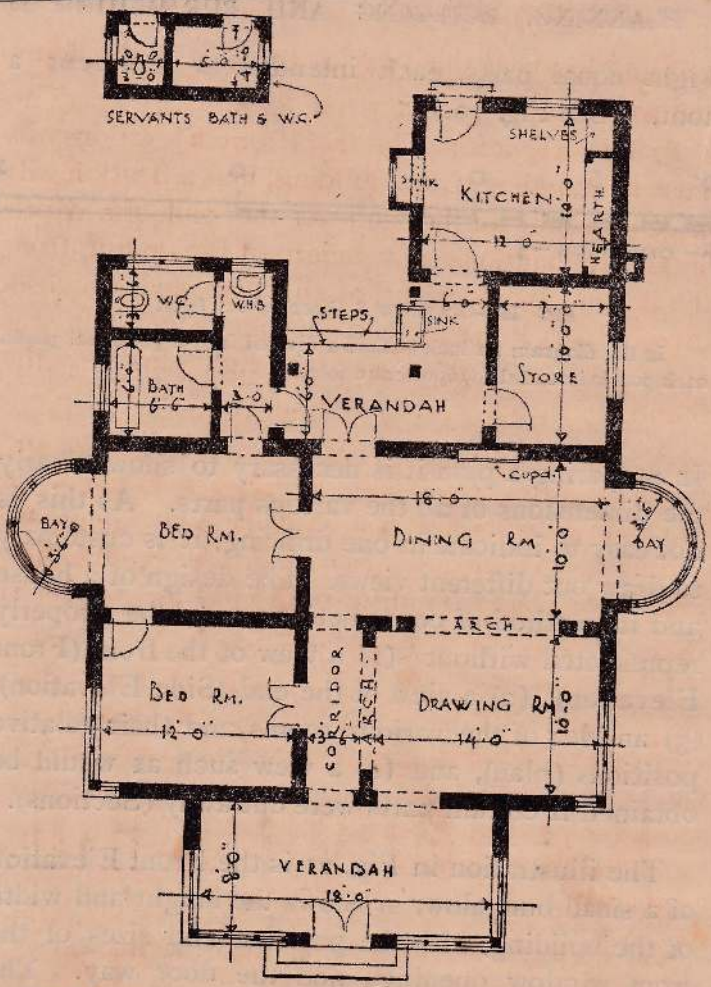


FIG. 20.—GROUND-FLOOR PLAN OF BUNGALOW ILLUSTRATED IN FRONTISPIECE

Note the dimensions of rooms are show on plan, their shapes and relative positions as well as the positions of windows and doors and the direction in which they open.

Municipal regulations require a clear space of 10' 0" at the rear of the building and 7' 6" on both sides. It is desirable to have at least 10' 0" Lawn in front of the Bungalow.

building has been cut away at the level of the doors and window.

A Side Elevation, like the Front Elevation will show an end view of the building, and a Section will of course indicate the slope of the roof, the depth of the foundations, the height of the ceiling from the level of the floor and of all doors and windows internally. If you could imagine a building cut apart vertically, from the roof right down to the foundations this is what a section will reveal.

An understanding of what a plan, section and elevation are would help you to read a plan or drawing quite easily and visualise the completed building. The frontispiece of this book is a view of the completed building shown in Figs. 20 and 21

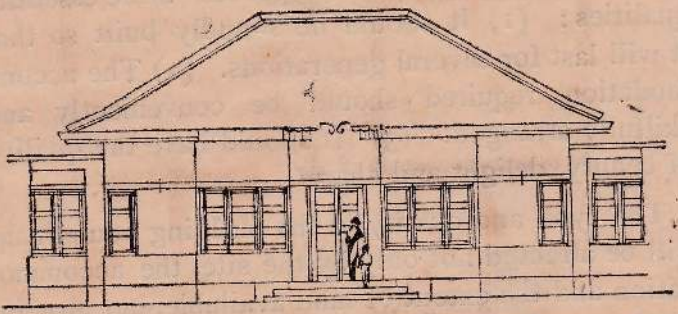


FIG. 21.—FRONT ELEVATION OF THE BUNGALOW ILLUSTRATED IN FRONTISPIECE

and is known as a perspective drawing. You will note that a perspective shows two elevations of the bungalow and is really a picture of the building as it would appear after completion.

The quality of the building will depend mainly on the correctness of the planning for the special purpose in view. General principles are very useful but the excellence of a plan is shown in the way in which it uses the possibilities available in a small plot of land to provide a house which will serve the people who will live in it most satisfactorily.

A matter of prime importance is the site. You have already learnt about the choice of a site for a building. Remember that in a town where land is expensive and space limited it is necessary that every foot of it should be used with advantage and the utmost care, to serve the general purpose of the building.

A well-built house should possess three essential qualities: (1) It should be soundly built so that it will last for several generations. (2) The accommodation required should be conveniently and skilfully arranged. (3) It should have the quality of beauty, delight and charm.

The type and quality of the building you put up will be affected not only by the site, the accommodation and the extent of land available, but also by the amount of money you are prepared to spend. Once these matters are settled you are ready to make a start.

Here the architect comes in and helps you as the person specially skilled in the business. Most houses have been badly spoilt by people entrusting

the drawing of plans to unskilled persons. Such plans may look good on paper to the untrained eye, but when the building is being built and later actually before your eyes, the many deficiencies will be apparent and too late to rectify. This is because the strength of a house combined with the quality of beauty and delight can come only from a very correct knowledge of materials and a sense of proportion.

A person builds a house generally once in a lifetime, and as he may have to live in it for many years, it is wise on his part to build it as well and as charmingly as he possibly can. You should learn to realize that in planning your house beauty and utility in the building as a whole as well as in its smallest parts must be secured. An object can be useful and at the same time beautiful. Modern domestic architecture combines the beautiful with the useful in building.

In order to prepare a plan you must know your requirements in the number of rooms and other parts of the building that have to be put up. There is a connection in all parts of the building and their relative positions, which must be correctly brought out so that the unity of design is expressed. It is only in this way that the building can have balance and proportion and that it can be made beautiful to the beholder with usefulness to the occupant. Having this in mind a rough sketch of the building is prepared by the architect. If this is

satisfactory a final plan is drawn and sent to the Municipality or other local authority for approval.

The sanction of the Municipal or other local authority is necessary as all buildings have to conform to regulations known as by-laws. These by-laws have been framed to prevent overcrowding, to secure proper sanitation, ventilation and adequate distance between buildings so that sunlight and air may be amply distributed over all. Once these plans have been found to satisfy all requirements, building operations may commence.

In building, the various spaces for rooms to the sizes indicated on the plan, are first pegged out. The work of excavation or digging up the soil is then commenced for laying the foundations. Once the foundations have been laid and built up to the level of the floor a damp-proof course of cement and sand is laid over the foundation to prevent damp from the soil from creeping up the walls. The walls are then built up to the level of the window sills. The door-frames are placed in position as the work proceeds followed by the window-frames. The walls are then extended leaving the necessary openings for arches and other purposes until they reach the roof level.

In Ceylon the walls are usually built of brick or cabook in lime mortar which is a mixture of lime and sand in certain proportions. In villages wattle and clay are largely used as this is much cheaper than bricks for the poorer type of homes. When all the

walls have been brought to roof level, the roof which is a framework of wood or other material is covered with tiles: in the country however, thatch is largely used.

The walls are now ready for plastering. This is done for the purpose of protecting the walls and giving them a pleasing appearance and a better finish. When this is finished the ceiling is fixed in position and the floor is laid. The door and window shutters are then fixed to the frames. In the finishing stages such operations as painting or varnishing the woodwork, colour or whitewashing the walls, and installing the various services such as water, drainage and electricity are carried out where these are available. Finally the boundary walls enclosing the site are built and the gates fixed in position. The house is now ready for occupation.

The house of moderate proportions should have at least two bedrooms, a drawing-room, a dining-room and a verandah, kitchen and store and if possible a spare room. There should preferably be two lavatories, one for the inmates and the other for the servants which may be detached from the house proper. It is sometimes necessary when the cost of the building has to be kept down, to combine the drawing-room and dining-room into one room known as a living room. In the larger type of house the number and size of bed rooms is increased and a pantry, servants' room and garage are usually provided. In arranging these rooms it should be

borne in mind that the convenience of the inmates and of visitors should be carefully studied.

The rooms should also be so arranged that the maximum amount of light and ventilation could be obtained. No living room should be less than one hundred and twenty square feet and the door and window openings to each room should not be less than one-seventh the floor area, the height of walls should not be under ten feet. These are the principal by-laws of the Municipality and local authorities governing buildings, framed to secure healthy living conditions.

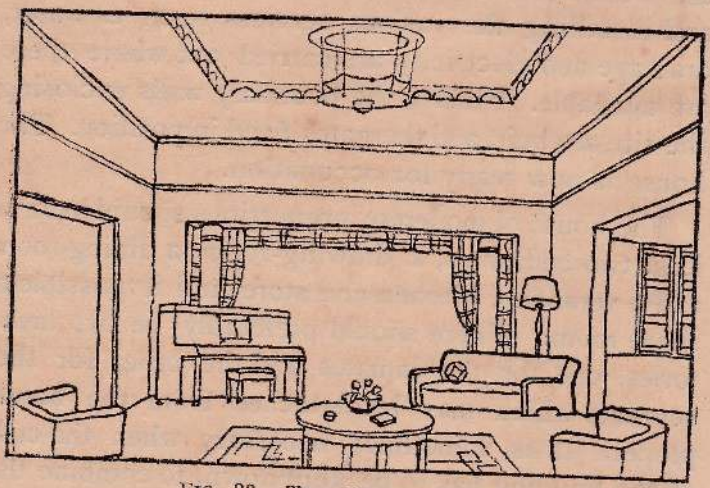


FIG. 22.—THE DRAWING-ROOM

This Room should not be overcrowded with furniture. In addition to a piano or Radio set, a large settee with comfortable chairs and a centre table, a couple of small occasional tables may be introduced.

The drawing-room (Fig. 22) should be well ventilated and lighted. It is usual to have a large

archway connecting it with the dining-room or the corridor at the side, a bay window helps to enhance the appearance of the room. The drawing-room should be comfortable and present a cheerful and inviting appearance.

The dining-room (Fig. 23) should be more spacious than the drawing-room as it will be put into

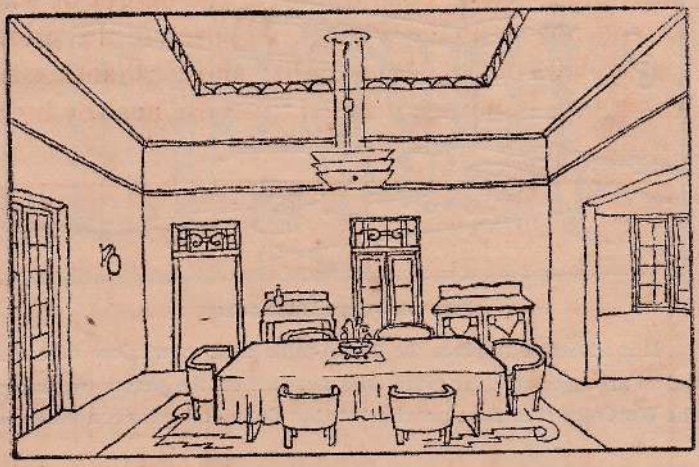


FIG. 23.—THE DINING-ROOM

Here a large dining-table with six comfortable chairs is illustrated. There must be ample space around the table for free movement. All other essential furniture should be placed against the wall

more frequent use by the inmates. It should be well lighted and ventilated.

The bed rooms (Fig. 24) should be sufficiently large, cool and airy, and so placed that the direct rays of the sun will penetrate the rooms at some time of the day. It is advisable to have fanlights

or ventilation grilles over the windows so that ventilation can be obtained through them even at

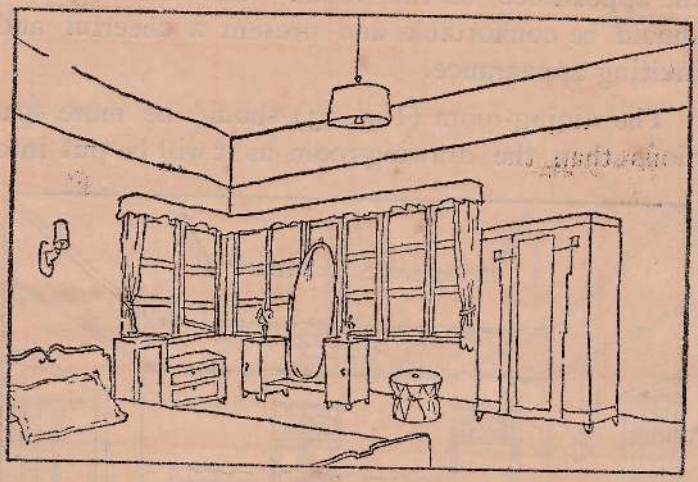


FIG. 24.—THE BEDROOM

It is advisable to place the Toilet-table near a window with the bed so arranged that the glare does not fall on the person reclining. The Wardrobe is in close proximity to the Toilet-table for convenience.

night should it be necessary to close the windows. In a tropic country like ours it is advantageous to health to have the windows fully open at night, provided they are protected by metal bars or grilles.

The bathroom (Fig. 28) and lavatories (Fig. 29) should be well ventilated and the walls protected from damp by glazed tiling. It is desirable to have the floor level of the bath and lavatory lower than that of the main building.

The storeroom (Fig. 26) should be ample in size, airy and have shelving in tiers. The kitchen

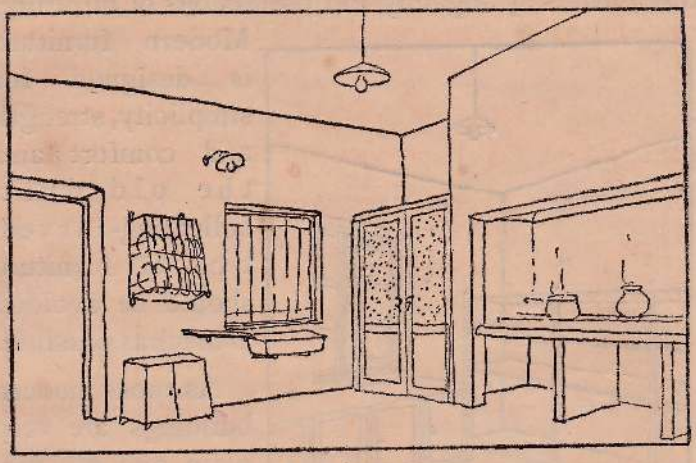


FIG. 25.—THE KITCHEN

You will here observe the open Hearth on the right with a Cupboard nearby, a sink with draining board is near the window while a Plate-rack hangs on the wall.

(Fig. 25) being the workshop of the house should not only be well ventilated but lighted too. There should be a good hearth and a chimney or ventilation roof for releasing the smoke. This is especially necessary in houses where the open hearth is used. A sink or two in close proximity to the kitchen is not only a convenience but also an indispensable part of the kitchen equipment.

One of the chief points to be remembered in the furnishing of a house is that it should not be

overcrowded with furniture. It is useless to have large rooms if they are to be ultimately cramped for the inmates by ungainly and useless bits of furniture.

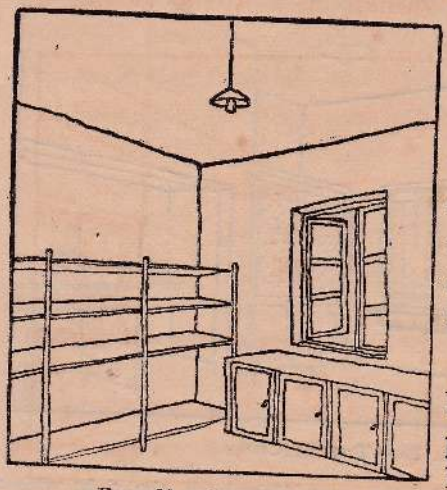


FIG. 26.—STOREROOM

The Storeroom should be fitted with Cupboards and tiers of Shelving for storage purpose.

Modern furniture is designed for simplicity, strength and comfort and the old dust-collecting-carved-type of furniture should be avoided as much as possible.

As most modern buildings are very plain and all useless enrichments such as mouldings are done away with, the use of harmonious colour schemes can be introduced with happy results. The rooms open to visitors, namely the drawing-room, verandah and dining-room, should be preferably in warm rich colours, such as cream, orange, light pink, russet and bright green. The bedrooms would be best in cool colours; the light blues, greys, buffs, lilac and lavander, blue greens with harmonizing and contrasting colours being specially suitable. All furnishing, even the various articles used in the home can be selected to harmonize

and blend with the colour scheme of each room.

