MEDICAL

QUIZ BOOK

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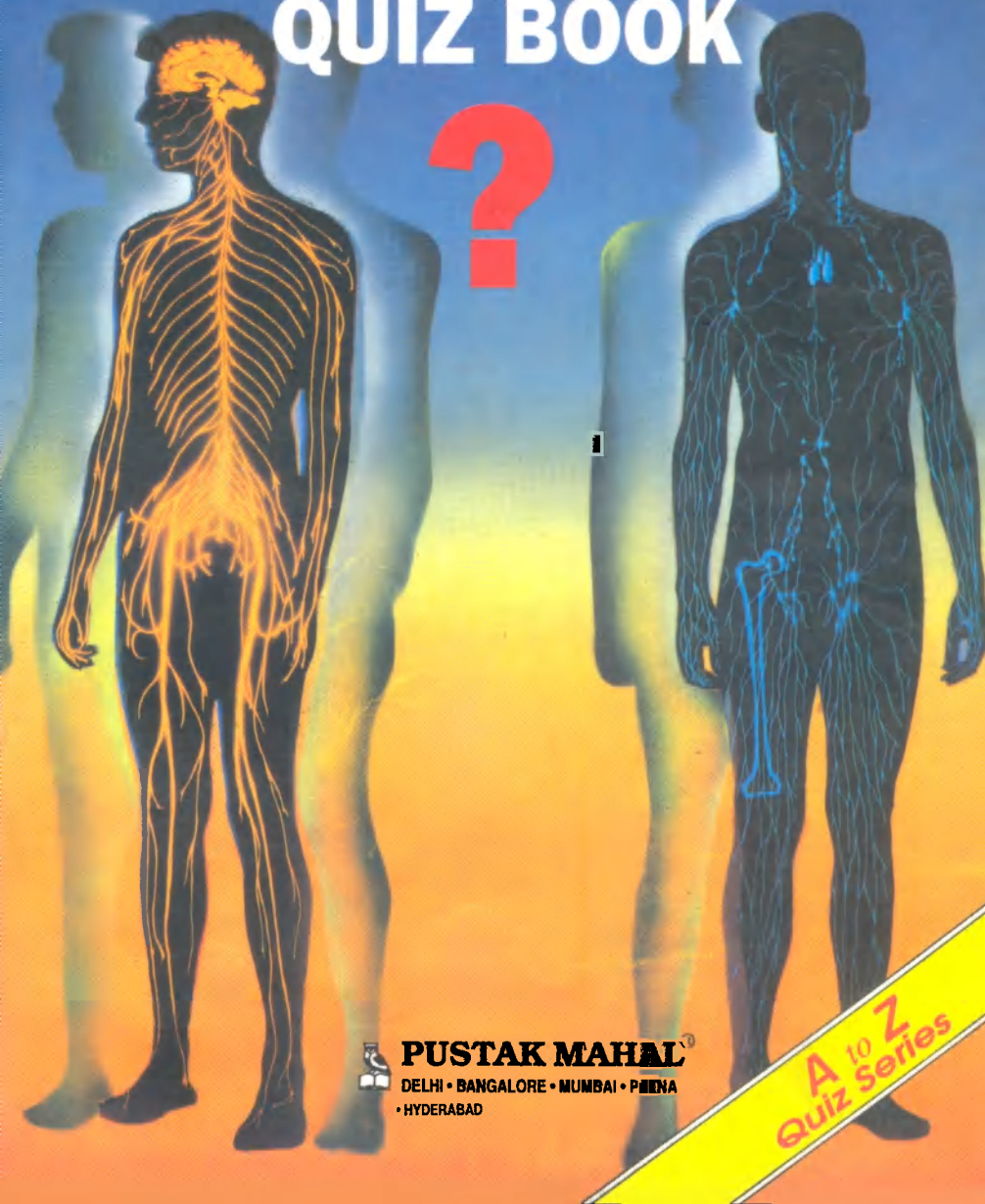

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A to Z Quiz Series

MEDICAL
QUIZ BOOK

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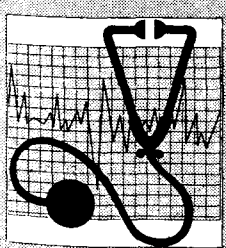
Publishers:
PUSTAK MAHAL, Delhi-110006

I.S.B.N. 81-223-0362-5

Edition : 2000

Preface



In the modern scientific world of today, people have become more aware about their health. They want to know exactly what is wrong with them or their children and how quickly they may expect to get better. Some appropriate book is required for the people which can provide them the background of health problems and body disorders. With this aim in view this book has been written in the question-answer form. The book has been presented in 37 chapters describing different systems of medicine, medical specialists, pregnancy, childbirth, growth, development and behaviour, drug abuse, ageing, human body systems and their disorders, different diseases, vaccinations, medicines, pathological and diagnostic tests, surgery, family planning, food and nutrition, exercises, myths and misconceptions, sex education, first aid, national and international health organisations. At the end of the book, the glossary of medical terms has been given so that one can understand the language of doctors.

The present edition has been revised in an easy language with lot of illustrations and new topics to make the subject matter more communicative to the readers. The revision of this book with added topics assumes that they are fresh in their approach and as a whole will satisfy the readers.

We hope that this revised and enlarged book will be very useful for the school-going students and general readers. It will also be useful for those who are appearing for medical entrance examinations. They will find the book stimulating and interesting.

— Publishers

Contents

1.

Systems of Medicine

What are the different systems of medicine?
Several systems of medicine are prevalent in the world. The most common amongst them are allopathy, ayurveda, homeopathy, unani, siddha, nature cure, acupuncture, tibetan, amchi.

What is Allopathic system of medicine?
It is the most modern system of medical science being practised all over the world. In this system, a disease is diagnosed and treated with its antedote to produce an effect opposite to that of the disease. The main criterion behind is to detect any pathogenic or non-pathogenic bacteria, which believes in symptomatic treatment. In this system, doctors specialize for each organ or a group of organs and the overall body.

What is Ayurvedic system of medicine?
It is an ancient medicinal system of India based on permutation of proportionate columns of *vayu* (wind), *pitta* (bile) and *slesma* (phlegm within the body). According to this system, a disease is caused by faulty food intake or disturbance of mind besides unhygienic habits. It has been in vogue for the prevention and treatment of various illnesses for many centuries.

What is Homeopathy?
Homeopathy is a system of medical practice based upon the law likes are cured by likes'. According to homeopathic doctors, a disease is cured by administering the person with small amount of drugs to produce symptoms like those of the disease. For example, poison ivy causes rashes and homeopaths treat them with poison ivy. Samuel Hahnemann, a German

physician, developed homeopathy in the late seventeenth century. In this system, doses of medicine given to a patient are of high power with maximum dilution.

What is Unani system of medicine?

This system is based upon four humours present in the body i.e. *Sauda*, *Safra*, *Balgam* and *Khoon*. Pulse examination, however, is a prime necessity for diagnosis. Herbs or minerals are used as medicine. Muslim rulers introduced this system in India during 12 AD.

What is Siddha system of medicine?

The Siddha system is mainly practiced in Tamil Nadu and some parts of Kerala. It is almost similar to Ayurveda.

What is the system of Nature cure?

This system is based on natural philosophy. Hydrotherapy, enema, fasting, sun bath, steam bath, massage and use of green vegetables are some of the phases of treatment in this system.

What is Acupuncture?

Acupuncture is a Chinese medical system—a method of pain relief as well as treatment in which the therapist inserts long thin needles in certain precisely determined points of the patient's body. Experts know those points on the body, where needles are to be inserted. Figure 1.1 justify such specific points.

What is Acupressure?

Acupressure is quite similar to acupuncture except for the needle treatment. Instead of the needles, the specific points are pressed with fingers,

Fig. 1.1 Points of the body where acupuncture needles are inserted

to relieve any pain therein. Experts know exactly where the points are and how much pressure should be applied on them. It will be as effective as acupuncture.

What is Nuclear medicine?

Nuclear medicine is the use of radioactive isotopes to diagnose and treat diseases. For example, an Isotope of Iodine-131 is used to diagnose and treat problems of thyroid. Similarly, an isotope of Cobalt-60 is used to treat cancer (Fig. 1.2).

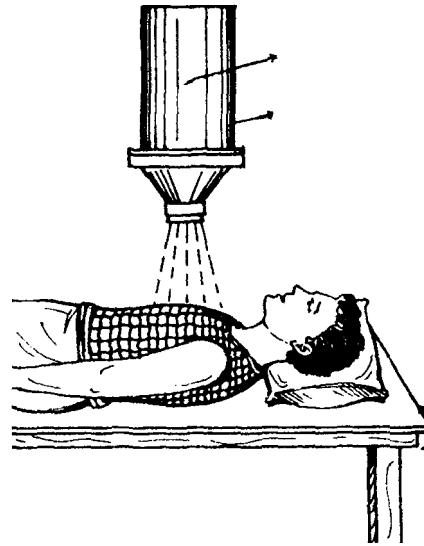


Fig. 1.2 A cancer patient is being treated for cancer using radio isotope of Cobalt-60.

What is Internal medicine?

It is a branch of medicine concerned with the diagnosis and treatment of ailments caused by infections, systemic, metabolic, nutritional, physical and chemical agents. It covers the diseases of lungs, kidneys, heart, blood vessels, endocrines, digestive and nervous systems.

What is Physiotherapy?

Physiotherapy is the use of physical methods to help healing. It may involve exercise, massage and manipulation of muscles, heat treatment and use of light and ultraviolet radiation etc.

Which device and treatments are used by a physiotherapist?

A physiotherapist makes use of radiant heat lamps, electric heating pads and diathermy. Sometimes, hot baths are used to apply heat to damaged parts of the body. Ultraviolet lamps are used to attack germs and to help healing. Ultrasound is used to treat inflammatory conditions of muscles and the joints. However, exercise is an important part of physiotherapy. Equipments such as pulleys, weights, bars, braces, crutches, wheel chairs are also used by physiotherapists to treat the disabled patients.

What is Osteopathy?

Perhaps, it is the most widespread and well accepted form of alternative medicine in Britain. It is based on the idea that mis-aligned spinal vertebra is the cause of most illnesses (Fig. 1.3).

Which diseases are cured by H--t th------?

Heat therapy employs infra-red lamps, diathermy machines and similar heat appliances. Heat energy, as such, increases the blood supply to the injured portion and relaxes any spasm of blood vessels or muscles. It is very useful in treating certain types of arthritis, muscle sprains or inflammation, still joints and tendons.

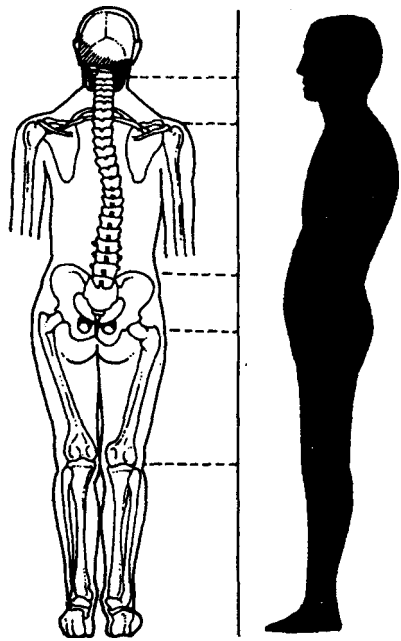


Fig. 1.3 Osteopathy.

How is light used in the treatment of patients?

Ultraviolet light is used to treat certain skin diseases. It may damage the tissue with severe burns, if not used properly.

What is Hydrotherapy?

Hydrotherapy involves use of water in the form of swimming tanks, whirlpool baths, hot sprays and hot tub baths to relax any of the spasms by increasing the blood supply to various parts of the body.

What is Chemotherapy?

It is a method of treating cancer or allied tumour growth with chemicals.

What is Psychosomatic medicine?

Psychosomatic medicine deals with physical symptoms that are at least partially caused by psychological stress.

What is Magneto-therapy?

Magneto-therapy makes use of powerful magnets to treat pain in the joints, spondilitis, indigestion or hypertension.

Who are quacks?

Quacks are those self-styled practitioners befooling the bonafide patients by their half-baked knowledge without possessing any licence. They operate with their own system of drugs and skills as advised by their *gurus*.

OOO

2.

Epidemics and Disasters

What was Minamata disease disaster?
In the early 1950s, a mysterious disease struck Japanese fishing community around the Minamata Bay, on Kyushu island. Some people died and many suffered from unpleasant illnesses. By the fall of 1950s, it was found, mercury poisoning used in a plastic factory in Minamata was the cause of the disease. This mercury was consumed by fishes and in turn by human beings. The epidemic became known as Minamata disease.

Which are the biggest killer diseases in the developed countries?
Heart disease, cancer and strokes kill more people around the world each year compared to other illnesses. Heart disease is by far the biggest killer in the Western world. For example, among every 100,000 people, 360 (USA), 458 (Britain) and 292 (Australia) die each year. Similarly, cancer kills 49 in the USA, 72 in Britain and 32 in Australia for every 100,000 people each year.

Which are the biggest killers in Third World countries?
In the Third World countries, diseases such as pneumonia, enteritis and diarrhoea are the biggest killers.

Which are the most common contagious and non-contagious diseases?
The most common contagious disease in the world is common cold. The most non-contagious one is tooth decay. During their life time, only a few can escape the effects of tooth decay.

What is the leading cause of death in industrialised countries?
The leading cause of death in industrialised countries is arteriosclerosis (thickening of the arterial wall) which gives rise to other coronary and cerebrovascular diseases.

Which has been the biggest Influenza disaster?
About 21,650,000 people died all over the world due to Influenza from April to November, 1918.

Where is the plague village?
It is Egam in Derbyshire, England. This small village fell victim of the great plague of A.D. 1665 which devasted London. A local tailor received a bundle of clothes from London, which carried with it the fleas that bore the dreaded disease. Within a few days 262 of the 350 natives of Egam died of this disease.

Which fatal disease of recent origin is the most dreaded one world-wide?
The most fatal disease AIDS (Acquired Immuno - Deficiency Syndrome) was first recognised in 1978. Its virus was identified in 1983, at the Pasteur Institute, Paris. It is a very dangerous disease caused by illicit sexual contacts, I.V. drugs or blood transfusions.

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3.

Pregnancy and ChildBirth

What is pregnancy?

It is a state of period of being pregnant when a female egg (ovum) gets fertilised with a male sperm cell during coition between man and woman. A human pregnancy normally lasts for about 280 days (40 weeks), from the first day of the last menstrual period. Fig. 3.1 shows the fertilization of an egg by a sperm.

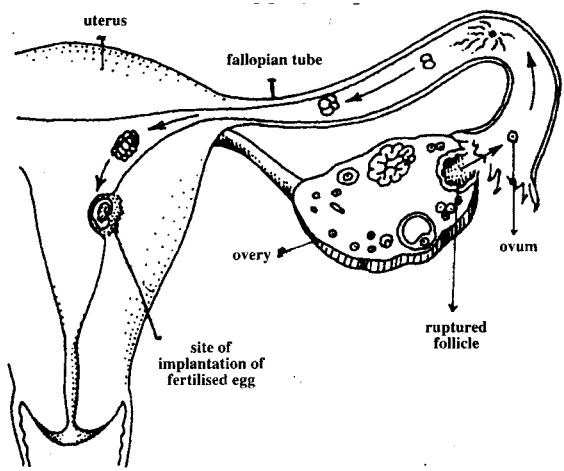

Fig. 3.1 Fertilization of an egg by a sperm.

What are the symptoms of pregnancy?

The first sign of pregnancy include cessation of menstruation, increase in size of the breasts, morning sickness. This is followed by nausea, heartburn, frequent urination (micturition), giddiness and increase in vaginal discharge. Breasts get enlarged within the first few weeks. There

will be enlargement of abdomen and movements of the offspring within the womb in the later stages.

What are pregnancy tests?
Various tests are used to confirm pregnancy, most are based on the presence of CHORIONIC GONADOTROPHIN HORMONE detection in the urine test.

What should be the vital nutrients in the diet of a pregnant woman? Why does she require more iron and calcium during the pre-natal phase?
Milk and its products, leafy green vegetables, fruits, nuts should be added to the normal diet. Meat eaters can add egg, liver, kidney and fish to their diet. The large increase in blood volume requires extra iron. Iron can be obtained from liver, egg yolk and nuts. The baby's bones and teeth begin to form from 4-6 weeks, consequently, calcium requirements are more than doubled. Milk and other dairy products are the best source of calcium.

How much weight should a pregnant woman gain?
About 8-15 kg.

Is it safe for her to drink alcohol and smoke?
No. Alcohol consumption and smoking retards the baby's growth with risks of miscarriage. However, excessive consumption increases blood pressure of the mother which may lead to stillbirth.

Is sexual intercourse permitted during pregnancy?
Yes, up to the end of eighth month to keep the woman vibrant, gay. She enjoys the pleasure derived from it. In case of bleeding, coition should be given up.

When does a pregnant woman feels the movements of the baby in the womb?
She will feel the movements three months after conception .

What are the minor complaints during pregnancy and any remedies?

a) **Increased frequency of urination** – This occurs due to the

pressure of the enlarging foetus upon the dome of the bladder.

b) **Frequent back aches** – The most common cause is the change in posture to cope the enlarging abdomen. The use of a firm girdle or solid support would relieve back ache.

c) **Perpetual swelling** – Pressure on the pelvic veins and increased blood pressure can cause swelling of the feet, ankles or other parts of the body.

d) **Haemorrhoids** – Constipation and the pressure of the growing baby leads to haemorrhoids. Drinking plenty of water, eating more salads and green vegetables would ease the bowel movements.

What are the danger signals in pregnancy?

Following are the danger signs:

a) Involuntary vaginal bleeding,
b) Increased swelling of the hand, feet or face,
c) Severe nausea,
d) Blurring of vision,
e) Severe headaches,
f) Strong abdominal pains,
g) Stoppage of foetal movements,
h) Any hard fall,
i) Trickles of water from the vagina,
j) High Blood Pressure, and
j) Decrease in urine output with a burning sensation.

What are the symptoms of labour?

a) Abdominal pains or contractions,
b) Rupture of the bag of water, and
c) Staining from the vagina.

What are the different stages of labour?

a) Dilation of cervix or mouth of the womb is the first stage,
b) The second stage begins at the time of complete dilation of the cervix and ends with delivery, and
c) The third stage begins with the delivery of the baby and ends with the delivery of placenta.

What is meant by 'false labour pains'?

The muscles of the uterus are extremely irritable and may undergo frequent contractions in the later months of pregnancy, which can be mistaken for labour pains.

What is natural childbirth?

If a baby is born without any surgical assistance through the birth canal with its head-on, it is called natural childbirth. Fig. 3.2 and 3.3 illustrates the various stages of delivery.

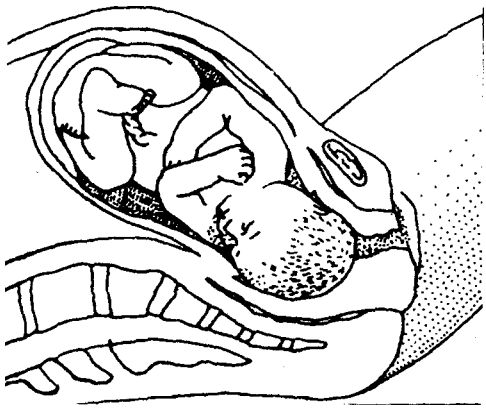

Fig. 3.2 A child before the stage of delivery.

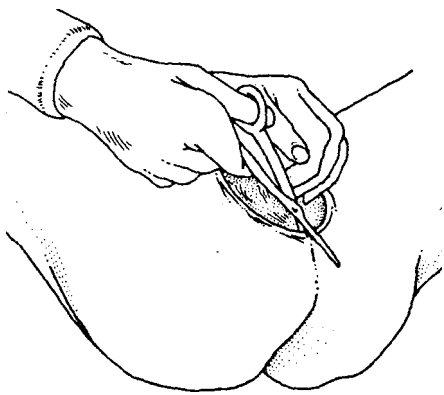

Fig. 3.3 Episiotomy incision to enlarge the vaginal orifice and make delivery easier.

What is meant by 'Induced Labour'?

When the pregnant woman is suffering from high blood pressure or diabetes or the baby is postmature and outgrowing its food supply, induced labour is achieved by breaking the water bag with a sterile instrument or by the use of Pituitary Extract (Oxtocin) injections. It is an artificial method.

What is epidural anaesthesia?