Very little attention is paid in Ceylon to the creation of beautiful gardens as a fitting setting to

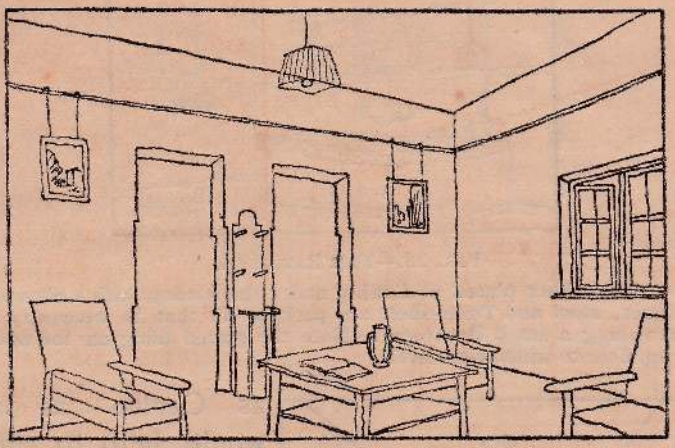


FIG. 27.—THE FRONT VERANDAH

A few comfortable Easy Chairs with a central Table and Hat Stand is shown in this illustration of the entrance verandah.

the house. The result is that the house meets the eye too directly without any softening shades such as a well-laid-out garden can provide. Ceylon with its perpetual summer is rich in opportunities for laying out gardens even within a small area. A small lawn with bright tropical flower-beds would offer a pleasant background to the otherwise too bare outlines of a house. This is specially necessary in a country of such strong sunshine

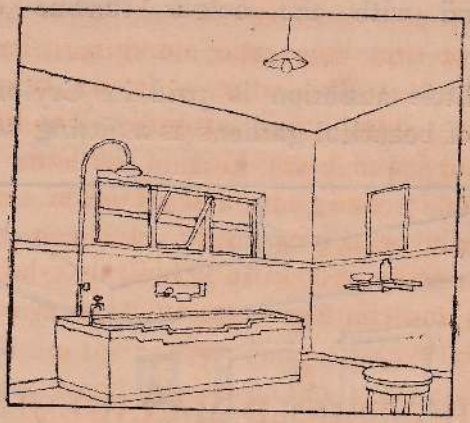


FIG. 28.—THE BATHROOM

A large Bath placed preferably under the window with a Shower, mirror, stool and Toilet-shelf are perhaps all that is necessary in furnishing a small Bathroom. (Note the glazed tiling on the walls from floor to window-sill level).

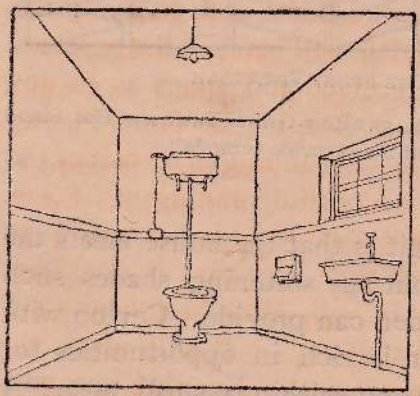


FIG. 29.—THE LAVATORY

Here a lavatory seat is provided with a Washhand Basin; glazed tiling up to window-sill level is a necessity.

as Ceylon as it would help to subdue the glare effectively.

You will realize now that the construction of a house on the right lines is no simple matter. It requires a very great deal of planning, care and foresight from start to finish. In the adventure of building your home much therefore

depends on your selection of a skilled architect and a builder of experience and standing. Once your home is built it is necessary to keep it beautiful by furnishing it suitably and tastefully. The home, the surroundings and everything in the home must be kept clean by daily care and attention. This will undoubtedly be a pleasure to you if your home has been so soundly and skilfully built that the qualities of beauty and charm are apparent to every visitor and passer by.

2. HOUSEHOLD MANAGEMENT

HOUSEHOLD ACCOUNTS

In this chapter we shall be learning about household accounts and how to keep them. Money is needed in the running of a home and every housewife must learn to regulate and manage the expenses carefully. Money is received and spent as in any ordinary business and as keeping accounts is very necessary for the successful running of a business so is it necessary for the successful running of a home. Keeping accounts will enable the housewife to check her expenditure and see that it does not exceed her income. It will, also, help her to put something by for a 'rainy day'. It will teach her to be thrifty and economical. Keeping accounts will also enable the housewife to cut down unnecessary items of expenditure.

This can be done only if the full income is in her hands and not doled out to her daily. The

housewife will of course remember that this money is a sacred trust given to her and she must do all in her power to use it carefully and wisely. She must budget proportionately for food, clothing, education, etc., and while not getting into debt she will give to the inmates of the home all the comfort she can with the money available. Because this is the most difficult task of a housewife, even little children should be trained in right spending and in the keeping of accounts from their very young days. They should be given a small pocket-money allowance either weekly or fortnightly. As they get older and more capable of right spending the amount may be increased. It would be very unwise to give large sums because the aim of giving pocket-money to children will be lost if this is done.

Household expenditure may be classified as follows :—*Current expenditure*, *occasional expenditure* and *emergency expenditure.*

Current expenses will include the normal expenses of the home. Some of the items under this head are house rent, food, school fees, servants' wages, etc.

Extra money spent on a holiday, or on entertainment will be *occasional expenses.*

Emergency or accidental expenses will be money spent on sudden illnesses, shifting, etc.

Some things in the home are bought monthly; rice, curry stuffs, sugar and other groceries which can be kept are some of these articles. But perishable

things such as vegetables, meat, fish, eggs, fruits must be bought daily and paid for daily. These accounts are entered into the *Canik* or *Daily Expenses book*. The items are entered in the right column and the total for the day put down. At the end of the week the totals of each item added together and the totals of each day added together must tally if the accounts are correct. A page of the Canik account book is given below.

CASH PAYMENTS

Date	Vegetable	Fish	Meat	Eggs	Fruit	Oil	Bread	Milk	Total
Jan. 2	0·24	0·75	...	0·15	0·20	0·11	0·14	0·28	1·87
,, 3	0·20	...	0·28	...	0·14	...	0·21	0·28	1·11
,, 4	0·36	0·30	0·28	0·10	0·20	0·11	0·35	0·42	2·12
,, 5	0·18	0·60	0·75	...	0·10	...	0·07	0·28	1·98
,, 6	0·35	0·90	...	...	0·25	0·11	0·21	0·42	2·24
,, 7	0·50	0·30	1·25	0·25	0·36	0·11	0·42	0·28	3·47
,, 8	0·25	0·40	...	0·15	0·24	...	0·14	0·28	1·46
Total	2·08	3·25	2·56	0·65	1·49	0·44	1·54	2·24	14·25

Petty Cash Book. In this book all items of expenditure for the month including the totals of the Canik account book are entered. The Petty Cash book may be called the monthly account book for this reason. Entries are made under the heads Income or Receipt and Expenditure. Every item of

income such as salary, extra income, a balance brought forward from the previous month or any money which we may use to run the home during the month will be included on the Credit side or Receipt or Income side. All expenditure or items of payment will be on the debit side or expenditure side. Any savings or balance in hand after running the month with the income given will also be items in this column. The two totals must tally to the cent if accounts are kept correctly. If the expenditure or the debit side is greater than the credit side it shows debt. Here is a page of a Petty Cash Book.

PETTY CASH ACCOUNT

Date	Receipts	Rs. C.	Date	Expenditure	Rs. C.
Jan. 1.	By balance ...	1·80	Jan. 2.	House Rent ...	35·00
1.	By salary ...	150·00		Conservancy ...	1·00
2.	By rent from house ...	40·00		Monthly provisions	28·75
3.	By garden produce ...	5·75	5.	Servants wages ...	12·00
5.	By sale of old school books ...	9·25	6.	Dhoby fees ...	6·00
			8.	Canik ...	14·25
			10.	Shoes for child ...	7·00
				Hilda's illness ...	5·85
				Car hire ...	3·50
				School fees ...	20·50
			14.	New Books ...	12·85
			15.	Canik ...	13·75
			16.	Birthday present...	2·85
			21.	Aluminium pans...	2·65
			22.	Canik ...	9·05
			28.	Insurance ...	5·75
			29.	Canik ...	16·75
			31.	Balance in hand ...	9·30
	Total ...	206·80		...	206·80

It would be very interesting at the end of the year to collect up amounts spent on various items such as food, rent, clothing, schooling, etc. This will also help the housewife to budget for the next year in correct proportion.

It is best to pay for things as we buy them. If the housewife depends on a regular monthly salary it may be more convenient to her to pay for things monthly. But a credit system should be avoided. Buying on the instalment system often brings trouble in the end and it is better to collect the money and then buy what we want paying for it at once.

Payments may be made by cash, cheque, Postal order, or money order, or Telegraph money order. When a payment is made a receipt should be obtained from the receiver of the money. If the amount exceeds Rs. 20 the receipt should be signed on a five cent stamp.

If the housewife has a current account in the bank, payments can be made by *cheques*. The money is in the bank and cheques up to that amount can be paid away. The bank will pay the money to the person named on the cheque. Cheques should be very clearly written. If any alteration is to be made, cross out the portion that is to be altered, make the correction clearly and sign against it. Cheques can be cashed over the counter at the bank if they are not 'crossed'. To ensure safety, cheques are 'crossed' by drawing two lines

across them with the words '& Co.' as shown

FIG. 30.—A CROSSED CHEQUE

below. Such cheques cannot be exchanged for cash but must be paid into an account at a bank. If money is needed the person into whose account the cheque has been paid, can 'draw' or write another cheque from his own cheque book leaving it 'open' or uncrossed. This 'open' cheque can be cashed at the bank.

If a cheque is to be posted it is safer to cross it.

FIG. 31.—AN OPEN OR UNCROSSED POSTAL ORDER

Payments are also made by means of *postal orders*. They can be obtained at all Post Offices in Ceylon.

The minimum amount for which a postal order can be obtained is 50 cents. The counterfoil of the order should be retained by the remitter or sender and in order to avoid payment to a wrong party, before posting the order the name of the payee and the office at which the order is to be paid must be filled in.

Postal orders can only be obtained in multiples of 50 cents. Payments of mixed amounts such as 21 cents or Rs. 3–64 must made by money order.

Money Orders are also obtained from Post Offices. An application is made on a printed form which is provided free at the Post Office. When the application is correctly filled in giving all the particulars required, it is presented with the money and commission and the money order is issued. This is enclosed in a letter and sent to the payee who signs and cashes it at the proper Post Office. The Post Office from which it is issued has already notified the Post Office where it is to be cashed that such an order has been issued. Hence payment by money order is a very safe form of payment though we pay a little more than for a postal order. If the payee has a bank account, postal orders, money orders and *Telegraph* money orders, may be crossed so that they can be paid only through a bank. The bank will cash them for the payee.

Telegraph money orders were introduced to enable money to be transferred as quickly as a

COLOMBO COURTS

No 09363

Stamp of Issuing Office

240C. 3P

WARNING TO THE PUBLIC.
NOT NEGOTIABLE.
DO NOT CASH THIS ORDER FOR A STRANGER.

Rs.	c.
—	21

CEYLON MONEY ORDER.

Pay the Person named in my Letter of Advice the sum of.

(To be stated in words)

Rupees	Cents
— nil —	Twenty one

To the Post Office at Katnapura

Sawkins, *Issuing Officer.*

The person to whom this Order is made payable must sign here his or her Christian and Surname in Ink. In the case of illiterate persons the thumb impression must be attested.

Received the sum specified above

.....

Signature (or thumb impression if illiterate) of Payee.

Signature of witness when necessary:

Name : .....

Address : .....

.....

Initials of Paying Officer .....

Stamp of Paying Office.

For further instructions see back.

J. N. 74504

FIG. 32.—A MONEY ORDER

telegram. This method is quick but expensive. The method of issuing it is very similar to that of the money order, but the telegram must be paid for.

All counterfoils of cheques, postal orders and the numbers of money orders and Telegraph money orders, should be kept until you are sure the money is received safely.

CARE AND STORAGE OF LINEN

One of the most expensive items in a home is house linen. Great care must be taken of it.

It is cheaper in the long run to choose good materials of good texture for making articles of house-hold linen. Cheap stuffs of poor texture tear soon and the edges get warped and stretched spoiling the appearance. If coloured materials are used the colours must be fast and if coloured fancy stitches are worked on them the thread used must be strong and fast in colour.

The house linen consists of sheets, pillow-cases, bed-spreads, towels, table-cloths, tea-cloths, serviettes, toilet table covers, tray cloths, chair backs, etc. We also include in the list glass cloths and a plentiful supply of dusters.

We usually choose cotton materials for our household articles for they are cheap and can be laundered easily. Articles made of real linen are the best, but they are expensive and the method of washing adopted by our dhobies ruins them.

We should have at least three sets of house linen made for a home, one set to be with the dhoby, one in reserve and the other in use. If means allow more linen may be made. This will make for the longer life of house-hold linen as periods of rest will give the fibres time to toughen.

The linen should be stored in a strong cupboard or almirah made of durable wood which will not be attacked by insects nor be spoilt by dry rot. It must be fitted with a good lock and key. On the shelves inside, the different kinds of linen will be arranged in their respective piles. No paper should be used to line the shelves for it attracts silver-fish and other insects which attack linen. Use cloth instead. A tea-poy cover or a folded sheet will serve the purpose. Camphor or naphthalene put amongst the clothes will keep off insects while bundles of savandara roots and bags of lavendar will give the clothes a pleasant smell.

When linen comes from the wash it should be arranged at the bottom of its pile so that it will be used in rotation, thus preventing the same articles going to the wash over and over again while the rest are scarcely used.

An inventory of all the house linen should be made and fastened to the inside of the door. From time to time the linen should be checked. Articles beyond repair must be struck off the list and new ones included. This will also help to show if any are lost.

All house-hold articles must be clearly marked in an inconspicuous place with the initials of the housewife. Let each kind of linen be also identified with a letter such as S for sheets, T for towels, C for table-cloths, etc. If there are 6 sheets in a set mark each with S/1, S/2, S/3, S/4, S/5, S/6. This system of marking will help to identify any article lost or destroyed.

When clothes come from the wash they must be examined and if any are torn they must be mended or repaired before they are put away in their proper piles. If any are past mending, dusters may be made from them.

The linen used on special occasions should be kept separately and put away safely after use. Personal linen may be stored in a different almirah or in a chest of drawers. These too must be kept tidily in separate piles.

All the soiled clothes should be placed in a dirty linen bag or basket until they are sent to the wash. They must be protected from white-ants and other insects. From time to time the dirty clothes must be sunned and aired.

When they are to be sent to the wash a record must be made of them. When they return from the wash they must be sorted out and checked to verify if the account is correct.

Here is a page of dhoby record book. Washes are due every 10 days. The extra column after each wash, is to record any deficiencies found when the clothes are brought back.

Date	January 5		15		25	February 5	15	25
Frocks ...	2		4		3			
Petticoats ...	4		3		3			
Knickers ...	6		4		3			
Sarees ...	4		2		4			
Blouses ...	6		3		5			
Night Dresses ...	3		2		4			
Ladies' Hankies ...	12		14		8			
Kimonos ...	1		2		1			
Coats ...	5		5		4			
Trousers ...	5		5		4			
Banians ...	5	1	6		4			
Large Handkerchiefs...	10		8	2	9			
Pyjamas ...	2		2		1			
Sheets ...	8		6		9			
Bed-spreads ...	4		3		4			
Pillow-cases ...	8		8		10			
Toilet Covers ...	3		3		3			
Chair backs ...	6		5		6			
Cushion covers ...	4		4		3			
Table-cloths ...	4		3		2			
Serviettes ...	15	2	12		14			
Tea-cosies ...	1		1		1			
Tea-poy covers ...	3		4		3			
Glass cloths ...	6	1	7		4			
Tea-cloths ...	4		3		2			
Dusters ...	18	3	12		10			
Odd pieces ...	5		4		8			
Total ...	154	7	135	2	132			

ARRANGEMENT OF A DAY'S ROUTINE OF A HOUSE-WIFE

A time-table is essential for the proper working of a school. The subjects that have to be taught and learnt, the proportionate time which must be given to each subject are all taken into consideration

when it is drawn up. In the same way it is very necessary to draw up a time-table of work for the efficient running of a home. Proportionate time should be allowed for each piece of work and a methodical arrangement of each kind of work will have to be considered here.

This programme should be planned and drawn up beforehand. This will help the house-wife to get through the maximum work with the minimum expenditure of time, energy and even temper. It will probably enable her to get a few hours of rest at the time it is most needed.