Epidural is given during the labour to relieve pain. A catheter through a hollow needle, is inserted into the backbone of the patient. Local anaesthetics are then given by the syringe down the catheter. This relieves the pain without interfering with the consciousness of the patient.

What is meant by 'Forceps Delivery'?

If the baby's head starts stretching the vaginal opening, an incision is made with the help of scissors, in the perineum (edge of the vagina) to facilitate the delivery.

What is 'Breech Delivery'?

The delivery in which the buttocks or feet of the baby are delivered first, is called breech delivery. About 3% of all deliveries happen to be breech deliveries (Fig. 3.4).

Fig. 3.4 Breech delivery.

What is premature delivery?

Premature birth is a birth occurring before the end of normal full term. If a child is delivered between 28 and 37 weeks of pregnancy, it is termed as a premature delivery. The premature baby survives if special care with regard to feeding and body temperature is taken. Premature baby often requires incubator care.

What is caesarian section and when is it carried?

It is an operation devised surgically by an incision in the abdomen and uterus to deliver the baby through this route instead of birth canal. It is a

major operation and is carried out in the circumstances when normal delivery is impossible.

How is the baby separated from the umbilical cord?
The umbilical cord is clamped about an inch from the baby's abdomen and is cut across with scissors.

What is multiple pregnancy?
Delivery of twins are the common form of multiple pregnancy. They occur one in eighty deliveries, whereas triplets one in 8,000 and quadruplets one in 700,000 deliveries. Multiple pregnancy can be detected by ultrasound scan during the tenth week of pregnancy.

What are identical and non-identical twins?
When both the babies are mirror images of each other, they are known as identical twins. They are always of the same sex. They are developed from splitting of single ovum fertilized by one sperm. Non-identical twins are formed from two separate ova, have separate placentae and different characteristics. They may be of different sex.

What are birth defects?
Many children are born with several defects. These may be deafness, blindness, facial abnormalities, heart malfunctions, abnormal limb development etc.

What is toxaemia of pregnancy?
Toxaemia is a condition peculiar to pregnancy and associated with a rise in blood pressure, damage of blood vessels, liver and kidney functions. The first sign of toxaemia is sudden swelling of ankles, feet and any other part of the body. Toxaemia is dangerous in pregnancy.

What is miscarriage?
A pregnancy that ends before the 28th week is termed as miscarriage. In the first three months of pregnancy, miscarriage is the result of faulty germplasm. In later stages, it could be due to diseases like diabetes, high blood pressure, or abnormality of the uterus.

What is the Rhesus factor? How is it important during pregnancy?
Majority of population has blood that contains this factor, they are Rhesus

positive. People without this factor are Rhesus negative. If a Rhesus negative mother carries a Rhesus positive baby, the antibodies from mother's bloodstream pass into the child's blood. This results in anaemia or jaundice in the baby soon after birth, which can be fatal at times. To prevent this, the mother is given an injection of anti-D-Globulin.

What is placenta praevia?

The condition in which the placenta develops low down in the uterus rather than high up as in normal conditions. It occurs in about every 200 pregnancies.

What is ectopic pregnancy?

This is rare but serious complication occurs when the fertilized ovum develops in a fallopian tube instead of in the uterus. The tube eventually rupture causing severe pain and haemorrhage. Treatment involves surgical removal of the affected tube. This does not necessarily affect the chances of a normal pregnancy in future.

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4.

Child Growth: Development and Behaviour

What are the problems of infancy?

Following are the major problems of infancy :

a) **Crying in the early weeks** : A baby's only way to alert the mother that he needs something is by crying. He may be hungry or thirsty, cold or too warm, wet or soiled or just bored. Efforts should be made to find the cause of crying and proper attention should be given to the child.

b) **Thumb sucking** : All babies try to suck their thumb. It is an inborn desire. The best way to prevent thumb sucking is by diverting the child's attention towards more interesting things whenever he puts his thumb into his mouth.

c) **Rashes** : Mild facial rashes are quite common in newborn babies. These clear up in time and need no treatment. A diaper rash is caused by ammonia in urine. To prevent it, the nappies should be either boiled or rinsed in a diaper antiseptic.

d) **Teething** : Teething process starts from the age of seven months. The cutting of the teeth is a painful process and may make the child irritable. Diarrhoeas, vomiting, indigestion are common during teething.

e) **Indigestion** : Hiccups, vomiting, spitting, colic, mild diarrhoea are the common kinds of indigestion. In the extreme cases, the doctor should be consulted.

What are the main principles of "Baby Care"?

Much of Baby care is routine and is best approached in an organized way.

The key to these organization is to correctly equip and arrange well the baby's room, bathing, changing and feeding. A baby should also follow a fixed routine. More important than routine are love and affection.

How should a baby's room be organized?
A baby's room should be warm (70-75^{0}F; 21-24^{0}C) well aired and close to the bed of the parents. The crib must be stable so that it can't be knocked over easily. Light blankets should be used but a pillow must never be used because it may smother a tender baby.

What should be the diet of a baby?
A baby needs food and water. Milk provides both. Mother's milk supplies, in addition, antibodies that help to protect against disease.

Why do some children stutter?
Stuttering in children is caused by anxiety and tension and delay in the maturing of speech. It is common in children from one to three years of age. After three years of age it is automatically corrected in a majority of children.

What are the main symptoms of the physical changes that take place in boys and girls during adolescence?
In boys, the genital organ increases in size and pubic hair start appearing then appears the arm pit hair and facial hair. The voice becomes deeper. In girls, the breasts develop, arm pit and pubic hair appear and menstruation begins.

What emotional and behavioral changes accompany these physical changes?
Hormonal changes awaken sexual feelings. Experiment in various activities such as smoking and drinking alcohol that are common among many adolescents also represent a form of determined independence.

What is Adolescence?
Adolescence is the period of body growth and mental development between the onset of puberty and attainment of physical and emotional adulthood.

What is meant by growth pattern?

The pattern of growth indicates the development of a human body starting from a newborn baby to the end of adolescence. It shows how a baby is transformed into a full grown human being over a certain period of time. Growth pattern from the age of 1 to 16 years is shown in Fig. 4.1.

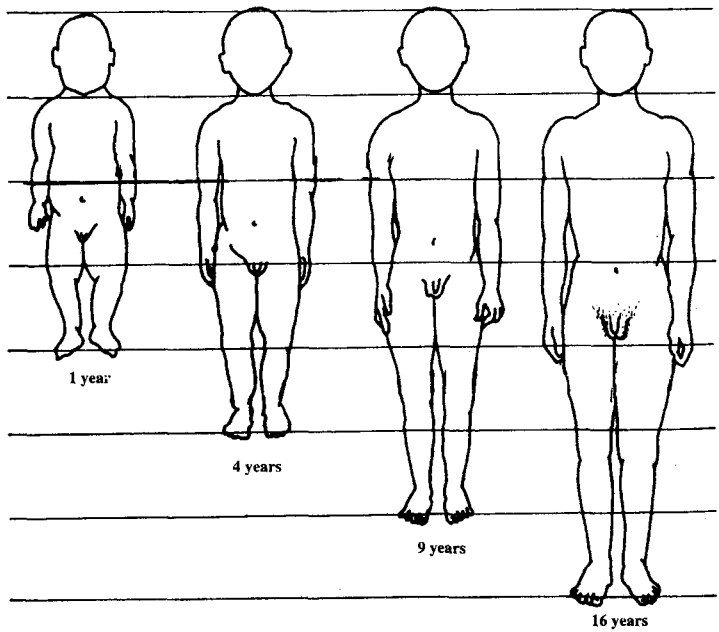

Fig. 4.1 Growth pattern from the age of 1 to 16 years.

How can parents prepare their child for adolescence?

Children should be told frankly and sensibly about the upcoming changes in their body. Information about sex should be provided in a way that is easily understood and that no questions remain unanswered. Such information is best supplied by the parent or someone who has an emotionally stable relationship.

How can parents help an adolescent child?

One of the best ways that parents and other people can help is to provide understanding, sympathy, advice and helpful discussion on all the physiological and psychological problems that accompany this phase.

What organs are responsible for the onset of adolescence?
The pituitary gland, the ovaries or the testicles begin to secrete larger quantities of sex hormones and thus bring on the changes seen in adolescents.

What are the important psychological changes that take place in adolescent boys and girls?
Adolescence is the age when a boy/girl, having matured physically, strives to break away from parental dependence and become self-reliant. Consequently, as a result of this, they become self conscious and touchy. Their aggressive behaviour, restlessness and disobedience are the result of these psychological changes.

How do the growth patterns of boys and girls differ from each other?
During childhood, the growth patterns of boys and girls remain more or less the same. They grow very quickly in the first two years, then slow down. Around the age of 10-12, there is a rapid spurt in growth. Boys continue to grow till they attain the age of 18, whereas growth in a girl is stopped once her menstrual cycle starts, that may be anywhere between 11-14. Heredity, nutrition and the state of health are some of the major parameters affecting the growth of a child.

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5.

Drug Abuse — Problems of Adults

What are the problems of the adolescence and early stages of adulthood in the modern society?
Drug abuse, tobacco smoking, alcohol consumption and homo-sexual activities.

How do we define drug abuse?
Any drug when used for "non-medical" purpose is said to be drug abused or misused. Certain narcotic drugs give a pleasurable effect which are quite harmful after a certain period to the body mechanism. Frequent use would lead to physical death, mental disorders and social crimes. Drug abuse is defined as self administration of such drugs in excessive doses.

Mention some narcotics and their effects on human body?
Opium, morphine, heroine and codeine are some known narcotics obtained from opium (Fig. 5.1). These are medically useful and serve as powerful pain relievers. They are, however, extremely addictive. Heroin is usually injected into a vein. It relieves pain, tension and brings drowsiness. When the drug is withdrawn from an addict, he will be subjected to restlessness with anxiety or a disturbed mind.

Fig. 5.1 Poppy plant.

What are the different categories of drugs which have abuse potentials?

The drugs with descending abuse potentials are: a) Narcotics (b) Depressants (c) Stimulants and (d) Hallucinogens. Alcohol and tobacco are also abused throughout the world.

What are depressants or tranquillisers?

Sleeping tablets and other sedative and tranquillizing drugs are the examples of depressants. Their long term use for several years leads to addiction. They produce soothing effect, reduce anxiety and tension. The *barbiturates* are the most powerful sedatives and may be extremely dangerous if taken in large doses.

What are stimulants and what are their dangerous effects?

Stimulants such as a amphetamines increase activity of the central nervous system. They produce a feeling of alertness and well being. Their prolonged use creates confusion and reduces appetite. They are habit-forming drugs. Their addiction leads to hallucinations, agitation and mental disturbance.

What is the effect of hallucinogens?

The hallucinogenic drugs such as LSD, STP, DMT, mescaline and psilocybin cause mental disturbance, hallucinations, vision distortions when swallowed even in very small quantities. They give a pleasurable effect and produce addiction. The illusions produced by them would provoke one to commit vices such as rape, murder, stealing, violence, etc. Their use is highly dangerous and may result even in fatal accidents.

What is solvent abuse?

Solvent abuse is a dangerous habit that has recently become popular among young people, and even in children. The substances used include model making glues, varnish, lighter fuel, paint thinners, petrol etc. The fumes from these chemicals are usually inhaled from a plastic bag. These fumes cause dizziness and create confusion similar to drug addiction.

What are the harms of chewing tobacco?

Chewing tobacco causes cancer of mouth and adversely affects the digestive system. It weakens gums and spoils teeth. It irritates the throat and the lining of the food pipe.

What are the bad effects of alcohol?
Alcoholic drinks are vulnerable to our longevity. They affect physical and mental health and spoil inter-personal relationship with others. Alcohol consumption increases intoxication, makes speech indistinct, and produces inbalance. Excessive dose would cost one's life so badly that he would lose reasoning and conditioning skills. It can produce mental disorders and the liver diseases.

What are the harmful effects of coffee?
Coffee contains caffeine which stimulates the central nervous system, pancreas and heart. It can also increase the level of free fatty acids and can cause peptic ulcers.

What is drug dependence?
Drug dependence is a biological phenomenon which consists of:

a) Phychic dependence which is seen in the form of compulsive and repeated drug taking for personal satisfaction. Heavy cigarette smoking is an example.

b) Physical dependence which is present when withdrawal of drug produces symptoms that are opposite to those sought by the user. Alcohol withdrawal syndrome is a common example.

Which are the drugs present in beverages and tobacco smoke?
Caffeine in tea, coffee or cold drinks:

a) A cup of tea carry 30-45 mg.; coffee 45-90 mg, and cola drinks about 30 mg, caffeine. In the event of non-availability of these, a mild headache and bodyache may be felt.

b) **Ethyl alcohol:** If it is used chronically, it may cause dependence or addiction and tolerance and thus may end up in physical and economic ruin and associated misery to the family.

c) **Nicotine:** It is taken in a number of forms of tobacco, e.g. in smoking in chewing *paan* with or without Zarda and through intranasal administration.

It causes many a chronic ailments and also decreases longevity.

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6.

Ageing and its Drawbacks

What is ageing ? What are its signs?

Ageing is growing old with obvious physical and emotional changes. Generally, one gets aged around the age of forty. The cessation of bone growth, deterioration in mental ability to formulate new concepts, loss of memory, greying of hair, baldness, gradual wrinkling of skin, teeth decay are some of the factors responsible for ageing. Clinically early ageing cannot be detected except for a few tests upon diminished functions of the vital organs indicating the possibility of ageing. Ageing changes can be seen clearly from Fig. 6.1.

Fig. 6.1 Changes due to ageing.

What determines longevity?
A person who has lived a healthy and stress-free life may live pretty longer to one who has been sick and under stress. Obesity and sedentary habits also reduce longevity. It is found that married people tend to live longer than single persons.

Do smoking and alcohol make one grow old prematurely?
Yes, smoking and alcohol consumption reduce longevity by causing cancer, heart ailments, bronchitis or abdominal disorders, etc.

What role do diet and exercise play in the process of ageing?
A well-balanced diet delays the ageing while on unbalanced one would lead to defective body mechanism. Exercise, however, mobilises joints, strengthens muscles and improves the functioning of heart and lungs.

Is there any way to reduce the ageing process?
Yes, by eating sensible diet, avoiding overweight, avoiding excesses of all types, and getting prompt treatment for any disease can delay the ageing process.

What is geriatrics?
Geriatrics is that branch of medical science concerned with the medical, psychological and social aspect of illness and disability in old people.

What are the most important principles those underline the geriatric approach?

a) The main one being the existence of a "geriatric team" of different specialists who pool their talents in the interests of the aged patient's recovery and return to reasonable independence within the community.

b) The second important principle is that where possible elderly patients should be examined and treated in their own home. Admission in a hospital should be avoided as far as possible.

C) The theme of the third and most important principle is that old age is not a disease. Much can be done to relieve the problems of old age. There is no need for older people to lose their independence and entitlement to reasonable health.

What is the most common disease of old age?

Atherosclerosis is the most common and it has become accepted as inevitable part of ageing. The level of cholesterol in the blood is considered one of the factors related to the development of atherosclerosis.

What are the social problems of ageing?

Aged people try to remain physically fit if not economically independent in their old age. Loneliness in the older age group is a major problem: the death of spouses and decreased ability in all fronts along with physical disabilities may contribute to the feeling of isolation which in turn may lead to apathy ,rigid attitudes, depression, frailty and so on.

What is menopause?

The gradual cessation of menstrual periods is known as the menopause. Reproductive life ends at the menopause. The menstrual cycle first becomes irregular and eventually stops altogether around the age of 45, due to hormonal changes, irritability and depression factors. Hot flushes and palpitations are also being experienced. All these problems are temporary and disappear gradually. However, sexual responsiveness is unaffected by menopause.

OOO

7.

Human Body Systems

How is the human body compared to a machine?
A human body is a wonderful machine, where each part does a specific job. This is the best machine ever built. It needs energy to run. In some respects it is more amazing than any machine, like it can grow and has a powerful inbuilt immunization system to prevent several diseases. It can repair itself and has senses to detect changes.

What are the primary divisions and composition of a human body?
Head, neck, trunk and extremities are the four primary divisions of a human body. A human body is a mass of cells. A cell consists of small molecules whose basic structure is atom. Different atoms of Carbon, Hydrogen, Oxygen, Calcium etc., combine together to form molecules. Group of cells combine together to form tissue and tissues, in turn, make organs. Organs form body system to perform various functions.

What kinds of minerals are there in our body?
There are 13 minerals in our body, such as calcium, phosphorus, iron, iodine, copper, sodium, potassium, chlorine, magnesium, sulphur, zinc, manganese and cobalt.

What is the normal temperature of our body?
The temperature inside our body is usually always the same—about 36.9^{0}C. It is measured by a thermometer under the tongue. This temperature however may go up and down a little with no ill effects.

What is a vital organ?

Some of the organs of the body, such as heart, brain, lungs, etc., are so closely associated with life of the body, that they are called 'vital' organs. If any of these are diseased or damaged, our health is adversely affected. Consequently, other parts of the body suffer and the result could be fatal.

What are the different systems ?

A. i. Skeletal system ii. Muscular system
iii. Nervous system iv. Digestive system
v. Respiratory system vi. Circulatory system
vii Endocrine system viii. Urinary system and
ix. Reproductive systems of male and female.

How many bones are there in the skeletal system?

A human baby has about 270 separate bones, while the adult skeletal system has only 206 bones, because many bones fuse together in course of adulthood. The bones are to the body what frame is to the house; they protect, support and retain other parts of the body in their proper places.

The bones of the skeleton are divided into those of the head, comprising twenty-nine; of the spine, twenty-six; of the ribs and breast bone, twenty-five; of the upper limbs, sixty-four and of the lower limbs, sixty-two bones. The skeletal system of man and women are shown in Figs. 7.1 and 7.2.

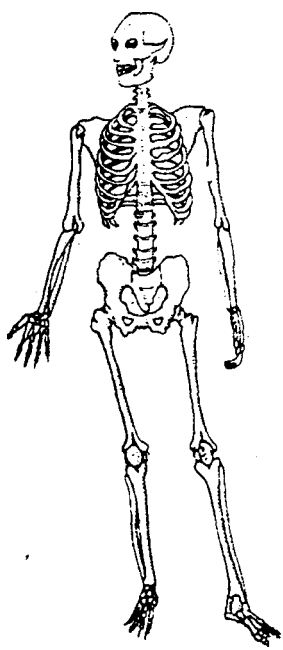

Fig. 7.1 Skeleton of a man.

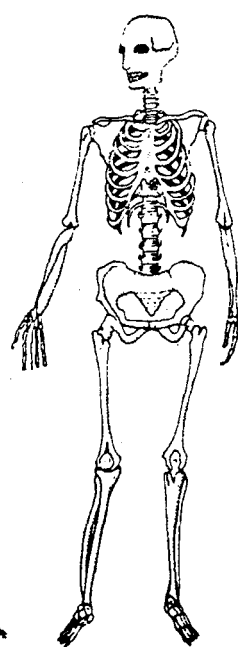

Fig. 7.2 Skeleton of a woman.

What are the main functions of bones and joints?

The bones of the skeleton give shape and support to the body. The skeleton combines strength and rigidity with resilience and mobility, providing attachment for muscles and ligaments so that there is some mobility. The bone marrow makes the precursors of cells that are passed into the blood stream. Bones also act as a store for minerals and salts.

What are different types of joints?

Joints are formed where bones would meet. They are either immovable or movable. Types of movable joints are known as hinge joints (elbow and knee), pivot joints (neck), as well as ball and socket (shoulder). The joints between skull bones are immovables. All these joints are shown in Fig. 7.3.

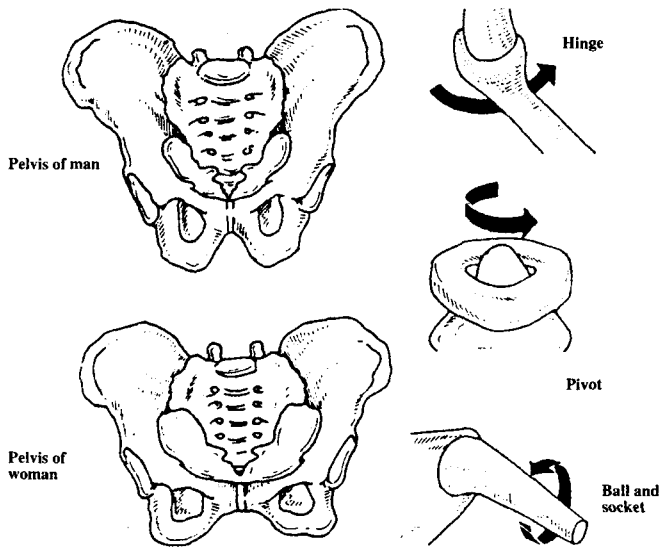

Fig. 7.3 Different types of joints.