The routine of work for the day will vary a great deal in different homes. If the house-wife has a number of servants it is not necessary for her to do much of the actual work. She will have more supervision of the work the servants do.

If the house-wife has work outside her home then the work in the house can be done by the servants without much supervision by her.

Where the house-wife cannot afford to have a sufficient number of servants to do all the work she will have to do a share of the actual work herself.

In homes where there are children much time will be devoted to them. So the programme of work drawn up will differ accordingly.

Below is a rough programme of work drawn up by a house-wife living in a suburb of Colombo. She has three children, two girls going to school daily from home, and a baby one year old. She has an

ayah to help her to look after the child, a servant to cook and a boy to carry breakfast to school, to go marketing and help in the cleaning of the house and garden.

PROGRAMME OF WORK FOR 3rd JANUARY 1939

5-45 ...	Rising time—Personal toilet—Superintending daily cleaning of garden and front verandah.
6-15 ...	Rising time for children—Fruit drinks—Children's bath—Getting ready for school.
7-15 ...	Morning tea.
7-45	Girls leave home for school—Continuation of cleaning of house—Clearing and washing of tea-table things supervised.
8-00 ...	Lunch menu ordered—Provisions given out for the lunch—Marketing for other necessary things.
8-30 ...	Baby's bath, play and rest to follow.
9-15 ...	Fruit drink. Weekly cleaning planned to be done in rotation, helped and supervised arranging flowers in vases.
10-00	Accounts, letter writing, sewing.
11-00 ...	Lunch sent to school and office.
11-15 ...	Baby's lunch.
11-45 ...	Lunch.

12-15 to 3-00	Rest time. Servants' lunch time—Rest after washing up.
3-00	Children return from school.
3-15	Tiffin.
3-30	Rest time for children—Dinner menu ordered. Provisions given out—Marketing.
4-00	Baby washed and dressed—Children's play time. Hobbies, etc.
5-00 to 7-00	Children's study supervised—Visiting or entertaining visitors.
5-30	Baby's dinner.
6-00	Baby washed and put to bed.
7-30	Dinner.
8-15	Free time for reading, sewing, study or play.
9-15	Locking up.
9-30	Lights out.

In the book for Standard VI we learnt about the work of a sick-room. In the sick-room a planned routine of work is essential. The details will vary according to the illness and the doctor's orders. These orders must be carried out exactly and at the proper time.

PART III

COOKERY

1. FOOD VALUES AND VITAMINS

We have already learnt about the digestion of food and the absorption of it. We shall learn a little more about food values, and how to draw up menus including balanced diets in them. For the very best forms of diet we must include all the food values, vitamins and water.

Carbohydrates.—Starches, sugar and gum build and repair fatty tissues, and give heat and energy.

Fats build and repair fatty tissues and give heat and energy.

Although the functions of these two classes of foods are alike the processes of digestion are different.

Proteins build and repair nitrogenous tissues and give heat and energy.

Mineral Salts are needed to build and repair all the tissues of the body. They are found in every fluid of the body including blood and digestive juices.

Water is taken as a beverage, plain, or in tea, coffee, cocoa, ærated waters and fruit drinks. It is

also present in varying quantities in almost all foods.

Various chemical substances such as lime, salts, iodine, etc. are also found in water.

Vitamins are factors in food which are necessary for the normal growth and development of the body. They also cure and prevent certain diseases.

All these classes of food may be divided into:—

(1) Organic Foods.
(2) Inorganic Foods.
(3) Vegetable Acids.
(4) Food accessories.

(See table on next page.)

The tissue-forming foods are those containing proteins, water and salt. The heat and energy producers are sugars, starches, fats, oils, proteins, water and salts. The body can exist without sugars, starches and fats, but it is absolutely necessary to give it some form of protein, water and salt.

The quantity of food varies according to the climate, age and occupation of a person. In a cold country a larger amount of all foods, especially of heat producing food will be necessary and in the case of laborious occupations the quantity will be increased.

Through the excretory organs an adult loses 20 grams of nitrogen and about 300 grams of carbon a day, and this loss must be made up by food.

The following table gives us the division:—

I. ORGANIC

Nitrogenous

Containing Carbon, Hydrogen, Oxygen, Phosphorus and Sulphur.

PROTEINS
- *Albumen.*—Milk, Eggs, Meat and Fish.
- *Casein.*—Milk and Cheese.
- *Legumin.*—Dhal, Peas and Beans.
- *Gluten.*—Cereals and Grain.

Non-Nitrogenous

Containing Carbon, Hydrogen, Oxygen, Phosphorus and Sulphur.

Starch.—Rice, Cereals, Yams, Jak, and Breadfruit.
Sugar.—Sugar, Jaggery, Sweetmeats, etc.
Gum.—Fruit.
Oils.—Coconut Oil, Butter and Ghee.

II. INORGANIC FOODS

Salts of Soda, Iron, Potash, Phosphorus and Water.

III. VEGETABLE ACIDS

Citric Acid	...	Oranges, Lemons, Limes and Pumelo.
Malic Acid	...	Apples.
Tartaric Acid	...	Grapes.
Acetic Acid	...	Vinegar, etc.

IV. FOOD ACCESSORIES

Condiments	...	Spices, Pepper, Chillies, etc.
Vitamins	...	Vitamins A, B, C, D, and E.
Beverages	...	Tea, Coffee, Cocoa, Mineral Waters, Fruit Drink, etc.

In the table given opposite the foods are divided into (1) Organic foods, (2) Inorganic foods, (3) vegetable acids, (4) Accessory foods.

Organic Foods may be nitrogenous or non-nitrogenous foods containing carbon, hydrogen, oxygen, phosphorus and sulphur. The nitrogenous foods or Proteins may be either True Proteins or albuminoids. *True Proteins* are of greater nutritive value. They may be :—

Albumen found in milk, eggs, meat and fish
Casein in milk and cheese
Legumin in dhal, peas and bean
Gluten in grain.

Albuminoids,—another class of proteins, such as gelatin, which is obtained from animal tissues by prolonged boiling. Albuminoids are of less nutritive value and cannot entirely take the place of proteins in a diet.

Non-nitrogenous foods contain : *Starch* in rice, cereals, yams, jak, breadfruit, etc.; *Sugar* in sugar, jaggery, and all kinds of sweets; *Gum* in fruit; *Oils* in vegetable oils and animal fats such as butter, ghee, etc.

Inorganic Foods include salts of soda, iron, potash, phosphorus and water. These are contained in many vegetables and leaves, grain, milk and other foods.

Water. About 3½ to 5 pints of water are lost from the body per day, through the excretory organs. Most of the foods we take in contain water,

and to make up the balance we must take in another 3 pints of water or other beverages.

Vegetable Acids are found in fruits such as oranges, grape-fruit, grapes, apples, mangoes, etc. Fruits have their own peculiar flavour due to the acid in them.

Food Accessories may be condiments, beverages and vitamins.

Condiments such as chillies, curry powders, pepper, mustard, ginger, cloves, nutmeg, cinnamon, salt, lime and vinegar, etc. do not fulfil the functions of food and cannot be reckoned as necessities. They give flavour and they excite the digestive organs to secrete their juices. Without condiments a rice and curry meal would be insipid, and less easily digested.

Beverages are exremely important, being necessary to life. It is possible to live without food for many days at a time but not without water. In hot climates people need to drink more than in cold places because they lose more moisture by perspiration. The greater part of the loss of water from the body is restored by drinking water, either alone or in the form of beverages such as tea, coffee, cocoa, mineral waters (soda, soda orange, ginger-ale, etc.), and fruit drinks (pine-apple cordial, passion fruit drink, orange squash, etc.)

Tea. The leaf of the tea-plant is dried, rolled, allowed to ferment, and dried again. These leaves are infused by pouring boiling water on to them.

The infusion is usually drunk with sugar or milk or both. When taken in this way tea contains a certain amount of nourishment. Tea contains 14 per cent of an astringent substance called tannin. Therefore when it is taken in excess is slightly harmful. There is also theine and volatile oil. The theine stimulates the heart and acts as a restorative to the nervous system. Unlike alcohol, tea has no depressing after effects. Tea drinking in excess may affect the nervous system but in moderation it is beneficial as a stimulant. Children below six should not be given tea, milk is better.

Coffee is a berry, roasted until it is of a dark brown colour and then ground into powder. Coffee contains caffeine, a little tannin and volatile oil. Like tea, it is a stimulant, and stimulates the heart and the nervous system. It also lessens fatigue and desire for sleep. Teachers who must work late in order to correct books often take strong coffee to enable them to keep awake and alert. If taken in excess it affects the heart and nerves and interferes with the digestion.

Coffee is sometimes adulterated with chicory, the root of a plant roasted and ground. It is said to improve the taste and so a mixture of 2 oz. to a lb. of coffee is made. With milk and sugar coffee has a nutritive value.

Cocoa is the seed of the cocoa pod. The seeds are roasted and husked. Then they are ground and the excess of oil removed.

Cocoa has theobromine which is very much like tannin in tea, and caffeine in coffee, in properties and composition. It also contains fats, starches, and salts ; so it is valuable as a food. It has stimulating properties on a smaller scale than tea. Cocoa is taken with milk and sugar. It is also used for making chocolate, a delicious nutritive sweet.

Fruit Drinks made of fruit juices and water with sugar added to taste. Fruits contain mineral salts, vegetable acids and sugar, and have nutritive value. They also contain vitamins A, C and D.

Mineral Waters. Fruit juices, water, ærated with gas is sold in bottles. They are refreshing drinks especially certain brands of them which are hygienically clean.

Alcoholic Drinks. These might be more accurately described as drugs rather than beverages. They are mostly taken for their drug action rather than for their food or thirst-quenching value. Their food value is almost non-existent while their thirst-quenching power is very brief.

The essential element in all of them is alcohol. This is a narcotic drug or poison and like other narcotic poisons should be administered only by a doctor in those extreme cases where the doctor considers it essential.

Alcohol is not a food, and cannot supply the needs of the body. On the other hand it does a great deal of harm. The degree of harm depends upon the quantity taken but quite small quantities,

especially if taken frequently, can do a considerable amount of damage. We have seen how foods must undergo great changes in the process of digestion before they can be absorbed into the blood. Alcohol is one of the substances which can be absorbed into the blood without any such changes. It is this rapid absorption by the blood and consequent diffusion to all parts of the body which partly accounts for the speed with which the effects of alcohol appear.

Alcohol is a narcotic and narcotics are drugs which deaden or paralyse the nervous system. It attacks the higher controls first and reduces one's sense of restraint and responsibility as well as one's critical judgement. This may be seen in the 'After-dinner speech' which is so often garrulous and indiscreet, but which is received with undiscriminating applause.

This narcotic slows down the functions of most of the organs of the body. The lining of the stomach thickens and the gastric juice is more slowly secreted. Loss of appetite follows and food is digested with difficulty. The liver is interfered with, the bile ducts partly closed and digestion in the small intestine retarded; excess of fat is formed, the waste products of the body are not properly eliminated, and the body becomes generally unhealthy.

The brain is dulled, and clear and accurate thought is more difficult. It quickly attacks those nerves which control skilled action. Co-ordination

of action becomes slower and less sure. 'Reaction time' becomes longer. It takes longer to thread a needle, the tennis player does not 'place' so accurately, the rifleman becomes less accurate while the car driver takes longer to realise a possible accident and is slower to react and avoid it. 'If you drive don't drink, if you drink don't drive.'

Alcohol is carried to all parts of the body by the blood and deadens the fine nerves which control the muscular walls of all the blood-vessels and these being no longer controlled by the nerves slacken and the blood vessels expand. This reduces the pressure of the blood against the force of the heart's beat and the heart begins to 'run away' like a car engine as the car begins to go down hill. The slack or dilated blood-vessels, especially the surface capillaries all over the body are filled by a larger quantity of blood than before, the skin flushes and a glow and warmth is felt. It is a most deceptive feeling. It is produced by the inner warmth of the body being brought to the surface and there dissipated. It is followed by a deeper cold and great depression. There is no true stimulation.

In this country where alcoholic drinks are expected at most festivities, where it is the fashion especially at weddings and all domestic celebrations to provide them liberally, it is necessary for the student of Housecraft and Hygiene to know what little value and what great danger these drinks possess. Just as we study the content and the

nutritive value and body building power of every kind of food, and see what effect each has as it is taken into the body, so in the same way must future house-wives study the content of these drinks and the effects produced within the body by them. She must seek such knowledge, not from those who have been guided chiefly by their feelings but, as with other foods, from those who have conducted their experiments under strictly scientific controls so as to eliminate the errors produced by misinterpreted feelings.

VITAMINS

A person may take plenty of food rich in all food values and yet be ill or under-nourished, if the materials eaten do not include the necessary amount of certain substances called vitamins. Vitamins have not been isolated, but it has been proved that they are present in natural foods. They are very essential for normal growth and health and they prevent and cure certain diseases. High temperatures destroy some of the vitamins. Five different vitamins have so far been distinguished and named after the five letters of the alphabet.

(1) Fat soluble A and D.
(2) Water soluble B.
(3) Anti-Scorbutic C.
(4) Water soluble E.

Vitamins A and D—Vitamins A and D are

found in the same kinds of food, so they are classed together. These vitamins are very necessary for young growing children, a deficiency of these is the cause of rickets and general debility. Vitamin A specially, cures diseases of the respiratory tract. Vitamin D, or Anti-rachitic vitamin, prevents and cures rickets in little children. The primary source of vitamins A and D is green leaves. Animals when fed on green leaves store up these vitamins in the fatty tissue so that animal fats, milk, and butter obtained from animals fed on green food are rich in these vitamins. But animal fats which have been subjected to great heat lack these vitamins. They are present also in the yolk of the egg, and in liver. Both liver and eggs contain all classes of vitamins and are therefore among the very best kinds of foods which contain vitamins. Cod-liver oil contains about 250 times as much vitamins A and D, as does butter.

Vitamin B.—Anti-neurotic vitamin prevents and cures certain nervous diseases one of which is Beri-beri. Anæmia, lack of vigour, nervous debility, and intestinal troubles are also caused by the lack of this vitamin. This vitamin is found in the seeds of plants specially in cereals such as rice, kurakkan, adlay and meneri, etc. and pulses. In the cereal it is contained chiefly in the embryo and the bran. Hence the value of country rice. Eggs, yeast and yeast extracts such as Marmite, are also rich in this vitamin. Meat, fish, milk and cheese contain

relatively small quantities. This vitamin withstands drying and will stand a temperature of 100°C. for two hours, but higher temperatures destroy it.

Vitamin C.—Anti-scorbutic—is present only in living tissues, it is obtained from fresh vegetables, fresh green leaves, and from raw fruits such as oranges, tomatoes, lemons, etc. This vitamin prevents and cures the skin disease called scurvy which used to be common among sailors owing to an insufficient supply of fresh vegetables. It is almost unknown nowadays. But infants fed on boiled cow's milk, of sterilized milk suffer from a similar disease. Symptoms are bleeding and soreness of the gums and bruising of the muscle. For this reason, infants who are not breast fed should, from the age of two months, be given the juice of fresh fruit such as orange, tomato, grapes and pomegranate.

Leaf malluns if not over-cooked contain vitamin C. Some of the leaves which may be cooked are:—spinach, gotukola, cabbage, mukunuhenna, sarana, anghuna, kankun, etc. These leaves also contain mineral substances such as iron and phosphorus. All leaves of the leguminocæ family such as murunga, kathurumurunga etc. contain lime.

Shredded leaves may be prepared as a sambol and thus retain all the vitamins. Fruit salads both sweet and savoury are preparations where vitamins are retained.

Vitamin E. is connected with re-production.

2. DRAWING UP OF A MENU

After we have gained a knowledge of the food constituents in Ceylon food materials we shall proceed to learn how to plan a well-balanced meal. A menu is a list of foods making up a complete meal. Drawing up a menu is an important duty of a house-wife. The time of meal, the money to be spent on it, and the food-values in the dishes chosen, must all be thought of. A methodical variety in food can be made possible by planning varied menus.

Given below are a few typical menus including Ceylon dishes.

MORNING TEA

Hoppers or pittu or string hoppers (Carbohydrates and Vitamin) with sambol or fish or meat curry (Protein)
Plantain (Mineral Salts and Vitamin)
Tea and milk (Calcium and Sugar).

BREAKFAST OR LUNCH

Rice (Carbohydrates)
Meat curry (Protein)
Tomato vegetable curry (Mineral Salts)
Dhal (Protein)
Leaf mallum (Mineral Salts and Vitamins C and A and D).