What is the function of the muscular system and how many types of muscles are there?

Muscles are responsible for the movement of different parts of the body. There are three types of muscles in our body. They are :

a) **Visceral muscles** - They are found in organs of whose movements we are usually unaware of, such as stomach, blood vessels, bladder

and womb. They are also called smooth muscles. They contact slowly but firmly. They are also found in association with the hair follicles of the skin.

b) **Cardiac muscles** – These are heart muscles enabling the heart to pump blood continuously. The heart muscle does not derive its nourishment directly from blood. It has its own blood supply through the coronary arteries located in the outer layer of the heart.

c) **Skeletal muscles**– They contract rapidly. They are responsible for the movement, stabilization of the joints and maintaining posture. There are about 650 muscles in the human body. Fig. 7.4 shows some important muscles.

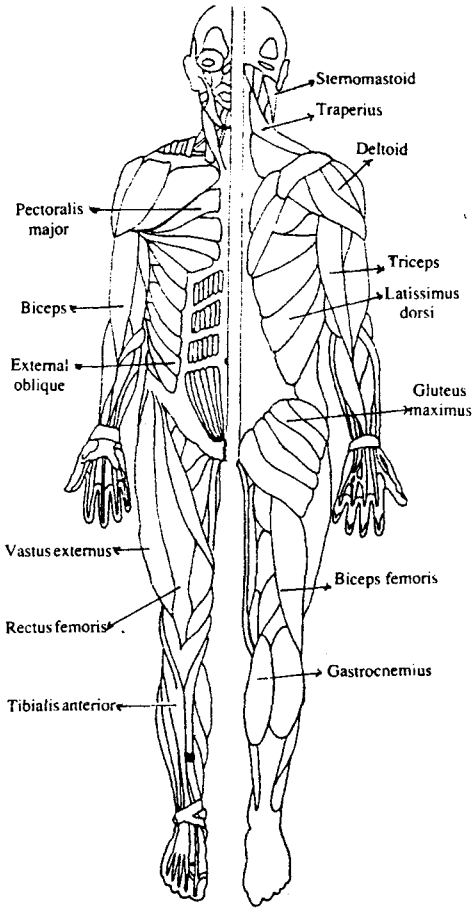

Fig. 7.4 Some important muscles of the human body.

What are the sense organs?

Eyes, ears, tongue, nose and skin are the sense organs of the human body. Skin provides covering to the entire body, protects internal organs, helps to regulate body temperature, acts as an excretory and sense organ. Eyes provide visual information. Ears are responsible not only for hearing but also help us to keep our balance. Tongue is the sense organ of taste and nose is the sense organ for smell and part of the respiratory system.

What is the function of the nervous system and what does it consist of?

The nervous system controls, coordinates, and monitors the activities of the body. It sends messages to all parts of the body and controls all automatic activities. It consists of the brain, spinal cord and nerves. Forty four pairs of nerves run down from spinal cord to the rest of the body. This system transmits vital messages around the body. Nervous system is shown in Fig. 7.5.

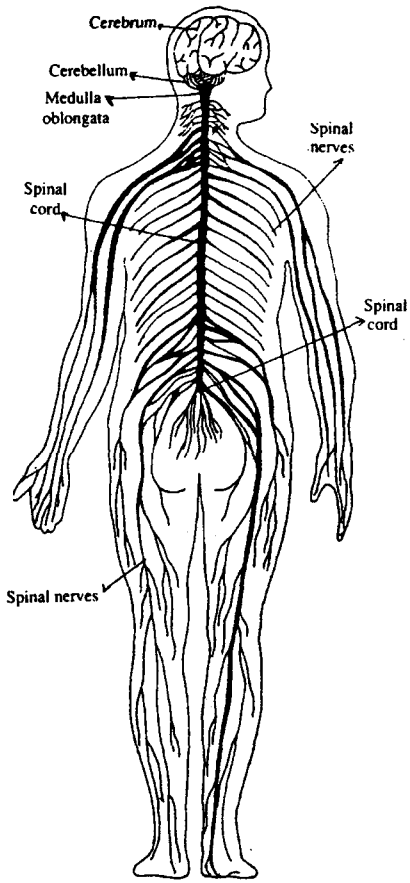

Fig. 7.5 Nervous system.

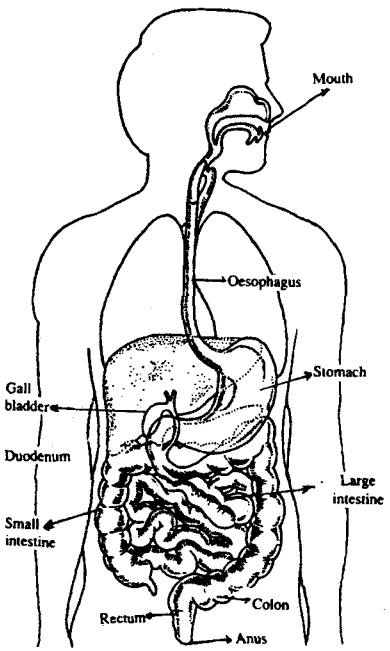

Fig. 7.6 Digestive system.

What is the digestive system and its role?

Digestive system is the series of organs that process and convert food into simpler substances that the body uses for nourishment. In this system, starch and complex sugars are digested to simple sugars, fats to fatty acids and glycerine, and proteins to

amino acids. It also gets rid of solid waste. The digestive systems consists of mouth, oesophagus, stomach, large and small intestines, liver and anus. Digestive system is shown in Fig. 7.6.

What is the function of the respiratory system?

Breathing, so vital for life, is the only way through which the cells in the body will receive oxygen, vital for conversion of sugars and other food products into energy. Respiratory system takes oxygen into the the body leaving carbon dioxide. Nasal cavity, pharynx (throat), larynx, trachea, bronic and lungs are the parts of the respiratory sysem. Fig. 7.7 shows ' e respiratory system of the human body.

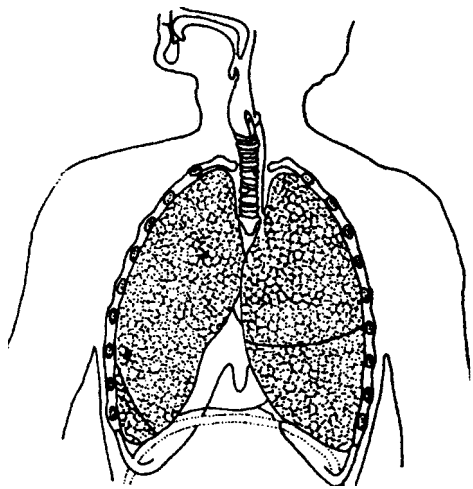

Fig. 7.7 Respiratory system.

How many senses do we have?

We have five main senses—sight, hearing, smell, taste and touch. Senses seem to operate at the outside of the body. In fact signals go along nerves to the brain, and actually we sense everything inside our brain.

What is the function of circulatory system?

The circulatory system is responsible for the blood flow in the human body. It consists of the heart and a network of blood vessels that take blood to and from the heart. The vessels are of three types: i) Arteries – the one, which carries oxygenated blood from the heart to the organs; ii) Veins – they bring deoxygenated blood back to the heart from them; iii) Capillaries – these are very fine, thin walled vessels through which exchange of substances between blood and tissues occur like glucose, amino acids, proteins, urea, etc. There are both arteries and veins on both

sides of the body. The aorta is the main artery of the body. Circulatory system is shown in Fig. 7.8.

What are endocrine glands?

Endocrine glands are ductless glands which produce hormones to regulate body activities. They consist of several glands such as pituitary, thyroid, parathyroid, thymus, pancreas, adrenal, ovaries and testes (Fig. 7.9).

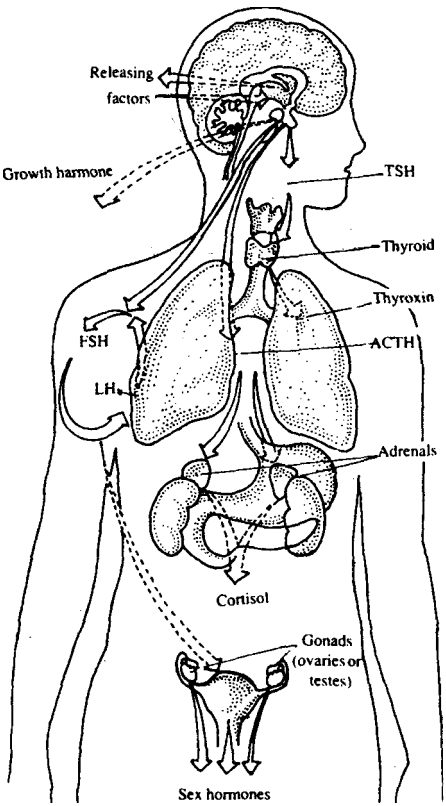

Fig. 7.9 Ductless glands and hormones produced by endocrine glands.

Fig. 7.8 Circulatory system.

W at is the function of the urinary system?

In urinary system, the blood is filtered with the help of kidneys to remove toxic substances like urea and acids. The two kidneys along with ureters, bladder and urethra form the urinary system. They are also essential for regulating the amount of water present in the body. Figure 7.10 show male and female urinary systems.

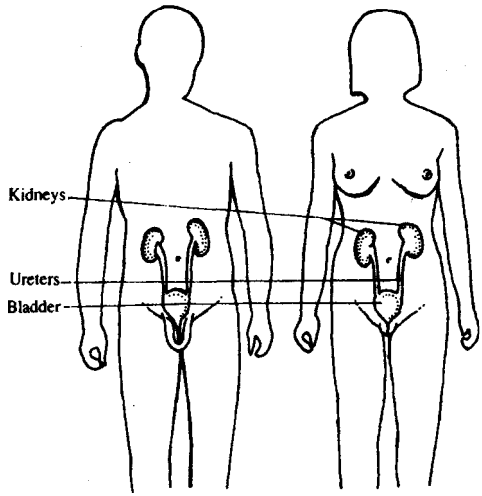

Fig. 7.10 Female & male urinary systems.

What is the function of the reproductive system?

A new life begins at the time of fertilisation when a male sperm unites with a female ovum. As soon as the wall of the ovum has been penetrated by one sperm it immediately becomes impenetrable to others. Fertilization occurs usually in one of the fallopian tubes, the fertilized egg then passes into uterus, where it becomes embedded in the lining membrane

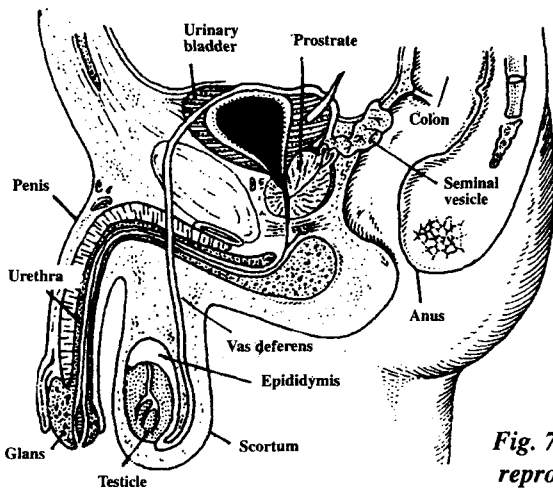

Fig. 7.11 Male reproductive system.

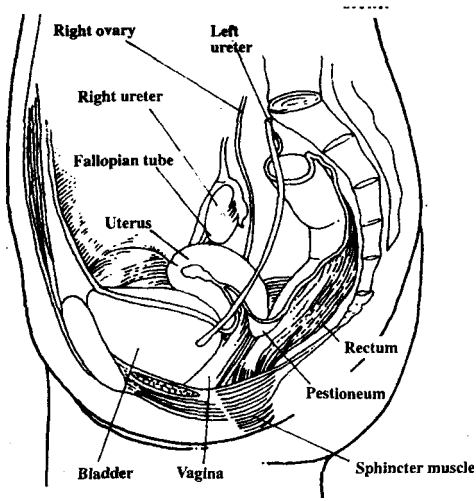

Fig. 7.12 Female reproductive system.

and begins to develop. After about 38 weeks in the uterus, the child is fully developed and ready to born. The female reproductive organs consist of ovaries, fallopian tubes, uterus, cervix and vagina. Scrotum, testes, seminal vesicles, prostate glands, urethra and penis are the male reproductive organs. Fig. 7.11 and 7.12 show the male and female reproductive systems.

OOO

8.

Common Disorders of Body Systems

(A) BONES AND JOINTS DISORDERS

W' a' are 'he common bir 'h de'orm' 'es of bones?

Some common birth deformities of bones are: club foot, dislocation of the hip, extra finger or toe or some other limb (Fig. 8.1).

What is *Scoliosis*?

A side to side curvature of the spine is called scoliosis. It is more common among girls and can be corrected by complicated surgery. A spine with curvature is shown in Fig. 8.2.

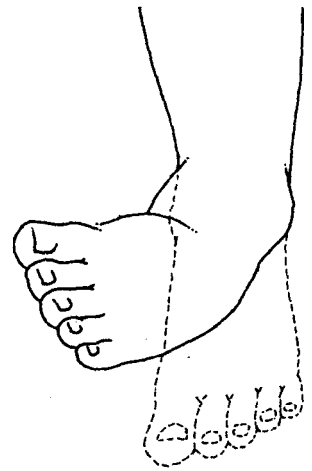

Fig. 8.1 Club foot.

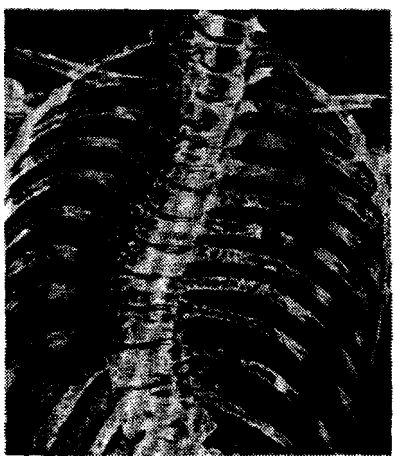

Fig. 8.2 X-ray of spine w.th curva.ure.

What is the treatment of sixth finger or sixth toe?

It is a simple matter to remove sixth finger or toe by operation.

What is hammer toe?

This is contraction of one of the

toes, so that it is permanently bent. The second toe is most often affected. The condition may be hereditary or associated with deformity of the foot or may be due to wearing short shoes. Excision of the joint or surgery of the toe gives satisfactory results.

What is arthritis?

Arthritis is the name for a family of diseases affecting joints leading to inflammation and severe pain. Arthritic joints may become very swollen and crooked. Sometimes, these joints cannot move. Although, this disease is very common amon old eo le, it can occur at any age. Housewives are prone to it rather to men. An ar hri ic ' and is s' own in Fig. 8.3.

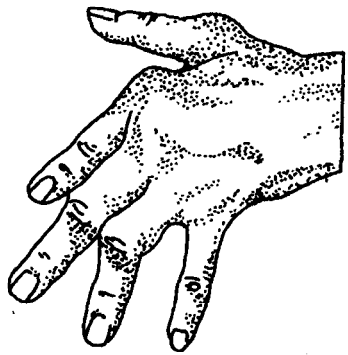

Fig. 8.3 An arthritic hand.

What causes the slipped disc disorder?

The intervertebral discs in the spine act as s oc -a sor ng was ers, a - lowing the entire vertebral column to twist and bend. Each disc is made of rough, outer bag like layer enclosing a soft, jelly-like inner core. Sometimes, a portion of the internal soft a a p g p in the outer layer to form a bulge or prolapse. This is commonly called a slipped disc. In fact, the disc is not slipped out of position, but acquired a buldge at some point as shown in Fig. 8.4.

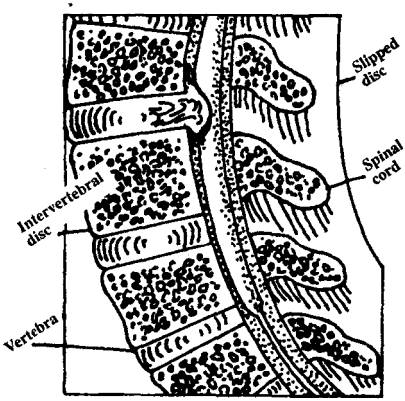

Fig. 8.4 Slipped disc.

What are the known causes for arthritis?

Arthritis may be caused due to following reasons:

a) From injury which often becomes chronic.

b) From infections due to gonococcal, dysenteric or pneumococcal

organisms, or tuberculosis, or associated with scarlet fever, enteric fever, syphilis etc.

c) From nervous disorders.

d) From blood disease like hemophilia.

e) From deficiency diseases such as rickets or scurvy.

What is flat-foot?

This is a depression of one or both feet and is associated with dropping of the arches and turning out of the foot in various degrees.

What is peget's disease?

In peget's disease the normal functioning of bone tissue is disordered causing progressive deformities of several bones, particularly skull, spine and pelvic bones.

What is a fracture and how fractures are caused?

Any break in the continuity of a bone is called a fracture. Fractures are mainly caused in road accidents, sports or falls. They are diagnosed by X-rays and normally treated by orthopedicians by plastering.

Mention some causes and the symptoms of gout. Can it be cured?

A disorder of joints, caused by the accumulation of uric acid salts in the body and is often inherited. Exposure to cold, worry, fatigue, also predispose to attack of gout. It is especially likely to occur in those who indulge habitually rich foods and alcohol. Gout causes sudden inflammation of a joint with severe pain. It is treated by drugs which may reduce inflammation temporarily, but cannot cure the disease.

(B) DISORDERS OF MUSCLES

What is muscular dystrophy?

Muscular dystrophies include several inherited conditions in which there is progressive weakening of the muscles. Mainly, there are, six forms of dystrophies. The common feature of all forms of dystrophy is the way the muscles become weakened.

What is myasthenia gravis?
Myasthenia gravis is a disease characterised by muscle weakness, the individual easily tiring with recovery of strength after rest. There is no cure for *myasthenia gravis,* but can be controlled with special drugs or removing thymus gland in certain cases.

How muscles and tendon injuries are caused?
Muscles and their tendons are often torn or stretched during vigorous sports and games. A severe sprain or strain causes a sudden acute pain and inability to use the affected area. Pain relievers are given to ease the pain. If a tendon is actually severed, surgery is required.

What is bursitis?
It is an inflammation in which the fluid in the bursa (sac like structure between ligaments and bone or between muscles and joints) is increased or there may be an inflammation of the lining of the bursa.

What is meant by neuro-muscular disorders?
This term applies to a group of diseases in which both the nerves and the muscles are affected.

(C) DISORDERS OF THE NERVOUS SYSTEM

What is neuritis or neuropathy and its symptoms?
Neuropathy is a term used to denote damage to a nerve regardless of the cause. It may be caused by an accident, pressure upon the nerve or due to vitamin deficiency. The symptoms consist of:

a) Pain in area of distribution of the nerve,
b) Tenderness of the affected nerve to pressure,
c) Tingling, numbness and cramps, and
d) Wasting of the muscles of the area.

What is cerebral palsy?
Cerebral palsy refers to a group of neurological disorders affecting children that begins at birth. It often affects speech, may cause mental impairment and stiffness of limbs.

What are the symptoms of brain tumors?
Persistent and recurring headaches, progressive weakness of arms and legs, disturbances in sensation, dizziness, convulsions and sudden episodes of vomiting are the symptoms of brain tumors.

What is encephalitis?
It is an acute inflammation of the brain and is caused by one of the several viruses. It can also occasionally be caused by bacteria. Its common symptoms are headache, fever, vomiting, paralysis, convulsion and in acute cases coma.

How is encephalitis treated?
There is no specific treatment for encephalitis caused by a virus, but if the condition is traced to bacterial infection, antibiotic drugs are effective. Surgery is necessary if it is the result of a tumor or abscess in the brain.

What is meningitis?
It is an infection of the brain and spinal cord. Its symptoms are abrupt onset of fever, headaches and stiff neck. It is most common in young children under 5 years of age. It is treated with antibiotics and sulpha drugs.

What causes strokes?
Strokes are caused from the sudden interruption of the blood supply to the brain.

What is epilepsy?
A disorder characterised by convulsions, seizures or spells in which there is a temporary loss of memory in consciousness. It may be caused by a birth injury or brain disorders, or may be hereditary. The direct transmission from parent to child is however, exceptional and does not occur in more than 30% of all cases.