TIFFIN

Levariya (Carbohydrates and Sugar)
Plantain (Mineral Salts)
Tea and milk (Calcium and Sugar).

Here is a bad menu for a Ceylon breakfast because it is an unbalanced meal.

Rice (Carbohydrates)
Potato curry (do.)
Jack Mallum (do)
Breadfruit vegetable curry (Carbohydrates)
or
Rice (Carbohdyrates)
Meat curry (Protein)
Dhal curry (do.)
Fish curry (do.).

3. RECIPES UNDER VARIOUS METHODS OF COOKING

STEWING

STEWED CHICKEN

Ingredients:

1 Small size chicken
2 red onions
1 carrot
1 turnip
2 potatoes
2 Bombay onions
½ pint water
1 oz. ghee or butter
Pepper and salt.

Method. Joint the chicken. Wash the meat dry and wrap in flour, pepper and salt. Cut up turnips, onions, and carrots, etc. Heat fat and fry chiken till brown. Take this out and fry onions.

When brown add turnips and carrot. When these are brown add meat, then the rest of the flour. Mix well and add water. Boil for 5 minutes. Add

pepper and salt to taste. Then let it simmer for 45 minutes till quite soft.

CRAB CURRY

Ingredients:

2 large crabs
1½ cups of thin milk
1 cup thick coconut milk
1 handful murunga leaf
8 red onions
4 green chillies
1 dessert-spoonful ground chilly
1 sprig curry leaves
1 dessert-spoonful coconut oil or ghee.

Method. Wash the crab well and then break the edible parts into a chatty. Add the milk and the ingredients and mix well. Temper this in fat and cook over a slow fire until the crabs are well boiled. About 2 cups of gravy must remain in the curry. (If the crabs are very large the hard shell should be smashed slightly taking care not to let the juice run out.)

FISH CURRY

Ingredients:

2 lbs. fish
3 cups thick milk
2 dessert-spoonfuls ground chillies
A pinch of saffron
6 bits goraka
2 dessert-spoonfuls tamarind made into a paste with water
8 red onions
6 green chillies
Salt.

Method. Wash the fish in goraka and water. Put the fish into a chatty (cut the slices into 4). Add the milk and all the other ingredients and cook over a slow fire. When the fish is well boiled and while there is a little thick gravy take the chatty off the fire.

KALUPOL CURRY (JAK SEEDS)

Ingredients:

2 dozen Jak seeds
1 tea-spoonful coriander
1 do white cumming
8 dry chillies
1 tea-spoonful rice
10 red onions
1 dessert-spoonful maldive fish
2 cupfuls thick milk
1 dessert-spoonful ghee or coconut milk
Salt.

Method. Wash and boil the jak seeds in water. The seeds will burst when boiled well. Mash the seeds slightly and put into another chatty with the milk, half the quantity of onions and other ingredients. When the curry is cooked, temper in the fat with the remainder of the onions.

STEWED FRUIT (PRUNES)

Ingredients:

1 lb. prunes
½ lb. sugar
Water.

Method. Wash the prunes well and put them into a basin with sufficient cold water to cover them. Let them soak through the night or at least

for a few hours. Then put the prunes and the water in which they were soaked into a vessel and let them simmer gently until the prunes are well cooked. Add the sugar and stir until the sugar is dissolved. A little vanilla essence or rose-water may be added to give it an added flavour.

STEAMING

PITTU

Ingredients:

2 chundus flour
1 coconut (scraped fairly tender)
Salt.

Method. Roast the rice flour well. Add the coconut to it and rub well into the flour forming fine balls with the mixture. Slightly wet the flour by sprinkling salt and water. Put handful after handful of this into the Pittu Bamboo which is placed in a pot of boiling water, just fitting into its rim. Cover the bamboo and let the pittu get cooked with the steam from the pot. When the pittu is boiled lift the bamboo out and empty the pittu from the bottom end on to a plate. Cut up into 4 inch squares, serve hot with coconut milk poured over it.

Pittu is usually eaten with meat or fish curry, jaggery or fruit.

LEVARIYA

Ingredients:

2 chundus rice flour
Boiling water
Honey and coconut mixed and cooked for the filling.

Method. Steam boil the rice flour. Pass this through a fine mesh. Add boiling water and mix well to a thick paste which can be passed through the fine holes of a string hopper mould. The string hopper is now moulded on to a round wicker frame. In the centre of it place ½ tea-spoonful of coconut and honey mixture as a filling and turn over and place edge on edge. Place several of these on a strong wicker frame. This frame with the levariya is placed on the mouth of a pot in which water is boiling. The levariya will be steam boiled in this way. A good cover should cover the pot so that no steam can escape. When the levariya is properly boiled they can easily be removed from the wicker frames.

The filling is prepared in the following way: Scrape coconut and add a ½ bundle of jaggery to it. Put the jaggery with ½ a cup of water on the fire and when it is boiling put in the coconut and stir. When cooked and of the correct consistency remove it and allow to cool. Add a little rose water or vanilla to flavour the 'panipol'.

VATTILAPPAN (MALAY PUDDING)

Ingredients:

1 bundle kitul jaggery
Thick milk of 1½ coconuts
12 eggs
Nutmeg grated
Lime rind.

Method. Beat up the eggs. Scrape the jaggery and dissolve in coconut milk. Add nutmeg and rind of lime and steam in a greased bowl.

CUSTARD

Ingredients:

½ pint milk
2 eggs
2 oz. sugar
Flavouring vanilla essence or nutmeg.

Method. Boil milk, add sugar, beat up the eggs and when the milk is slightly cool pour it on to the egg, beating all the time. Pour into a greased bowl and steam for about ½ hour. This same mixture may be baked.

BOILING

BOILED CABBAGE

Boil water in a sauce-pan. When it has reached boiling point, add a little salt. Wash the cabbage and let it remain in salted water. Salt will kill any insects in between the leaves. Clean out any dirt or insects and when the water is boiling put the cabbage in and let it boil for about ¾ of an hour taking care to remove the scum that collects on top. Boil cabbage without lid on, this keeps the cabbage green. To test when cabbage is boiled, take a skewer and see whether stalks are soft. Then drain the cabbage, add a little butter and a pinch of pepper. Mix well and let it dry on the fire for a few minutes.

SALT BEEF, BOILED

Salt Beef should be well washed and soaked overnight, or for a few hours in cold water, before putting it on to boil. Then tie it into shape with a piece of tape and put it into a saucepan with cold water to cover it. Bring it quickly to the boil, and then simmer gently until tender, skimming when necessary. It takes longer boiling than fresh meat. The minimum time taken will be about 30 minutes.

VEGETABLE SOUP

Ingredients:

2 carrots
1 turnip
2 leaks
1 Bombay onion
2 sticks of celery
1½ pints boiling water
1 pint milk
1 oz. sago
1½ oz. dripping
1 dessert-spoonful minced parsley
Salt.

Method. Prepare the vegetables and cut them into small cubes. Melt the dripping in a saucepan, put in the vegetables, and let this cook gently for 10 minutes without browing. Add the water and salt and simmer slowly until the vegetables are tender. If the water boils down more must be added, then add the milk, parsley and the sago and boil for another 10 minutes or until the sago becomes clear.

KARALLO FISH BROTH

Ingredients:

25 small Karallo fish
4 cups of water
10 sliced onions
10 pepper corns
2 pips garlic
2 slices ginger
Salt to taste
Few drops of lime.

Method. Clean and wash the fish well. Put these into a chatty and add the dry ingredients in water. Then cook over fire. When the fish is well boiled, mash it well stirring it against the side of the chatty. Add a few drops of lime and pass through strainer.

BREAD FRUIT BOILED

Skin the bread-fruit and cut up into $1\frac{1}{2}$" cubes. Wash with lime-juice to remove any discoloured sap. Rub over with salt and saffron for colour. Add sufficient water to boil it. Boil over a slow fire and if there is too much water strain off. When it is dry take off the fire.

BAKING

VELLAVAHUN (SINHALESE PAN-CAKE)

Ingredients:

1 chundu rice flour
$1\frac{1}{2}$ cups thick milk
Salt
Filling with scraped coconut and honey.

Method. Mix the flour and milk and salt. Pour into the hopper chatty $\frac{1}{2}$ a ladle of the mixture. Spread the mixture by turning the chatty round. Place a chatty of fire on this chatty and bake for

2 or 3 minutes. Remove from the fire, place filling in the centre and roll up as you do a pan-cake with filling.

MACARONI CHEESE

Ingredients:

½ lb. macaroni	2 oz. butter
¾ pint milk	1 oz. flour
6 oz. grated cheese	Salt and pepper.

Method. Put water in a sauce-pan to boil. When it comes to the boil, add a tea-spoonful of salt. Then add macaroni broken up into short lengths and boil till tender. Melt butter in a sauce-pan, stir in the flour and add the milk and seasoning. Stir till cooked. Strain the macaroni and put it into the mixture and mix well. Add ½ the cheese grated, mix and put into a greased pie-dish. Then put a layer of macaroni and a layer of cheese. Bake for 10 minutes in a quick oven, until the top is brown.

GINGER-BREAD

Ingredients:

4 oz. flour
Pinch of salt
1 tea-spoonful ginger (powdered)
½ lb. sugar
1 oz. fat
3 oz. golden syrup (1½ lb. table-spoonfuls or 3 dessert-spoonfuls)
¼ oz. candied peel
1 egg
¼ tea-spoonful bicarbonate of soda
2 dessert-spoonfuls milk.

Method. Grease a Yorkshire pudding tin. Melt the fat and add golden syrup and sugar and melt over a fire but do not let it boil. Sift the flour ginger and salt together. Cut up, peel and add to the flour. Dissolve bicarbonate of soda in a little milk. Add this and the egg and syrup to the flour and beat. Pour mixture into a greased tin and bake in a moderate oven for ¾ or 1 hour. When done let it cool on a cake rack or a wire sieve.

LOVE CAKE

Ingredients:

1 lb. rulang (slightly roasted)
2 lb. sugar
25 eggs
300 cadjunuts or almonds
½ lb. butter
2 wine glasses rose-water
1 tea-spoonful powdered cinnamon
1 do cardamom
1 grated nutmeg
Rind of one lemon.

Method. Beat yolks of eggs and sugar together. Add pounded cadjunuts and half of the rose-water, and mix. Stir in the rulang mixed with the butter (mixing of rulang and butter is done with a spoon). Next add the rind of lime chopped up fine and other powdered and grated spices. Last of all gradually add the whites of about 6 eggs should the mixture be too thick. Mix together, put on to a greased pan or baking sheet, and bake in a moderate oven.

FRYING

MEAT CUTLETS

Ingredients:

½ lb. meat
¼ lb. potatoes
¼ lb. red onions
1 egg
Pepper and salt
¼ bottle oil.

Method. Wash the meat and cut into pieces. Then mince the meat, potato and onion in the mincing machine. Mix pepper, salt, the yolk of the egg and form into cutlets. Egg and crumb and fry in oil.

KOKIS

Ingredients:

1 chundu rice flour
2½ cups thick milk
1 egg
Salt and a touch of saffron
¾ bottle good coconut oil.

Method. Mix up well the flour and milk. Add the eggs, salt and saffron. Leave the mixture for about an hour. Put the kokis frame into boiling oil and carefully dip it into the mixture just covering the pattern of the mould. Dip this back again into the boiling oil, shake it a bit and coax the fried kokis to drop out of the frame. Turn it over and take it from the oil when it is of a golden brown colour. Place this on paper, so that the oil can be absorbed.

PANAKAWUN

Ingredients:

1 chundu of rice flour fine sifted
1½ cups of thick milk
2 eggs
2 lbs. of sugar
1 cup water and salt.

Method. Roast the rice flour and mix well with the milk, egg and salt until it is a thick paste. Separate the lump into small balls the size of a marble. Mould these into flat shapes having a rough surface to take in the sugar later. Fry these in oil and strain on to paper. When the oil is absorbed put them into a new chatty pot, cover the mouth with a clean cloth and put away till next day. Add a cup of water to the sugar and let it boil until it becomes a thick syrup. Put the fried panakawun into this and stir till the sugar crystallizes on them.

DEVILLED CADJUNUT

Ingredients:

100 well matured cadjunuts
¾ bottle oil
8 chillies, fine powdered
1 dessert-spoonful salt.

Method. Clean the cadjunuts well. When the oil is boiling for several minutes, put the cadjunuts into this and fry until they come golden brown. Strain on to paper and let oil be absorbed. Now spread the cadjunuts on paper and while still warm add the salt and chillie powder and mix thoroughly. Put into an air-tight bottle or tins.

MISCELLANEOUS

YELLOW RICE

Ingredients:

½ measure Muttusamba rice
¼ tea cup ghee, butter or dripping
⅛ lb. red onions sliced
½ a coconut
½ a tea-spoonful saffron powder (ground)
4 cloves
3 cardamoms (crushed with the skins)
1 inch rampe
Cinnamon.
A small sprig of karapincha
8 pepper corns
Salt to taste.

Method. Wash the rice well and set aside to drain. Heat the ghee in a chatty or saucepan and when very hot, fry the onions and karapincha. When brown, add the riceand stir for about two minutes. Then add two cupsful thin coconut milk and I cupful thick coconut milk. Add enough salt and saffron. Also the cardamoms, pepper and cloves tied up in a muslin or voile bag. Allow the rice to boil. Stock may be used instead of water.

CHICKEN CURRY

Ingredients:

1 middle sized fowl
2 dessert-spoonfuls ground chillies
1½ dessert-spoonfuls coriander
½ tea-spoon saffron
10 red onions
5 green chillies

2 table-spoonfuls vinegar
2 inches rampe
Small bit of lemon grass
Small sprig of curry leaves
A piece of ginger chopped
3 cups thin milk
2 cups thick milk
Salt and lime to taste.

Method. Cut the fowl into neat joints and put them into a chatty with all the ingredients except the thick milk and the lime-juice. Mix well and cook over a slow fire till the joints are tender. By this time the gravy will be reduced, then add the thick milk and allow the milk to boil. Add lime and salt to taste.

4. PRESERVATION OF FOOD

In the air there are certain low forms of life such as yeast mould and bacteria. These get into food and if the temperature is right, multiply and grow very readily.

The yeast-plant grows if it has (1) sugar, (2) a temperature of 80°F. to 90°F., (3) a certain amount of air. In a warm sugary solution, the yeast acts on the sugar and breaks it up into carbon dioxide and alcohol. As the yeast-plants grow the foods are fermented. All vegetables and cereals are readily fermented by the action of yeast-plants.

Moulds multiply by means of spores. These spores float about in the air and when they settle

upon suitable substances and have the right temperature, dampness and darkness, each spore grows into a new plant. They are easily recognized in foods by their peculiar smell and taste. These moulds are often seen on stale bread, cheese, damp clothes and old shoes or leather. There are also other bacteria growing on food making it go bad. Meat, fish and milk very readily go bad owing to bacteria growing in them.

Cooked food does not go bad so quickly as uncooked, because the bacteria in the food has been killed while cooking. It goes bad as fresh bacteria from the air attacks it.

In order to preserve food, different methods are used. The chief of these methods are :—(1) Sterilizing and packing in hermetically sealed vessels, (2) drying, (3) addition of chemical substances, (4) cold storage.

(1) **Sterilizing and packing in hermetically sealed vessels.** Food goes bad because moulds or bacteria attack it. In contact with the air these grow causing the processes of decomposition to begin. Food can be preserved almost indefinitely by first killing all the bacteria or mould and then keeping the food from contact with the air. The food is placed in dry sterile jars or bottles or cans. These are heated sufficiently to destroy the bacteria or germs and then closed securely being hermetically sealed so that no air can enter. The success of the process depends upon the complete sterilization of

the contents of the vessel and the permanent exclusion of the air by sealing. The quality of the food depends of course upon the quality of the original supply and the care exercised in the processes.

The canning industry to-day is of the very greatest importance. The cans used are made of very thin iron coated with tin, but glass and earthenware vessels are also widely used. When a can is once opened the contents must be removed to a dish or plate. It will then keep no longer than fresh food.

In order to keep cheese from mould and its spores it is wrapped in grease proof paper or metal foil. Eggs are coated with grease to keep the air from penetrating the shells. This will keep eggs 'good' for several weeks.

(2) **Drying.** We have already seen that bacteria thrive in moisture. So a method of preserving food is by drying it. Milk powders, such as Glaxo, Lactogen are dried forms of milk. Maldive fish, dried meat, dhal, jak, breadfruit, cadjunut, and desiccated coconut are all dried foods. Sometimes the food is salted and dried to further facilitate drying. Salt is not only a preservative, but also a drying agent and to enable perfect drying of foods that are full of moisture salt is used. Mango, fish, lime, billing fruit are treated this way.