Why do people faint?
Fainting is caused from transient reduction in the circulation of blood to the brain. It may be due to emotional upset, sudden fall in blood sugar, certain conditions of heart, extreme pain or injury.

How is coma caused?
The state of unconsciousness due to head injury, toxic agent, severe infection, brain tumour or failure of kidney function is called coma.

What is headache?
Headache is not a disease but a symptom of some abnormality in the body. It is an extremely common complaint and is found most often among civilized people. It may be caused due to a variety of reasons such as diseases of sense organs, brain disorders, stress, anxiety, emotional tension, fatigue, fever or disorders of the eyes.

What is migraine?
Migraine is a particular type of severe and recurring headache. Prior to the attack of migraine, one feels zig-zig patterns before eyes, a tingling sensation in the face or limbs leading to severe headache on one side of the head. Other symptoms are redness or watering of one eye, running nose, vomiting. The patient should lie down and keep warm in a semi-darkened room in order that he may sleep at the earliest possible moment. It should be treated by a neurologist.

What is Parkinsonism?
It is a disease of the brain characterised by muscular rigidity and tremor. This disease was first described in 1817 by James Parkinson. The tremor or shaking is rhythmic and slow. Middle aged or old people are easiest prey to it. It is caused due to hardening of the cerebral arteries or degeneration of certain parts of the brain.

(D) DISEASES OF THE DIGESTIVE SYSTEM

Why is food essential for living beings?
Without food, life is just not possible. Living beings require food for production of organic substances, growth and for fulfilling the energy requirements of the body.

What is acute and chronic gastritis?
Acute gastritis is an inflammation of the lining of the stomach caused by bacteria, virus, chemical irritants, or by eating spoiled foods. It persists over a longer period of time. Long-continued and excessive smoking will also cause chronic gastritis.

When does the digestive process begin?

It begins as soon as food is taken into the mouth, chewed and mixed with saliva. Without any difficulty, now food can pass down the oesophagus and into the stomach (Fig. 8.5).

Can one eat normally when part of the stomach has been removed?

Yes, but the amount of food should be reduced and the frequency of feeding increased.

What is stomach and where is it located?

Stomach is a L-shaped hollow, pouch shaped structure lying beneath the diaphragm under the ribs on the left side of the abdomen. Its inner lining contains folds which would increase its surface area when the situation so warrants (Fig. 8.6).

What is duodenum and what are its functions?

Duodenum is that segment of small intestine, which extends for several inches beyond the stomach. It is con-

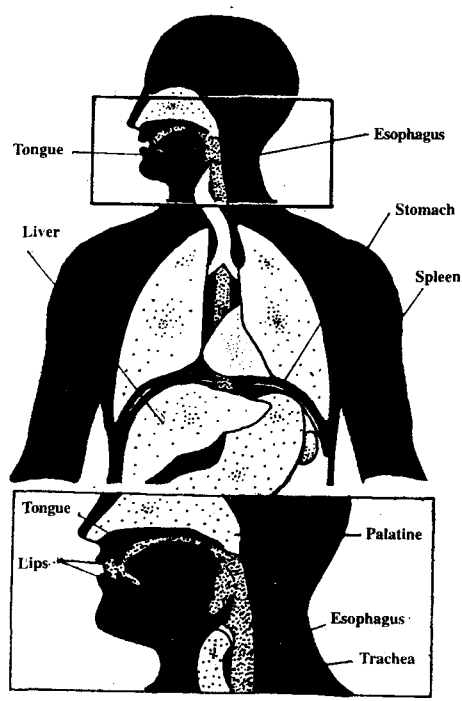

Fig. 8.5 The mouth and oesophagus.

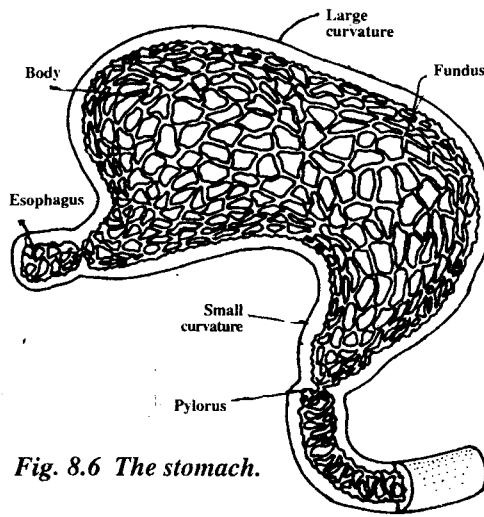

Fig. 8.6 The stomach.

sidered along with the stomach, because conditions affecting the stomach often affects the duodenum too. Duodenum manufactures juices that help to digest foods. It is also the portion of small intestine into which the bile is deposited and the segment, where the pancreatic juices empty.

What are the most common diseases of the duodenum?
Duodenitis (inflammation of the duodenum) and duodenal ulcer. Such an ulcer may be chronic and may persist for years. The duodenal ulcers are three or four times more frequent in men than in women.

What is meant by 'peptic' ulcer?
It is a general term used to describe an ulcer in the stomach, duodenum or the lower end of the oesophagus. A peptic or digestive ulcer is the result of local destructions of the mucous membrane and the underlying tissues of the stomach wall.

What is saliva used for?
It helps us to swallow food by making our throats slippery and to taste food because substances in the food have to dissolve in the saliva for the tongue to taste them. Saliva also begins to digest our food.

Where is saliva produced?
Saliva is produced by salivary glands which reaches the mouth through ducts leading from the glands to the oral cavity. A normal person secretes every day, some 1-1.5 litres of saliva.

Are tumors of the salivary glands common?
Yes, particularly the so-called 'mixed tumors', which involve the parotid gland.
The inflammation of salivary glands may also occur in mumps.

What is Oesophagus?
The oesophagus is a thick-walled tube, whose inner surface is lined with mucous membrane. Through it, swallowed food and fluid are moved to the stomach. The oesophagus has no digestive function, but acts merely as a conduit.

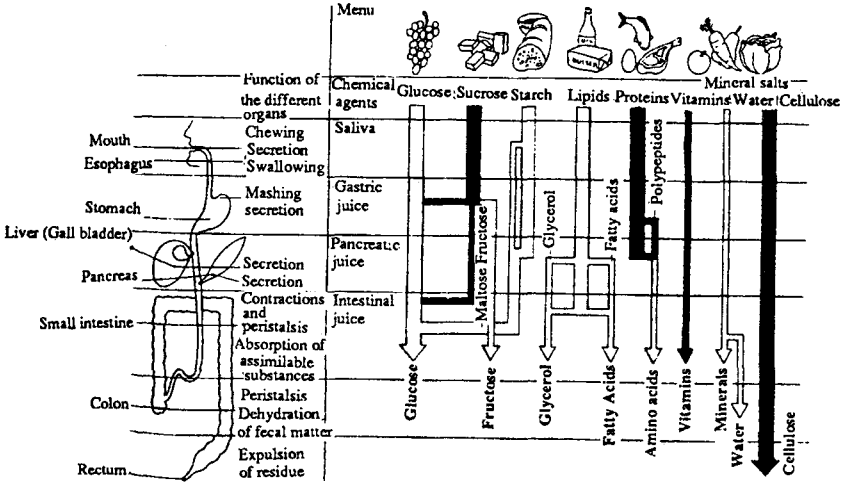

Fig. 8.7 Different juices prouced in digestion.

Account different juices in the process of digestion?
Different juices produced in the process of digestion are shown in fig. 8.7.

What are those conditions affecting the oesophagus?
Birth deformities, inflammatory conditions, injuries including burns and presence of foreign bodies, chronic spasm or tumours.

What are small intestine and large intestine?
They are the portions of the intestinal tract. Small intestine extends from the duodenum to the ileocecal valve. Large intestine is extended from here to anal orifice. Small intestine is approximately twenty feet long while large intestine is five to seven feet long.

What type of birth deformities of the oesophagus are encountered?
The most common type is tracheoesophageal fistula. As a result of this abnormal opening, saliva, milk, or other swallowed materials get into the lungs through the wind pipe and cause irritation, often resulting in pneumonia. If it remains untreated, it always results in death.

What is gastroenteritis?
It is an acute inflammation of the lining of the small intestine and the

stomach. It may be caused by a virus, allergic to certain foods or drink, by eating spoiled foods, alcohol or food poisoning. Gastroenteritis of the new born child generally occurs during the first month of life. It is believed to be due to a virus called *Eschericia coli.*

What is laryngitis?
An inflammation of the voice box or larynx, usually caused by a virus or bacterial infection.

Why is it advisable to breathe through nose rather than mouth?
When we breath through nose, numerous hairs at the entrance of the nostrils keep away the particles of dirt or other foreign matter that otherwise would poison the lungs. If we breathe through the mouth, there are probable risks to our respiratory system. In addition, the air is not sufficiently warmed, before it enters lungs.

(E) DISEASES OF THE RESPIRATORY SYSTEM

What is respiration?
The process in which the lungs take in oxygen is called respiration or breathing. The process of taking in air into the body is called inspiration or inhaling, while releasing air and accumulated carbon dioxide from the body is called expiration or exhaling. The nose, trachea, bronchial tubes and the lungs take part in respiration (Fig. 8.8).

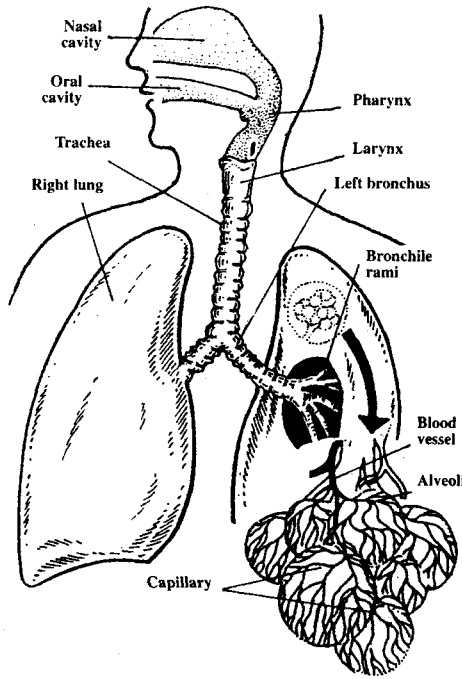

Fig. 8.8 Different parts of the breathing system.

How do we breathe?
We inhale air through the nose or mouth. The air goes to the lungs through the wind pipe. The oxygen in the air is

circulated throughout the body by the blood. It gets oxidised and converted into carbon dioxide, which comes out when we breathe out (Fig. 8.9).