(3) **Addition of Chemicals.** Substances usually added to preserve food are salt, vinegar and sugar.

Salt. Salt fish, salt meat are common examples of salted foods.

Sugar. Before adding the sugar some of the moisture may be drawn off. Thus in the preparation of jams, jellies and preserves, sugar is added and the food cooked until a great deal of the moisture is extracted from it.

In condensed milk, much water is removed by means of heat. Sugar is added to the milk and all the air excluded when sealed in tins.

Vinegar. Vinegar and salt are sometimes used to preserve foods. Pickles are prepared in this way.

(4) **Cold Storage.** Bacteria are not destroyed by freezing, but they are made inactive and the growth is stopped. All kinds of food such as fruits, vegetable, fish, meat, and butter may be kept for months in perfect condition. As soon as the food is thawed it must be used or it will go bad.

RECIPES

PUMPKIN PRESERVE

Ingredients:

A well seasoned pumpkin
Sugar (1 pound to a pound of pumpkin)
Rose-water or vanilla essence.

Method. Cut the pumpkin into halves lengthwise, then into quarters and eighths until each piece is 2½ inches thick. The length of each piece should not be more than six inches. The green skin should be cut off leaving no trace whatsoever. Prick each

piece with a fork taking care that the pieces are not broken. Immerse the pieces in boiling water into which a little chunam is added. Place each piece on a strong cloth and squeeze out as much water as possible without breaking the piece. Weigh the pumpkin and take an equal quantity of sugar. Put the sugar into a pan with sufficient quantity of water and boil till it treacles. Then put the pumpkin in and boil until the water has evaporated. With the help of a ladle and fork cover each piece with the crystallised sugar until it is nicely shaped. Lay on a dish and allow to cool and harden before serving.

PINE-APPLE JAM

Ingredients:

2 pounds finely cut pine-apple
1½ pounds sugar.

Method. Boil the sugar in one cup of water till it treacles. Now add the pine-apple and boil. When thick take it off the fire and let it cool. Do not allow the jam to be too thick. Keep it in an air-tight vessel.

Ripe mangoes, Guavas, Billing, Lovi and Tomato can be made into jam.

WOOD-APPLE JELLY

Ingredients:

6 or 8 ripe wood-apples
2 pounds of sugar.

Method. Scoop out the pulp from the shells and weigh it. Put it into a pan and pour water till the pulp is covered. Boil well and allow it to cool and then strain with a piece of muslin cloth. Add the sugar and boil, stirring well, until the jelly is formed.

ONION AND CHILLY PICKLE

Ingredients :

1 pound onions
20 green chillies
1½ bottles vinegar
1 table-spoonful finely ground mustard
1 tea-spoonful ground chillies
A pinch of saffron
3 pips garlic, chopped
A bit of ginger, chopped
Salt to taste.

Method. Put half abottle of vinegar and the salt into a pan and boil the onions slightly. Remove the onions from the pan and put the chillies into the same vinegar and boil slightly. Put all the boiled onions, chillies and the gravy into a vessel and add all the other ingredients and the vinegar and mix well. Keep in an air-tight vessel.

TAMARIND CHUTNEY

Ingredients :

1½ pounds tamarind
½ pound sultanas
1 pound dates
30 cadjunuts
A little ground dry chillies
A small bit of cinnamon

4 pips garlic, chopped
A bit of ginger, chopped
6 cups of water
1 bottle vinegar
Salt and sugar to taste.

Method. Squeeze the tamarind in the vinegar. Add all ingredients and put in a vessel and boil until proper consistency is obtained.

COCONUT ICE

Ingredients :

¾ tea-cup coconut milk
1 pound sugar
½ tea-spoon vanilla.

Method. Boil the sugar in a saucepan adding ½ a tea-cup of water and when bubbling add the coconut milk and stir continuously over slow a fire till the mixture thickens. Then add the essence of vanilla and turn on to a buttered dish.

MILK ALUWA

Ingredients :

1 bottle milk
1½ pounds sugar
50 cadjunuts, cleaned and finely cut
1 dessert-spoonful essence of vanilla

Method. Boil the milk and sugar till it treacles. Add the cadjunuts and stir continuously over a slow fire till the water evaporates. Add the essence of vanilla and turn on to a buttered dish and cut in pieces. Allow to cool and keep in an air-tight vessel.

PART IV

SICK NURSING

1. CLASSIFICATION OF DISEASES

HOW GERMS ENTER THE BODY

We have learnt about the harmful germs which enter our body and cause disease. We also learnt that if the Phagocytes in our body are strong they attack these disease germs and conquer them and we are saved from disease. If on the other hand the Phagocytes are weak or are few in number they themselves are destroyed by the disease germs and disease is caused.

Disease germs enter our body in three different ways :—

(1) *Through the air and by droplet infection*, the germs entering in through the breathing tract. The diseases classified under this head are :— Influenza, Bronchitis, Pneumonia, Pthisis, Measles, Chicken-pox, Small-pox, Mumps, Whooping cough and Diphtheria.

(2) *Through food and water*, the germs entering the body through the digestive tract. The diseases which come under this head are :—Diarrhœa, Dysentery, Cholera, Typhoid or Enteric Fever, Tuberculosis of the bowels and Diphtheria.

(3) *Through the skin.* They may be injected into the body by insects or they may work their way through an abrasion. The germs enter the blood stream. Diseases under this head are :—Malaria, Dengue, Plague, Hydrophobia and Tetanus.

There are some diseases which are caused by the larvæ of worms and other parasites. Among these are itch, eczema, ring-worm, hookworm and thrush.

Before we deal with these diseases, let us see how germs may be destroyed in the human body.

(1) *By the cells of the body*, especially the Phagocytes.

(2) *By chemical substances.* Many of them are of the nature of ferments elaborated by the various cells for the purpose, such as anti-bacterial ferments and anti-toxins.

(3) *By natural immunity.* This is to some extent proportionate to the state of the general health. It depends on the power of the body tissues to either destroy the bacilli or neutralize their toxins. It may be a family condition or may depend upon age. Some families do not get malaria. Measles and whooping cough, etc. seldom attack adults. Old people seldom contract typhoid fever.

(4) *By acquired immunity.* This may be obtained (*a*) by an attack of the disease such as enteric, measles, mumps, etc ,(*b*) by vaccination with weakened or dead organisms as in small-pox, (*c*) by inoculation with anti-toxin as in tetanus and diphtheria or with bacterial sera as in enteric, plague and cholera.

2. PREVENTION OF SPREAD OF DISEASE

Diseases are spread from one person to another by (1) *Direct contact* with the skin, breath, excreta or discharge of infected persons. These are spread diseases such as diphtheria, influenza and cold. (2) *Indirect contact.* Anything which has been in contact with an infected person, clothing, bedding, books, etc. may harbour germs which will cause the disease in others. Carriers, parasites and insects such as flies also spread disease. Carriers are persons who carry the germs and spread disease without suffering from it themselves. Typhoid fever and diphtheria can be spread in this way.

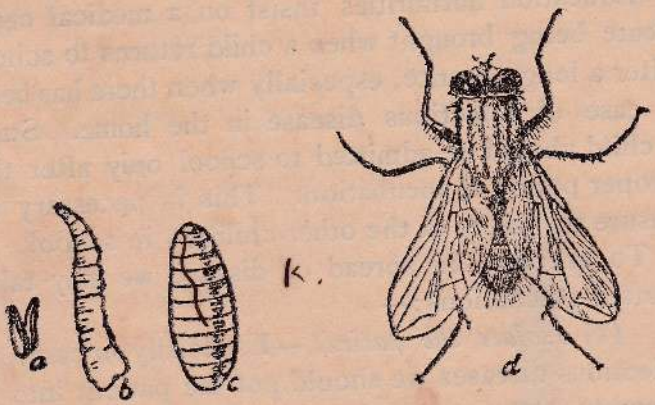


FIG. 33.—THE HOUSE FLY

a. egg; *b.* larva, or maggot; *c.* pupa case, or puparium; *d.* adult male (all enlarged.)

Flies and parasites such as bugs, lice, mosquitoes also carry disease germs and spread disease.

The period of time taken by the germ to develop in the body before the disease shows itself is called the *Period of Incubation.* These periods vary with the kind of disease and people coming in contact with an infectious disease during this period may develop it. The incubation period for common diseases in Ceylon are given below :

Measles	...	21 days
Chicken-pox	...	21 ,,
Mumps	...	21 ,,
Diphtheria	...	2–7 days
Typhoid fever	...	14–21 days
Dysentery	...	10 days
Plague	...	12 ,,
Cholera,	...	10 ,,
Whooping cough	...	16 ,,

Education authorities insist on a medical certificate being brought when a child returns to school after a long absence, especially when there has been a case of infectious disease in the home. Such a child should be admitted to school only after the proper period of incubation. This is necessary to ensure the safety of the other children in school.

To prevent the spread of disease we may take certain precautions :—

(1) *Isolate the patient.*—Especially in cases of infectious diseases we should put the patient into a separate room, away from the others who are healthy. In some cases patients have to be removed to hospital. In Colombo and other large towns there are special hospitals for infectious diseases.

(2) *Separate the contacts.*—Those who have been exposed to infections should be separated from the others because they may have got the germ into them which will in time give them the disease. The quarantine period varies with the kind of disease.

(3) *Disinfect.*—By means of various methods of disinfection we can destroy all germs and spores. Some of these methods are burning, boiling, use of liquid disinfectants, use of gaseous disinfectants and use of powders. Paper, swabs and articles of small value should be burnt, and clothes, boiled to kill germs in them. A sick room can be disinfected by burning sulphur in it, floors and drains disinfected with chloride of lime, or washed with carbolic acid in water.

(4) *Acquire immunity.*—We have already learnt about immunity in this chapter.

(5) *Notify the proper authorities.*—If there is a case of an infectious disease, those who are responsible for the health of the village or town must be notified about it. Precautions will be taken to stop the spread of disease and this will prevent epidemics.

(6) *Observe the laws of health.*—The resisting powers of the body will thus be maintained in as high a state of efficiency as possible. Fresh air, sunlight, pure water, good food, exercise and rest must be secured and the laws of cleanliness be observed. This method of preventing the spread of disease is far more effective than the others.

3. SIGNS, SYMPTOMS AND TREATMENT OF DISEASES

A. Diseases Caused By Germs Entering through the Respiratory Tract

Influenza. Symptoms are a severe cold, headache, fever and a slight cough. There will be pains in the body, especially in the limbs, abdomen and loins. In some types of this disease there is diarrhœa and vomiting. The immediate after-effect is extreme weakness. If influenza is neglected it may lead to bronchitis and pneumonia.

Treatment. Keep the patient warm in bed until the temperature is normal. During the fever stage, only liquid foods should be given. When the patient is convalescing give plenty of nourishing food.

Induce perspiration by giving hot drinks of boiled coriander and ginger or ginger tea. Coriander steam inhalations and Friar's Balsam inhalations are also effective. When bronchial troubles are noticed warmed oils such as Sarwavisadiya and camphorated oil may be rubbed on the chest and back. Keep the bowels open.

Doors and windows must be left open to give plenty of fresh air to the patient but chills must be prevented.

Influenza is highly infectious and care must be taken to stop the spread of disease.

Bronchitis is an inflammation of the bronchial tubes often caused by a sudden change of temperature. It is often produced by cold and damp. It may be a development of cold, influenza or measles.

The temperature is usually between 100°F. and 102°F. Mucous or phlegm will be present and the coughing is due to an attempt to clear the breathing tubes to let the air in to the lungs.

Treatment. Keep the patient warm and quiet in bed, until the temperature is normal. If breathing is difficult, keep the patient propped up comfortably in bed. When there is fever, only liquid food should be given, but the food should be nourishing. Milk, Malted milk, albumen water, orange drinks should be included in the diet. Plenty of water may be given.

Induce perspiration by giving hot drinks of boiled coriander and ginger and ginger tea. Steam inhalations of coriander, and Friar's Balsam will also help. Warmed oils such as camphorated oil and Sarwavisadiya may be applied on the chest. In severe cases Antiphlogistine plasters may be applied on the chest, under doctor's orders. Keep bowels open. Plenty of fresh air will hasten recovery but avoid chills.

When convalescing great weakness will be felt, so nourishing foods must be given. Cod-liver oil is most beneficial for illnesses of the respiratory tract. Neglected bronchitis may bring on pneumonia and pthisis.

Pneumonia. Inflammation of one or both lungs is caused by a specific germ called the pneumococci. When both lungs are inflamed it is double pneumonia and this is a very dangerous type of the disease. When the bronchial tissues are also inflamed the disease is called broncho-pneumonia.

This disease is often the further development of influenza, bronchitis and measles. It may also come on when the resisting power of the body and especially of the lungs is weak.

In pneumonia the onset is usually sudden and commences with a chill and pain in the chest. The temperature rises rapidly to 103°F. or even higher. The pulse is rapid and the respiration short and laboured. The face is livid and the nostrils dilate with each breath. There is a short painful cough. The patient will find it difficult to sleep.

Treatment. Put the patient to bed and keep her warm and quiet. Consult a doctor and follow his orders.

Good nursing is most important in pneumonia. Bring the temperature down by using cold packs or ice-bag. If the patient finds breathing difficult prop her up in bed with pillows. Till the temperature is normal only liquid food should be given and this must be nourishing. Milk, malted milk, albumen water, orange drinks, etc. may be included in the diet. These should be given in small quantities at short regular intervals. If food is not taken the patient will not have strength enough to fight the

disease. Drinking plenty of water will help to flush out poisons from the body.

Apply Antiphlogistine plasters on the chest under doctor's orders. A pneumonia jacket next to the skin will keep the chest warm. Allow plenty of fresh air but protect from chills. In very severe cases oxygen may be given.

Doctors are now able to treat pneumonia by hypodermic injections greatly reducing the danger and length of the disease.

When convalescing nourishing foods must be given. Cod-liver oil may be taken to great advantage. Change of air will be beneficial.

Pthisis or Tuberculosis of the lungs is caused by the tubercle bacillus in the lungs. The disease may attack any part of the body, bones, joints, glands especially in the neck, and in the bowels. It may be caused by eating or drinking infected food, milk or food exposed for sale on the road may carry the bacilli in them; by contact with the sputum when inhaled with the dust; by using feeding utensils, etc. of tuberculosis patients; by coming in contact with the discharge of tuberculosis wounds and sores.

The predisposing causes of this disease are lack of fresh air and sunlight, insufficient food, colds, general weakness of the body, overwork and heredity. It must be remembered, however, that it is the tendency to consumption that is inherited and not the disease itself.

The onset is gradual. The symptoms are low and continued fever (99°F.—100°F.) and peculiar cough. In the early hours of the morning the fever drops and the patient perspires profusely. The weight steadily decreases and a loss of appetite is noticed. The sputum is thick and blood may be present in it. Anæmia is a general symptom.

Treatment. It is most important that the patient should have plenty of fresh air. Hence living in the open air as much as possible is beneficial. The patient's room must have large windows which can be open both night and day. These will supply air and sunshine. The patient should rest in bed until the fever leaves her. Then she may indulge in gentle exercises and if it does not harm her, may be given out-door work with hours of rest between.

The food of a tuberculosis patient is of great importance. The patient must be induced to take the diet the doctor orders in as large a quantity as possible. Milk, egg, butter, fresh fruit, vegetable, fish may be included in the diet. Cod-liver oil may be taken to great advantage. In spite of the feeding up if the patient loses weight steadily she must be kept at rest. Sunlight and fresh air can destroy the bacillus better than any other agents.

For any type of tuberculosis this same general treatment should be given together with treatment for the special local attack.

To prevent the spread of disease the consumptive patients must not be careless about the disposal

of sputum and other discharge. When coughing or sneezing they should hold a handkerchief over their nostrils. Sputum cups or spittoons containing some disinfectant must be provided for them to spit into. The germs are in the sputum of the patient and it is most important that it should not be allowed to dry and the germs get into the air. Inhaling these germs with the air will spread the disease.

All crockery used by the patient must be kept separate and not used by others. The clothing should be washed separately and bits of rag used for mopping up sputum should be burnt. The excreta should be received into vessels with disinfectant and carefully disposed of.

The patient should sleep in a separate room. When cleaning the room the dust which may contain the tubercle bacilli should be taken up with a duster wrung out in a disinfectant.

Measles. The germ enters the body through the breathing tube. The first signs are a severe cold with running of nose and inflamed eyes with a watery discharge. There may be sore throat and cough. The temperature rises gradually. At this stage when the disease is most infectious there are no definite signs to distinguish it from an ordinary cold and the patient may mix with others and so spread the disease.

The characteristic rash appears on the third or fourth day, first behind the ears and on the face and then on the chest and gradually it spreads all over

the body. The rash is seen in patches and consists of small red elevated spots much smaller than those which appear in chicken-pox. These patches are separated by normal skin.

In a week the rash will fade and the temperature will be normal. This will be followed by the peeling of the skin. Bathing will help to remove this upper skin which will be full of germs.

Treatment. Isolate the patient. Give liquid diet till the temperature is normal. If the eyes are inflamed, straining should be avoided. Bathe them frequently with boric lotion until they are normal. Protect from chills. When convalescing give nourishing foods. Bronchitis, pneumonia and other respiratory tract diseases are developed through neglect in measles. So too much care cannot be taken of a measles patient. The after-effects of an attack are often most serious.

Chicken-pox. This is usually a mild disease. It begins with a rash. This is seen first on the back, shoulder, chest and then spreads quickly all over the body. It consists of red, widely scattered papules and soon they get filled with pus and are called pustules which scab and fall off in about a week. The skin is full of germs and, as in measles, bathing will help to remove the loose scales of the skin with the germs.

Treatment. Isolate the patient. Keep patient in bed giving only liquid food until temperature is

normal. Care must be taken to prevent the patient scratching the spots and causing scarring.

When convalescing give plenty of nourishing foods. Protect from chills. Avoid developments such as bronchitis and other respiratory troubles.

Small-pox can be prevented by vaccination, which is a protective measure adopted against small-pox. Vaccination is the introduction into the body of the virus of cow-pox. A very mild attack of this disease follows but there is no risk of it spreading as small-pox does nor is it in any way severe or dangerous. During this attack the body develops an immunity against cow-pox. It has been found however that while developing immunity against cow-pox the body has also developed immunity against small-pox, the small-pox germ being an exceeding fierce relative of the cow-pox germ.

The immunity lasts for about seven years. A child should be vaccinated during its first year and if the vaccination 'takes', need not be done again. To ensure greater safety we may be re-vaccinated about the age of twelve. If there is a case of small-pox, all within the vicinity and especially all contacts, should be vaccinated immediately.

Signs and symptoms. The onset is sudden and comes with shivering, fever, head-ache, vomiting and pain in the lumbar region. In children there may be convulsions. The temperature is high (104°F.—106°F.). The pulse is rapid. Great thirst is felt and the tongue furred. The rash appears the

fourth day on the forehead and quickly spreads over the whole body. The face especially is thickly covered. At this stage the temperature drops. The rash first consists of hard and red papules. These gradually soften and fill with fluid and appear like blisters. Three days later these papules turn to pustules. The temperature rises very high again. Then the pustules dry and scab. The fever subsides and the convalescing stage is reached.

Treatment. Isolate the patient. Notify the Health authorities. Quarantine contacts and revaccinate all the inmates. Carry out doctor's orders. No solids should be given during fever. Bring down the temperature. Protect eyes and ears. Care must be taken to prevent the patient scratching the erupted area and causing scarring. Germs like in measles and chicken-pox are in the skin. Prevent from chills. After-effects may be pneumonia, bronchitis and other respiratory tract diseases.

When convalescing give plenty of nourishing foods. Change of air will be very beneficial.

Mumps is caused by the inflammation of the parotid glands. There may be pain in the jaw accompanied by slight fever. Later swelling of the glands will be noticed. The gland may be tender and it will be difficult to open the mouth or to swallow. Both cheeks may be affected at the same time or one after another. They will regain normal size gradually in a few days or within a few weeks.

Treatment. Isolate the patient. Until the patient's temperature is normal give liquid foods. Feeding will be difficult because pain is caused by swallowing. Give small quantities of food at a time till acute symptoms disappear. Keep the bowels open. Hot fomentations on the swollen area are ordered. In Ceylon we sometimes apply red sandalwood and lime juice on the swelling. Protect from chills. Chill may harden the glands and give rise to ear trouble.

When convalescing give plenty of nourishing foods.

Whooping cough is a highly infectious disease usually marked by a spasmodic cough and by a whoop during inspiration when coughing. The first stage of the disease will be a slight cough, fever and a cold. This is the infectious stage but yet the time when we may overlook symptoms and allow the disease to spread.

After about a week the characteristic whoop may develop. During coughing there will often be vomiting, and in severe cases the child will find it difficult to breathe and go blue in the face. This cough will last at least two weeks and in severe cases even months.

Then the temperature will become normal and the coughing not so intense. This is the convalescing stage.

Treatment. Isolate the patient. If there is a temperature keep her in bed and give liquid foods

only. Try to ease the cough. For this follow doctor's orders.

During the second stage keep the child out of doors as much as possible. Protect from cold and avoid chills. Give liquid and semi-liquid food in small quantities. Support the head during a severe fit of coughing. When convalescing give plenty of nourishing foods. Cod-liver oil may be given. Change of air is also beneficial. Even adults may contact the disease. It is a very infectious disease, and may last many weeks. After effects of whooping cough may be bronchitis, or pneumonia.

Diphtheria is not a very common disease in Ceylon. It is a very dangerous and a highly infectious disease. By drinking contaminated milk, by direct contact and even by contact with carriers the disease may spread. The carrier may carry the germ at the back of her throat and transmit it when talking or sneezing.

The onset is usually gradual. First the patient will suffer from headache, a sore-throat, pain in the back and swelling in the glands of the neck. Then the fever will gradually rise. The tongue will be coated. If the throat is examined the tonsils, uvula and soft palate will be covered with a whitish membrane which will soon be yellowish in colour. This membrane may extend into the larynx, resulting in hoarseness, loss of voice, croupy cough or difficulty in breathing. If this membrane covers the

breathing tube suffocation will result. Suffocation and paralysis may cause death.

Treatment. Isolate the patient. Notify the proper authorities. Quarantine contacts. Consult the doctor and follow his orders.

Incubation period is short lasting from three to five days only. After effects of diphtheria may be deafness and bronchial complaints. When convalescing give plenty of nourishing food. Change of air will be beneficial.

B. Diseases Caused by Germs Entering Through the Digestive Tract.

Diarrhoea. The patient passes thin watery stools at short intervals. Pain in the abdomen may be present. The disease may be due to infection through dirty water, dirty food or infected milk. It may also be due to chills and indigestion. It is common in warm countries. In very severe cases great weakness will be felt and there will be prostration.

Treatment. If it is due to indigestion give a dose of castor oil in order to remove whatever causes trouble in the stomach and intestines. After castor oil take light food like plain tea, soft rice and pepper broth, etc. When the patient is normal, usual diet may be taken.

If the diarrhoea is due to a chill warm the region of the stomach and the intestines with the application of hot water bottles and warmed oils. If there

is vomiting and prostration let the patient lie quiet in bed. In all types of diarrhoea be careful about the diet. Avoid milk and milk foods. Arrowroot gruel, albumen water, pori-water may be taken.

If diarrhoea persists consult a doctor. If neglected it may develop into dysentery and chronic diarrhoea which will undermine the health a great deal.

Dysentery. This disease is caused by a bacillus or by an amoeba. The symptoms are diarrhoea and pain. The stools are very frequent and contain mucus and often blood as well. There may be fever, or the temperature may be normal. The pulse is rapid and feeble. The patient will be thirsty and there will be great weakness and prostration felt. The stools will be very offensive smelling especially when pieces of the lining membrane of the intestines are passed with the stools. The excreta is highly infectious and great care must be taken to disinfect it and keep flies from it.

Treatment. Consult a doctor and carry out his orders. Avoid milk and milk foods. Albumen water, arrowroot gruel, pori-water, toast water, and roasted rice congee may be included in the diet.

Iriwariya, a medicinal herb, is widely used in Ceylon to great advantage. Get the juice of this plant by crushing the stems. Immerse a red hot iron in this juice till it becomes heated, then drink about two tablespoonfuls once a day. A dose of castor oil or emulsified castor oil is often given to patients. After the castor oil weak tea and thin

gruels should be taken. Great care must be taken when the patient is convalescing. Gradually the patient who is weak must be strengthened with easily digested nourishing foods.

Cholera is a highly infectious disease. It is caused by the spirilla bacillus. It commences with diarrhoea, vomiting accompanied by severe pain in the abdomen and exhaustion resulting in cramp.

Treatment. Consult a doctor and carry out his orders. Notify the Health authorities.

The patient must lie flat on the back. Hot water bottles or heated bran bags must be applied to the abdomen to relieve pain. Collapse must be prevented.

The germs are in the excreta and flies may carry the germs into food and water and so spread the disease. Therefore use disinfectants freely for excreta and vomit and dispose of them carefully.

Enteric or Typhoid Fever is caused by a specific germ carried by food, water, flies and dust. The onset is gradual. The person will feel out of sorts and there will be a head-ache. The temperature rises gradually during the first week the evening temperature being higher.

Towards the end of the first week the symptoms become more marked and the temperature continues. The tongue is coated. Diarrhoea is usually present, the stools having the appearance of pea-soup. Sometimes, however, there is constipation. The

abdomen is distended and tender and pain will be felt. The cheeks are flushed. There is also much sweating. A rash sometimes appears on the abdomen.

At the end of the third week or after twenty-one days, the temperature falls rather suddenly. The symptoms become less severe and the patient longs for food. There may be bleeding from ulcers in the intestine.

Treatment. Keep the patient perfectly flat on her back until the temperature is normal. This is most important. As the illness is a long and wasting one great care must be taken to avoid bed-sores. The strength of the patient must be kept up by giving nourishing food such as albumen water, milk, malted milk, orange-juice, barley-water, etc. Small quantities at short intervals should be given. Plenty of water drunk will help to flush the poison from the body. Keep the skin clean by daily sponging and washing. All excreta and vomit must be disinfected and disposed of. If the germs from them are carried by flies to food or water the disease will spread. A contaminated water supply is a frequent source of the disease.

When convalescing give good nourshing foods. Remember that the after-effects last for about a year and so very gradually the body must be built up. Change of air will be beneficial. Great care is necessary during convalescence, slight carelessness, especially about food may easily produce a relapse.

C. Diseases Caused by Germs Entering Through the Skin

Malaria is caused by minute parasites which feed on the red blood cells and poison the system. When an anopheles mosquito bites a malarial patient, with the blood it takes into its body a large number of malaria parasites which live and grow in its body and attain full development within a fortnight. When the mosquito now bites a person the parasites are injected into his blood stream and they will live at the expense of the red corpuscles generating poisons. After about ten days the parasites are so numerous that attacks of fever commence. There are three types of malarial fevers :—

(1) Benign Tertian ague in which the attacks of fever occur every other day.

(2) The Quartan ague in which the attacks of fever occur every third day.

(3) Malignant Tertian ague which is always very serious as the fever is severe.

The common symptoms of all types of malaria are attacks of shivering, or ague followed by high fever ; and profuse sweating when the fever comes down. Great weakness is felt after the attack.

A malarial patient will be anæmic because the parasite lives at the expense of the red blood corpuscles in the blood. After a number of attacks the spleen becomes enlarged.

Treatment. Rest in bed during the fever, and bring the temperature down by the application of cold packs and ice-bag. Give plenty of iced water to drink.

After the sweating change into dry clothing. When the patient is cold and shivering cover with warm blankets, apply hot water bottles and give hot drinks of tea, etc. Do not give any alcohol. Until the temperature is normal give nourishing liquid foods such as milk, malted milk, orange drinks, etc.

Quinine is the remedy in malaria and if taken early and continuously is always effective.

If the fever does not come down after four days, consult a doctor.

When the temperature is normal it is necessary to build up the body with nourishing foods. Milk, fruit, fish, butter, eggs should be taken. This is most important.

To prevent malaria, destroy the breeding places of the malaria-carrying mosquitoes. Do not allow any stagnant water in the home or compound. Keep drains clean and in good condition. Do not allow coconut shells, old bottles anywhere round the house. 'No stagnant water, no mosquitoes'.

Protect from mosquito bites. In malarial districts sleep under a mosquito net. The net must really protect the person.

Dengue Fever is spread by the Culex mosquito. It is a type of fever and it leaves the patient very weak after the attack.

Plague is caused by a specific bacillus. There are three types of this disease:—

(1) Bubonic.
(2) Pneumonic.
(3) Septicaemic.

They are contracted by inoculation, inhalation by way of mouth. First it is a disease of rats. The flea lives on the body of the rat sucking its blood. When a rat gets plague the fleas take in large numbers of plague germs with the blood. When the rat dies the fleas leave the dead body and try to live on another live rat or on man sucking the blood from the host. Thus man gets infected. The plague germs multiply in the blood stream causing plague.

Treatment. Notify the proper authorities. Isolate patient and quarantine contacts. Follow doctor's orders.

Prevent plague by destroying rats. Keep a cat which catches rats. Allow no home for rats. Provide no food for rats by carelessly dropped pieces of food or refuse. 'No rats, no plague.'

Hydrophobia or rabies is caused by the germs in the saliva of a mad dog getting into the human blood by its bite; or even by its lick if there is a wound on the skin.

When bitten by a mad dog remove the patient to the Pasteur Institute, Baseline Road, Borella, Colombo, where she will receive anti-toxin injections to prevent hydrophobia. Even if you are doubtful

about the dog being rabid it is best to take her to the Pasteur Institute.

Tetanus is caused by a germ from the garden soil entering through an open wound into the blood and generating poison in it. In Ceylon where people walk barefooted wounds are commonly caused by rusty nails, barbed wires, etc.

If these are neglected tetanus germs can enter and cause tetanus which often prove fatal.

To prevent tetanus, cleanse the wound with a disinfectant such as lysol and water. Then paint with tincture of iodine. If it is a clean wound apply iodine without washing it. On an old wound made by a rusty nail apply a little asafœtida heated over the fire and bandage; as a preventative we often take coriander and venivalgata or baanval gata (a medicinal root) boiled with coriander. If threatened with tetanus a doctor should be consulted at once.

An anti-tetanus injection will prevent the disease, because it will be powerful enough to act against the toxin generated by the tetanus germ.

All open wounds must be kept clean and bandaged to prevent germs from entering.

D. Diseases Caused by Larvae and Other Parasites

There are some diseases which are caused by larvæ of worms and parasites. They are the hook-worm and other worm diseases, scabies or itch, eczema, ring-worm and thrush.

Hook-Worm Disease (Anchylostomiasis) or Pandu is a preventible but very common disease in Ceylon. This disease is caused by the entrance of the larvæ of the hook-worm into our bodies either through the skin or through food and water.

The larvæ which are microscopic when they enter the body develop into worms which hook themselves to the lining of the bowels. They live and grow in the intestines feeding on the good materials of the blood. They move from place to place leaving behind sores. They bite the lining of the intestines and suck the blood; at the same time they inject poisons which are carried by the blood stream to all parts of the body. The patient becomes anæmic, weak and ill. He may suffer from head-ache, dizziness, and indigestion and be unwilling to work or to play. He may also have a strong desire to eat raw rice, clay, charcoal and earth. Children suffering from the disease grow very slowly, they are often thin and small for their age. In severe cases the body becomes badly swollen. The vitality is so sapped by the hook-worms that if attacked by any other disease the patient has but little strength to fight it.

When the hook-worms are fully grown, the female worms lay thousands of microscopic eggs, but the eggs never hatch in the intestines, they pass out of the body with the excreta. On warm moist soil these eggs will hatch into microscopic larvæ. When people walk bare-footed on such contaminated soil

or if they meddle with it the larvæ sieze on to the skin of the feet or hands and work their way through the pores into the blood. The blood carries them into the intestines. Especially during the rainy season is the bare-footed walker liable to get ground itch where the larvæ pierce the skin causing itching and scratching.

If the larvæ from excreta or from dirty soil get into drinking water, they may be taken into the body and reach the intestines where they develop into worms.

Sometimes fruit falls on the ground where larvæ are and if the fruit is eaten without being washed the larvæ may find entrance to the body. Leaves eaten raw or unwashed may have larvæ on them.

To prevent the hook-worm disease :—

(1) Be careful about the disposal of excreta. Have well-built latrines, and see that they are used properly.

(2) Do not walk bare-footed on dirty soil or where the hook-worm larvæ are likely to be.

(3) From time to time be examined and treated if necessary for this disease.

(4) Never eat unwashed fruit and leaves.

(5) Do not play with dirty soil.

Treatment. The medicines for the cure of hook-worm can be obtained free from a Government Dispensary. There are two medicines used :— one is Chenapodium oil made from a weed called 'Hedakansa' or panupilla, a weed which grows in

Ceylon, India and other countries; the other is an imported medicine called Carbon Tetrachloride. These medicines should be taken only under a doctor's orders.

Round Worms resemble the common ground worm but are paler. They are of varying lengths from 3 to 12 inches moving about in the digestive tract. Sometimes they are vomited from the mouth.

Children suffering with this worm-trouble will refuse food, grind the teeth when sleeping, scratch the anus and the nose there will be fever, pain in the stomach, vomiting and even convulsions.

Treatment. Consult a doctor. The doctor usually gives Santonine powders. These are followed by a dose of castor oil.

Thread-Worms resemble little bits of white thread. Hence the name. They live in the lower part of the bowel.

Treatment. Give a salt and water enema twice a day for a few days. Four oz. of water may be given at a time. (1 tea-spoonful of table-salt to a pint of water). Keep the bowels open.

Under doctor's orders Santonine powders may be given. These should be followed by a dose of castor oil.

Scabies or Itch is a disease caused by little creatures called itch mites. They burrow into the skin, especially in the creases between the fingers, and at the wrists. Each burrow is about $\frac{1}{8}$ of an inch to $\frac{1}{2}$ of an inch long at the end of which the

mother itch mite lays her eggs. Little black lines on the skin mark the burrows. After a few days, the eggs hatch out into young ones. These crawl

Fig. 34—GROUND ITCH

Note the eruption on the foot and between the toe s and the swelling of the surrounding parts.

about underneath the skin causing intense itching, and scratching produces a troublesome eruption.

Treatment. Isolate the patient. Soak the affected part for about ten minutes in hot water into which a little disinfectant may be added. Carbolic

acid, Dettol or Hydrogen peroxide would do. After the skin has been thus softened scrub the affected area with a bit of coconut husk and carbolic soap. Rinse the soap off and dry well with a piece of rag.

Next rub some sulphur ointment (flowers of sulphur and coconut oil) well into the affected area. Bandage with rags. Repeat this treatment twice a day for about seven days. Marcussen's ointment is more effective than sulphur and the treatment shorter.

As itch is a highly contagious disease the clothing of the patient should be boiled and bandages burned. Do not touch anything handled by the patient.

Ring worm is caused by microscopic plants known as fungi. Although this disease is called ring-worm it is not caused by a worm but by a vegetable parasite growing on the skin.

The disease is very contagious and may be spread by the use of brushes, combs, towels, hats of patients. Any part of the body may be affected. A round spot may be noticed, this will spread outwards at the margin and die away at the centre, thus forming a ring. When it attacks the scalp, the hairs over the area break off near the skin.

Treatment. Isolate the patient. Scrub the spot with hot water and carbolic soap. Then apply iodex. Repeat this treatment twice a day until the skin is whole.

Gun-powder and lime-juice may cure the itching. If the ringworm persists consult a doctor.

Eczema. This skin trouble comes in any part of the body. Eczema varies from a simple scaliness of the skin to a red patch from the surface of which there is a constant discharge which afterwards dries up and forms a crust that is hard to remove. Constant scratching with finger nails will probably result in blood-poisoning. In milder cases eczema may be caused by failing to keep the skin clean and dry, by bites of parasites, and by hookworm larvae which produce ground itch.

Treatment. Wash the infected area with warm Condy's fluid. If the scabs are hard to remove apply bread poultices. The poultice should be changed every hour. Now remove the scabs by soaking the area with clean oil. Dry and apply Zinc ointment or Zinc powder.

Very old coconut oil (over ten years') has proved effective. Bandage with clean bandages especially if oils are used. Give good nourishing foods especially if there is mal-nutrition. Bowels must be regulated. Cod-liver oil and fruit juices are very beneficial to eczema patients.

Thrush is caused by a fungus growing on the mucous membrane of the mouth and the throat of a child. It is caused by sour milk, dirty bottles and teats, etc.

Treatment. Clean the mouth with glycerine and borax till the thrush disappears.

Give plenty of fruit juices such as orange-juice, tomato-juice, pomegranate-juice, etc.

PART V

FIRST AID

1. LOSS OF CONSCIOUSNESS

Fainting. This is due to failure of the action of the heart and the consequent insufficient supply of blood to the brain. It is usually brought on by fright, hunger, tiredness, heat, excessive bleeding, sudden grief, etc. A person fainting suddenly turns pale, feels giddy and will fall down and lie still owing to lack of consciousness.

Treatment. Find out the cause of fainting. If the patient is sitting down and has not completely fainted, bend the body forward till the head is between the knees. Keep this position for a little time. If unconscious lay the patient on her back keeping the head lower than the body to help the flow of blood to the brain. Loosen all clothing and sprinkle a little cold water on the face. Apply smelling-salts to the nose and if these are not available a crushed onion is a good substitute. Give as much fresh air as possible by having doors and windows open and by not allowing a crowd to gather round.

When she is recovering give her a drink of hot tea, coffee or any other mild stimulant but nothing

should be poured down the throat while she is unconscious.

If fainting is due to bleeding it must be stopped and the wound dressed. If it is due to extreme exhaustion stimulants and food must be given to strengthen the patient.

Fits of Hysteria are now not so common as they used to be. Women suffer from hysteria more commonly than men. The fit comes on usually after some excitement when there is lack of self-control. Alternate laughing and crying are noticed and the patient may fall down as in a faint but not much harm will result from it for the patient will take care that no harm comes to her.

Treatment. Put the patient in a quiet room and let her sleep. Do not give sympathy. Deal firmly with her. Wetting the head with cold water will induce sleep and she will get up from sleep free from fits.

Fits of Epilepsy are due to brain trouble. They begin in youth and may continue to old age. They may be mild or severe and when mild the unconsciousness is only for a short time. When severe the patient screams and falls down and becomes rigid. The hands are clenched and the legs and arms jerked to and fro. The face becomes distorted and froth comes out of the mouth. Owing to lack of nerve control, the eye balls roll about and the patient may try to bite the tongue. These convulsive movements subside after some time and the patient falls asleep.

Treatment. See that the patient does not harm himself when he falls. Prevent the patient from biting the tongue by putting something hard such as wood or cork between the teeth. Put something soft under the head. Loosen all clothing. When the fit is over let the patient sleep quietly.

Convulsions occur in children. They come on quite suddenly and for seemingly trivial reasons. This is a nervous trouble and is usually caused by high fever as in malaria and measles; by extreme exhaustion in prolonged illnesses as in dysentery and diarrhoea; by teething troubles, by stomach troubles as constipation; and by worm troubles.

In a typical case of convulsions the child becomes unconscious and the body becomes rigid. The eye-balls roll upwards showing only the whites and the face becomes pale. The teeth are clenched and the neck is stiffened.

Treatment. Immerse the child in a bath of warm water (100°F.—105°F.) for at least 5 minutes. Add a little mustard to the water (1 dessert-spoonful to a gallon of water) to make it more effective. Simultaneously bathe the head with very cold water. A piece of ice, or a little eau-de-cologne may be added to make the water colder and the result better and quicker.

Now wrap the child in a towel, wipe dry and dress in warm clothes. Protect from chills. Do not on any account pour anything down the throat until consciousness is regained. If the fit is due to

constipation give an enema. It may be necessary to give a dose of castor oil, when the child is normal.

After the attack the child must be kept quiet and put to sleep. Sleep is necessary for the nerves. If the fits are repeated or if they last a long period of time a doctor should be consulted.

Shock is sudden prostration due to accidents and injury. The patient will have a subnormal temperature. The skin will be cold and wet, the pulse feeble, the face pale and breathing shallow.

Treatment. Let the patient lie in bed quietly. Loosen all clothing. Apply heat to the body in as many ways as may be necessary. If conscious give drinks of hot tea, coffee, ginger tea, essence of ginger and water or salvolatile. Hot water bottles, warmed oil, heated bran bags may be used for giving warmth to the patient.

Concussion or stunning is sudden loss of consciousness and failure of the heart. It is due to a severe blow on the head. Unconsciousness may last a minute or so, or many hours according to the seriousness of the blow. The pulse will be weak, either rapid or slow, and breathing shallow. The limbs will be relaxed.

Treatment. Send for a doctor immediately. Keep the patient very quiet. Apply cold to the head. Do not give stimulants.

Sunstroke is contracted by exposing the head and spinal column to excessive heat of the sun. It

occurs usually in the tropics and commonly among Europeans who are not used to the strong rays of the sun. Drinking alcohol in the heat of the day predisposes people to sun-stroke.

In a severe case there is vomiting, prostration and unconsciousness. The face is flushed, the pulse quick and the temperature high.

Treatment. Remove the patient to the coolest place available. Loosen all clothing and if necessary strip clothing down to the waist. Bathe the head and neck with cold water, or apply ice to the head, neck and face. When consciousness is recovered give a drink of water.

Electric Shock. In these days when electricity is common and so many homes have electric lights, and some electric cookers, refrigerators and wireless sets worked by electricity, it is very necessary that we should know what to do in cases of electric shocks and burns, caused by contact with live electric wires. First remove the person from contact with the electric current. When about to do this remember that the current can pass from her to any who come in contact with her unless properly insulated or protected from electric shock. Wherever possible *switch the current off.* If this is not possible use an insulator.

There are certain substances such as rubber, silk, dry paper and wood which are non-conductors of electricity or insulators. To get the person away from the current stand on a non-conductor of

electricity such as a folded mackintosh, sheets of rubber, a wooden plank or a heap of dry paper. Anything wet is a good conductor of electricity, so if paper is used it must be perfectly dry. Then wrap your hands in a material that is a non-conductor of electricity, and pull the person away from the contact.

Treatment. If the breathing has stopped render artificial respiration. If unconscious treat for shock and help to regain consciousness. If there are electric burns treat as for ordinary burns and scalds, but these burns are more difficult to heal.

If it is a serious case send for a doctor and give this First Aid till he arrives.

Apparent Drowning. Among common accidents in Ceylon drowning is one. It is very necessary to know what First Aid should be given in such cases.

Treatment. Send for a doctor. Meanwhile do all you can to revive the apparently drowned person. Loosen all clothing especially from the neck, chest and abdomen. Clear the mouth, nose and throat of froth, weeds, or dirt. The tongue should be pulled forward so that it hangs out of the mouth. The patient should be turned over on one side. The chest should be rubbed and the nostrils excited with a feather or smelling salts. If the person does not start breathing when this is done, artificial respiration should be started immediately. If the patient regains the power of breathing then all efforts must

be made to promote warmth and normal circulation of blood.

Artificial Respiration. To render artificial respiration place the patient face downwards on the ground with head turned to a side and with a folded cloth under the lower part of the chest. Kneel astride the patient's body, facing the head. Lean down and place your hands flat over the lower part of the back, one on each side, and gradually throw the weight of your body forward on them so as to produce firm pressure upon the patient's chest. In this way the air and water will be driven out of the patient's lungs. After this raise your body slowly so as to remove pressure but do not remove your hands from their position.

Continue this backward and forward movement twelve or fifteen times to a minute without a pause between the movements until normal respiration is resumed. Now turn the patient face upwards and apply heat to the body in as many ways as necessary. Warm clothing, hot water bottles, heated sand-bags, warmed oils such as margosa oil and Sarwa Visadaya may be used to warm the body of the patient. Dry ginger powder applied on the skin and rubbed in an upward direction is very effective in extreme cases.

Hot drinks and even brandy may be given to promote circulation. Anything given by way of mouth should be given only when the patient is conscious and when normal breathing is established.

Poisons. The general symptoms of poisoning are pain in the mouth and stomach, vomiting, cramp in the legs and unconsciousness. Immediate action is necessary because some poisons act very rapidly and cause death.

Treatment. Send for the d o c t o r and until he arrives do all you can to counteract the poison.

All poisons are divided into four groups :—

(1) *Corrosives*—strong alkalies and acids which burn the mouth, tongue, and digestive tracts.

(2) *Irritants*—which become harmful when they reach the stomach. They produce inflammation, vomiting and diarrhoea.

(3) *Narcotics*—which produce sleep and insensibility.

(4) *Deliriants*—which affect the brain.

Corrosives. If a corrosive poison is taken do not try to make the patient vomit. This will cause more burning of the tissues. If the poison is an alkali give as an antidote vinegar in water, lime-juice, orange-juice or any other mild acid. Then give soothing things such as raw eggs, olive-oil.

If the poison is an acid give as an antidote a mild alkali such as plaster from walls in water, milk of Magnesia, Epsom Salt, etc. Then soothing drinks of raw egg, olive-oil, etc.

Irritants. If an irritant is taken give an emetic such as salt and water or mustard and water and remove as much of the poison as possible. Then give soothing drinks.

In phosphorus poisoning do not give oils.

Narcotics. Give an emetic and induce vomiting. Do not let the patient fall asleep. Strong coffee and tea may be given to keep them awake. Make them walk about till the doctor arrives and flick the skin with the ends of a wet towel. After this give an antidote. A good antidote for morphia or opium poisoning is Condy's fluid.

Deliriants. Remove as much of the poison as possible by giving an emetic.

If unconscious apply smelling-salts to the nose.

In a severe case of poisoning, it may be necessary to apply artificial respiration.

Ptomaine Poison. We have already learnt that bacteria act on foods forming toxins in them. When this spoilt food is eaten the usual symptoms of poisoning occur. There will be intense pain in the stomach, cramp, vomiting and loss of consciousness and diarrhoea.

Treatment. Send for a doctor. Remove as much of the food as possible by means of an emetic. A dose of castor oil may be given afterwards.

In all cases of poisoning send for a doctor and meanwhile do all you can to save the patient. Do not leave the patient alone until the doctor arrives.

2. A FIRST AID CUPBOARD

In the school and in the home a well-equipped First Aid cupboard is essential. It should have everything necessary for rendering help in a case of accident and emergency. In a sick-room this cupboard should also contain things required for general sick-nursing.

The cupboard itself should be made of good durable wood. It may be divided into three partitions—upper and lower, as in sketch. The upper partition may be divided again into two, one for containing poisons, and this should be under lock and key, and the other for medicines which are not harmful.

The lower partition will contain bandages, lint and other sick-room requisites.

The poisons which are contained in the First Aid cupboard are :—

Tincture of Iodine—the best skin disinfectant. It is used for cuts and wounds.

Lysol—a strong disinfectant. It is used diluted ½ tea-spoonful to 1 pint.

Liniment—for sprains. Used also to be rubbed on chest in bronchitis and chest colds.

Morcussen's Ointment—excellent for itch.

Strong Acids—such as carbolic acid.

Strong Alkalies—such as ammonia.

Note.—All liquid poisons must be contained in peculiar shaped bottles bearing red label with the

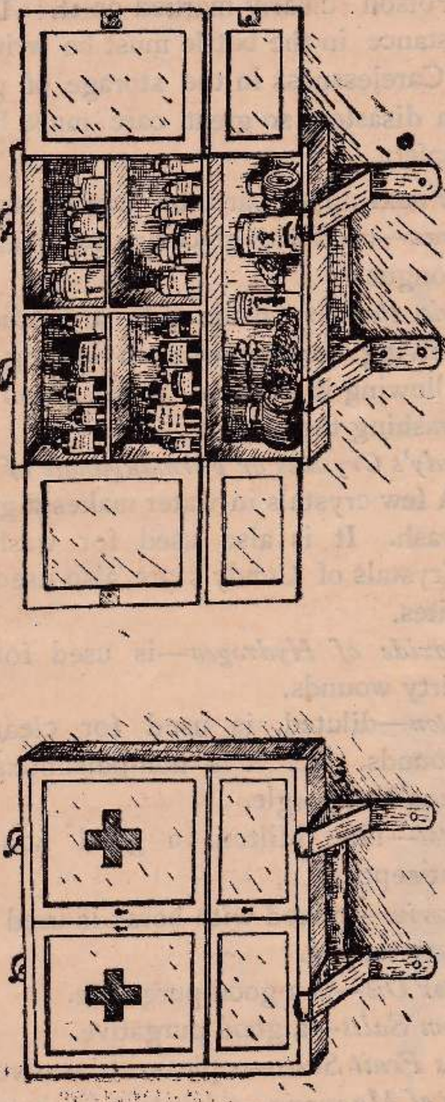


FIG. 35.—FIRST AID CUPBOARD.

word 'Poison' clearly marked on it. The name of the substance in the bottle must be written on the label. Carelessness in the storage of poison may result in disaster, so great care must be taken to ensure safety.

In the next upper partition may be stored :—

Borax—used with glycerine for cleaning a dirty tongue.

Boric Powder—made into a solution by dissolving boric powder in boiling water and allowing it to cool. Boric lotion is used for washing the eyes.

Condy's Crystals or Permanganate of Potash—A few crystals in water makes a good mouth wash. It is also used for washing sores. Crystals of Condy's are also used for snake bites.

Peroxide of Hydrogen—is used for cleaning dirty wounds.

Milton—diluted, is used for cleaning dirty wounds. As it is non-poisonous it is an excellent gargle.

Dettol—like Milton, a good non-poisonous antiseptic.

Glycerine—mixed with borax is used to clean a dirty tongue.

Castor Oil—is a good purgative.

Epsom Salts—a good purgative.

Eno's Fruit Salts—a pleasant laxative.

Milk of Magnesia—a laxative for babies.

Gripe Water—for pain in the stomach for babies.

Essence of Ginger—a stimulant for stomach ache.

Sal Volatile—a good stimulant—a substitute for alcohol without its harmful effects. Taken diluted.

Comphorated Oil—for bronchitis and chest colds. It may be warmed and rubbed on the chest.

Siddartha Thailaya—a red oil applied on the chest for chest troubles. It may also be used for catarrh.

Oriental Balm—may be used to soothe pain in any part of the body. It is especially good for headache.

Red Sandalwood—with lime-juice is applied on the skin for insect bites and swellings.

Bicarbonate of Soda—A solution of bicarbonate of soda is used for burns. Very effective for bites of poisonous insects. A weak solution ($\frac{1}{2}$ tea-spoonful in a cup of water) for flatulence or dyspepsia.

Smelling Salts—to smell in fainting.

Eucalyptus Oil—to be inhaled for a cold.

Antiphlogistine—for inflammation in any part of the body. Extensively used in cases of pneumonia and bronchitis, applied on the chest warm.

Mustard—plasters made with mustard applied where there is inflammation. Added to the warm bath in convulsions. Mustard and water are an emetic.

Ichthyol and Belladonna—applied on the skin for inflammation.

Iodex—for skin troubles.

Vaseline—for redness of skin.

Zinc Ointment—for *eczema.*

Zinc Powder—a drying agent—for navel wound.

Eau-de-cologne—with water to wet the head and forehead—to bring down temperature of fever patients.

Rectified Spirits—a drying agent. To prevent bed-sores rub with rectified spirits and sprinkle with dusting powder. Used also for the navel wound.

Quinine—for fever.

Rhubarb Powder—for little children.

Sulphur Ointment—for itch and other skin troubles.

In the lower partition the following may be stored:—

Boric lint—used as fomentations on wounds.

Cotton wool—for absorbing discharges from wounds and sores, and moisture; and for the retention of heat.

Roller and triangular bandages.

Also Scissors, Safety pins, plenty of clean white rag, splints, clinical thermometer, syringe, ice-bag, hotwater bottle, enema, bed-pan, feeding cup, measuring glass, soap, powder, etc. This part of the cupboard need not be locked up.

3. ROLLER BANDAGING

There are three kinds of bandages generally in use :—(1) triangular bandages used in First Aid. (2) Roller Bandages. (3) Special Bandages such as 'Many tailed', 'Four tailed' and 'T' bandages.

Bandages are used to cover and retain dressings and splints; to provide support for a part, as a sprained ankle or a dislocation; to exercise pressure on a part in order to prevent or reduce swelling; to restrict movement and to secure a limb in a required position.

Materials used are gauze, muslin, unbleached calico, flannel, crepe, crinoline and book-muslin.

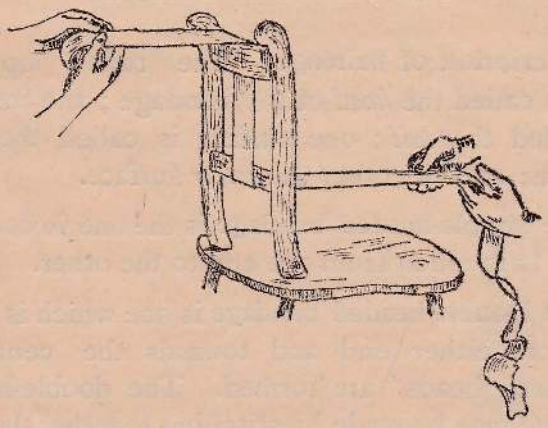


FIG. 36.—ROLLING A BANDAGE

To make bandages. Remove the selvedges from the material, tear it into strips of the required width and length, remove all loose strands from the

edges; roll evenly and tightly by hand or by machine.

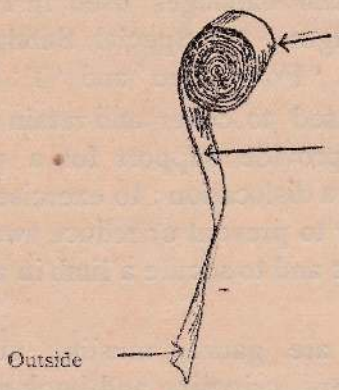


FIG. 37.—THE ROLLER BANDAGE

Description of bandage. The rolled up portion is called the *head* of the bandage; the free end is called the *tail*; one surface is called the *inner* surface; and the other the *outer* surface.

The Simple-headed bandage is the one in common use. It is rolled from one end to the other.

The Double-headed bandage is one which is rolled up from either end and towards the centre so that two 'heads' are formed. The double-headed bandage may be made by stitching together the ends of the single-headed bandages of equal length and width.

Rules for Bandaging—1. Stand opposite the part to be bandaged and at the side, except in

the capelline bandage for the head. 2. Place and support the limb in the required position before application of bandage. 3. Hold the bandage with the 'head' uppermost and apply the outer surface of the bandage to the part to be bandaged. 4. Always bandage from within outwards. 5. Begin bandaging at the bottom and work upwards. But in bandaging the abdomen bandage from above downwards. 6. In bandaging limbs, the head of the bandage should be held in the right-hand when the limbs of the left are bandaged and *vice versa*. 7. Never have more than a few inches of the bandage unrolled. 8. Secure the bandage with two turns of spirals and let each successive turn cover 2/3 of the previous turn. 9. No turn or knot should be made over a bony prominence. Pressure throughout must be even. 10. Keep all margins parallel and let crossings and reversings be in a line towards the outer aspect of the limb. 11. Finish off by fixing the 'tail' neatly and securely with a safety-pin.

THE VARIOUS FIGURES USED IN BANDAGING

(1) *Spiral*—used for limbs of equal dimensions.

(2) *Reversed Spiral*—used in conjunction with spiral for those parts of the limbs which vary in thickness.

(3) *Figure of Eight*—used for joints and also for parts where firm application is needed.

(4) *Spica*—name given to Figure of Eight bandage applied to a part which is at right angles to the trunk or limb, e.g. shoulder, hip, thumb, etc.

METHOD

The Spiral Bandage. Beginning at inner side of the limb with the outer surface against the limb take the bandage round and round, each layer covering 2/3 of the previous one and leaving 1/3 of it exposed.

Reversed Spiral. Begin with one or two spirals. As the more muscular part of the limb is reached the spiral turns will not lie evenly on the limb, the lower edge remains loose. To overcome this the bandage is reversed and the 'reversed spiral' is used. One hand, the free hand, will be supporting the limb while the other holds the bandage. With the fingers of the free hand support the limb, bring the bandage round from the back of the limb keeping its head sloping upward so that the bandage lies flat on the skin. When it reaches the front of the limb place the thumb upon it near the top edge holding the upper half firmly, give the bandage a half twist, bringing the head of the bandage downward so that the upper edge folds over the thumb. This turns the bandage to the other side or 'reverses' it. Continue to hold the reverse with the thumb and carry the bandage right round the limb and overlap the previous turn;

then move the thumb up and repeat the reverse turns until a more even part of the limb is reached when the ordinary spiral can be used. Like the spiral each reverse spiral must overlap 2/3 of the previous turn leaving 1/3 exposed.

Figure of Eight. Bring the bandage over the front of the limb, then obliquely upwards round the limb behind and down over the first crossing the first turn just like the figure 8.

Spica. Apply as described for Figure of Eight, making one loop round the limb; the second loop which is much longer, is made round the trunk and brought down over the front of the limb to cross the first loop thus making the pattern.

The following bandages may be practised.

(1) Hand (Fig. 36).
(2) Hand and arm (Fig. 37).
(3) Foot (Fig. 38).
(4) Foot and leg (Fig. 39).
(5) Elbow (Fig. 40).
(6) Knee
(7) Shoulder (Fig. 41).
(8) Head (Fig. 42).
(9) Heel (Fig. 43).
(10) Eye (Fig. 44).
(11) Ear (Fig. 45).
(12) All the fingers (Fig. 46).
(13) Thumb (Fig. 47).
(14) Middle finger (Fig. 48).

Bandage for Hand. Pronate the hand; hold palm downwards, begin by taking a half turn round the wrist and carry the roll obliquely over the back of the hand to the side of the little finger. Carry

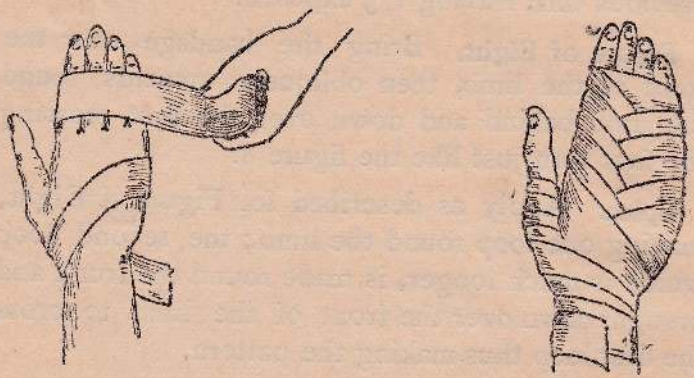


FIG. 38.—THE HAND BANDAGE

the bandage round the palm encircling the fingers with one horizontal turn so that the lower border of the bandage just touches the root of the nail of the little finger. Carry bandage once more round the palm and then return obliquely to the wrist. Make a few Figure of Eight turns round the wrist and hand until the hand is covered and the bandage is fixed with a few spiral turns round the wrist.

Bandage for Wrist, Forearm and Upper Arm. Bandage the wrist and forearm by the use of the simple and reverse spiral until the elbow is reached, continue over the upper arm leaving the elbow uncovered. (Fig. 37.)

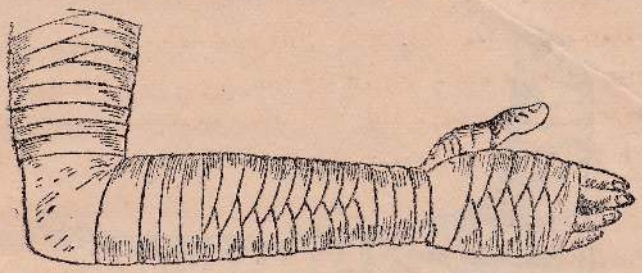


FIG. 39.—THE HAND AND ARM BANDAGE

Examination of the illustrations will show where each kind of bandage will normally be used. The simple spiral at wrist and ankle; the reversed spiral at the swellings of arm and calf; the Figure of Eight at the joints; the modified Figure of Eight for the heel; the double headed bandage used for the head.

Bandages are chiefly used to keep dressings in place and where the dressings are bulky discretion must be used as to the method of bandaging followed. The bandage must be firm enough to keep the dressings in place but not so tight as to cause pain or restrict circulation.

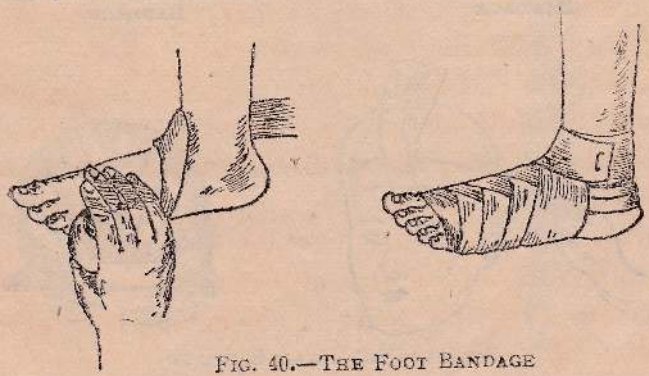


FIG. 40.—THE FOOT BANDAGE

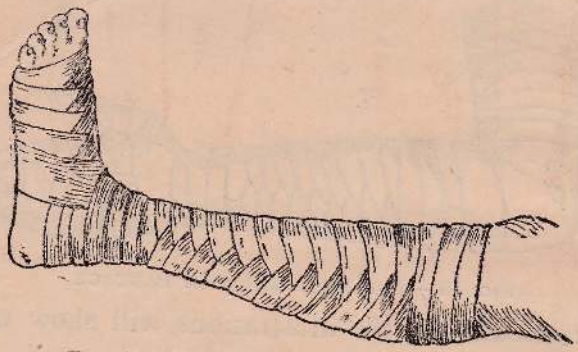


FIG. 41.—THE FOOT AND LEG BANDAGE

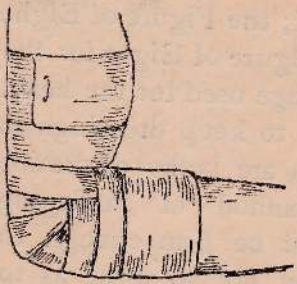


FIG. 42.—THE ELBOW BANDAGE

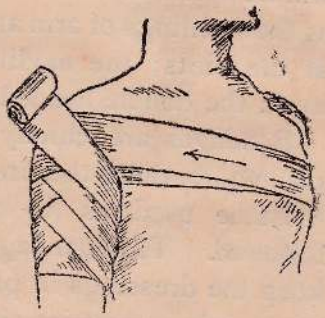


FIG. 43.—THE SHOULDER BANDAGE

FIG. 44.—THE HEAD BANDAGE

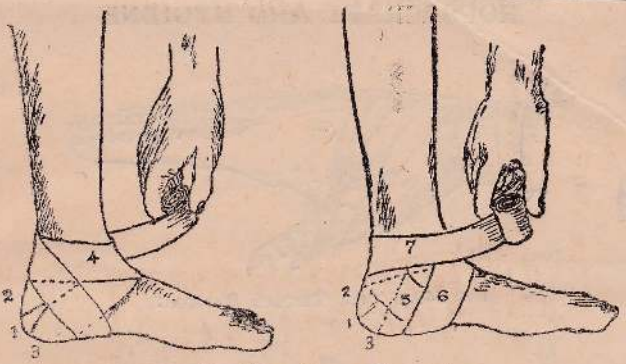


FIG. 45.—THE HEEL BANDAGE

FIG. 46.—THE EYE BANDAGE

FIG. 47.—THE EAR BANDAGE

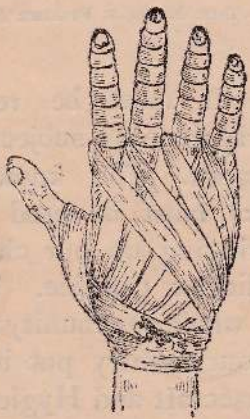


FIG. 48.—THE BANDAGE FOR ALL THE FINGERS

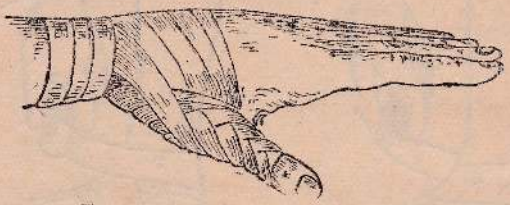


FIG. 49.—THE THUMB BANDAGE

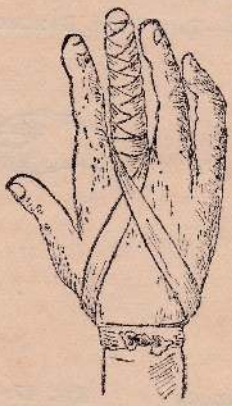


FIG. 50.—THE MIDDLE FINGER BANDAGE

In conclusion it must be remembered that Housecraft and Hygiene are subjects of the utmost practical importance. The knowledge obtained from these books must be used in running our homes and in bringing up our children. Theory must lead to efficient practice. The health and well-being of the whole community will be benefited as the women of our country put into practice the principles of Housecraft and Hygiene taught here.

INDEX

சா. பி. சபையின் வரணி உபஅலுவலகம்

நூலகம்

இந்நூலை கீழ்க்காணும் திகதியன்றோ அதற்கு முன்னரோ திருப்பி ஒப்படைத்தல் வேண்டும். தாமதமாகும் ஒவ்வொரு நாளுக்கும் ஐம்பது சதம் தண்டமாக அறவிடப்படும்.