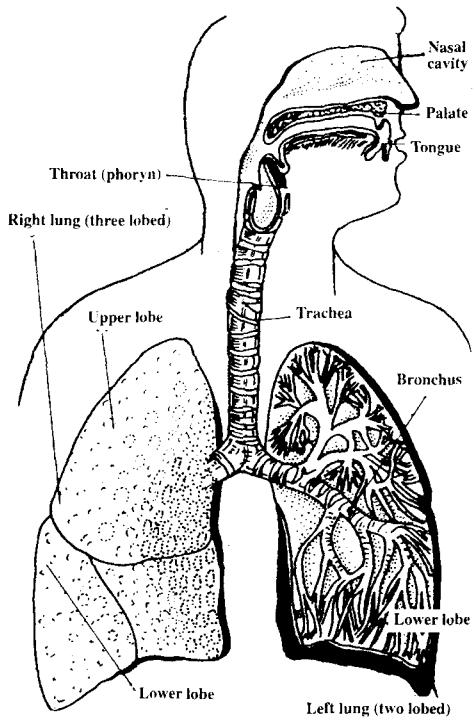

Fig. 8.9 Breathing process

What is the structure of lungs?

Lungs are the organs of breathing, which are located in the chest cavity. They contain bronchial tubes, alveoli, many blood vessels - arteries, veins and capillaries. There are about 300 million air sacs in the lung tissues.

What harm can result from tobacco smoking?

Tobacco smoking can cause local irritating effects on the membranes of the nose, throat, pharynx, bronchial tubes, and lung tissues. Chain smoking may lead to the development of chronic bronchitis, emphysema and cancer of the lung.

What is atelectasis?

It is a condition in which the lung tissue is collapsed and contains no air. It may be due to obstruction of a bronchial tube.

What is emphysema?

It is a condition in which the lung tissue loses its elasticity and becomes over-stretched. This is most often seen in middle and late adult life and is common in men than in women. It is usually associated with partial obstruction of the bronchial tubes, so that air is trapped within the lung. It is found most often in chronic bronchitis and asthma of long duration.

This condition can be arrested by some physical therapies, but it can't be cured.

What are the symptoms of spontaneous pneumotnorax or collapse of the lung?
There is a sudden and dramatic occurrence of chest pain, shortness of breath followed by frequent and severe shock or collapse.

What is pneumonia?
An infection of the air spaces and sacs of the lung by bacteria, viruses, fungus or other types of germs. If it happens to both lungs, it is called Double Pneumonia.

What is a lung abscess?
Lung abscess is an area of pus formation within the lung. It may be caused by the blockage of a bronchial tube, or aspiration of pus or infected mucous.

What is pulmonary infraction?
The destruction of a portion of lung tissue due to interference with its blood supply. It may be caused by blood clot, which has travelled from another part of the body to a blood vessel within the lung.

What is achalasia?
It is a condition in which certain nerves of the oesophagus are absent, probably since birth. Consequently, the lower end of oesophagus is unable to dilate or relax, widening and dilating the area of spasm.

What is sarcoidosis?
It is a chronic disease involving many organs but especially the lungs, which may contain many fine and coarse inflammatory nodules in its tissues.

What is bronchiectasis?
This is a condition in which the small bronchial tubes and air sacs become widened and are partially destroyed. This disease is serious, as mucous secretions tend to stagnate in the air sacs, leading to chronic lung infection. Bronchiectasis can often be cured by removing the diseased portion of the lung.

What is common cold?
An acute inflammation and infection of the nose and the throat. It is extremely contagious and may be caused by a virus. It is transmitted by coughing, sneezing or close contact with any infected person.

Does exposure to dust always cause lung trouble?
No. Dust and fumes of many varieties may be inhaled over longer periods of time without causing any disease of the lung. A prolonged inhalation of cotton dust may cause *byssinosis* and sugar cane fibre inhalation may cause *bagassosis.*

What are influenza and swine flue?
Influenza is a highly contagious virus disease with fever, muscular aches and pains, cough, running nose, sore throat, as well as the inflammation of the respiratory passages. 'Lagrippe' was the term which was used to denote influenza or flu. It usually lasts from four or five days to a week or ten days. It often occurs in the winter months, being spread by droplet infection through sneezing and coughing.

What is tuberculosis?
It is a communicable disease caused by the *Tubercle bacillus*, a germ that is transmitted from one person to another by 'droplet infection', that is, by coughing, sneezing, or spitting. Characteristics nodules or tubercles are formed where bacteria get deposited.

When does artificial respiration become necessary?
When breathing stops, life can be sustained by artificial respiration,either by manual or mechanical means. During emergencies, usually a manual method is necessary but mechanical means of respiration can also be applied. In applying manual artificial respiration, one either blows directly into the lungs of the victim through the mouth or nose, or else one alternately compresses and expands the chest. A machine is used in mechanical artificial respiration.

(F) DISORDERS OF THE HEART, BLOOD VESSELS AND BLOOD

What does blood contains?
Blood is composed of red cells, white cells, platelets and plasma. Red cells contain haemoglobin and give red colour to the blood. They transport oxygen to the body. White cells fight against diseases. Platelets are responsible for blood clotting. Plasma is a nutritional fluid medium.

What are different blood groups?
Different blood groups are A, B, AB, O and ABO. Group O is known as the universal donor group and AB is called universal recipient group.

What is anaemia?
Anaemia is a condition in which the blood has lesser number of red cells or of their hemoglobin or in both together. It causes weakness, lassitude and pallor. Most common anaemia is iron deficient anaemia. Anaemia is mainly caused due to inadequate and vitamin B and C deficient diets. Other factors include iron deficiency, anti-anaemia deficiency and thyroid gland hormone deficiency. More dangerous forms of anaemia are sickle-cell anaemia and congenital anaemia.

What is blood poisoning?
A condition in which bacteria are found in the blood. If the bacteria cause fever and intoxication, the condition is known as Septicemia. When the bacteria are merely present for a short period, the condition is called Bacteraemia, caused due to severe infections.

What is haemophilia?
A hereditary disease characterised by delayed clotting of the blood and a consequent abnormal tendency to bleed or haemorrhage. The application of normal fresh human blood to the bleeding area may arrest the flow. Blood transfusions may sometimes be required. It is almost exclusively a male disease; female merely acts as a carrier.

How hardening of the arteries takes place and what are its dangers?
When elasticity of arteries is lost, their walls become rigid and pipe like.

This is caused by abnormal deposits within the walls of the artery that causes gradual narrowing and eventually block the blood circulation. This abnormality may cause severe heart attacks e.g., coronary thrombosis.

What is Raynaud's disease?

It is a specific disease characterised by attacks of severe spasm of the blood vessels of the fingers or toes. It is most common in girls and women between puberty and middle age. During the attack the hands and feet become numb and there may be pain and tingling.

What is thrombosis?

The formation of a blood clot within the vessel, either in an artery or a vein.

What is aneurysm?

It is a weakness in the wall of the artery resulting in a local dilatation or out pouching, analogous to a blister on a tire.

Can one bleed to death from a lacerated artery or vein?

When a major vessel is severed, it may be fatal. Jugular vein in the neck or major arteries in the limbs if bleed may cause death.

What is varicose veins?

In varicose veins, one or more of its valves become faulty so that blood collects in the vessel making it to swell. (Fig. 8.10). The symptom of varicose vein is a prominent blue, swollen vein usually in the legs.

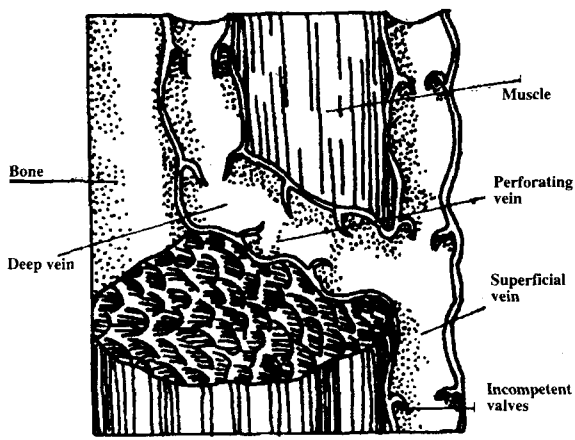

Fig. 8.10 Varicose vein.

What is angina pectoris?

Angina is a symptom of coronary heart disease, due to high blood pressure or the lack of oxygen reaching heart muscles. Angina pectoris is felt as a sharp pain in the chest. Several drugs such as beta-blockers are used to control angina pectoris.

What is embolism?

An embolus is any clump of material - a globule of fat, gas bubble or a clump of blood cells - that is carried in the blood stream, until it lodges in a vessel blocking the flow of blood (Fig. 8.11). It may sometimes cause death.

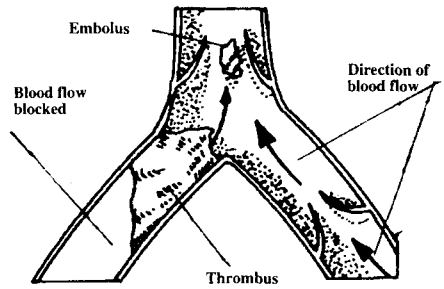

Fig. 8.11 A blood clot in a blood vessel.

What are congenital heart diseases?

Septal defects, damaged valves, arteriosus etc., are some congenital heart diseases.

What is hypertension and hypotension?

High blood pressure is called hypertension and low blood pressure is called hypotension. High blood pressure is caused due to overweight, smoking, alcohol intake, and eating too much salt etc. Anxiety, nervousness may lead to low blood pressure. Both these diseases can be genetically inherited.

(G) DISORDERS OF DUCTLESS GLANDS

What are endocrine glands?

The glands which do not possess ducts to discharge their secretions are termed as endocrine glands. They secrete hormones into the bloodstream.

What are hormones?

Hormone is derived from a Greek word meaning 'to stimulate'. Hormones are organic physiological compounds produced by endocrine glands which direct the activities of the distant parts of the body. Their action is specific and precise and main function is to regulate the chemical processes taking place in the body.

Which is the master endocrine gland and what are its functions?
Pituitary gland is known as the master endocrine gland. It is a small gland, about the size of large pea seed, weighing about a gram. It is attached by a stalk to the base of the brain, almost exactly in the centre of the head. It simulates and controls function of all other endocrine glands in the body. Figure 8.12 shows the position of pituitary.

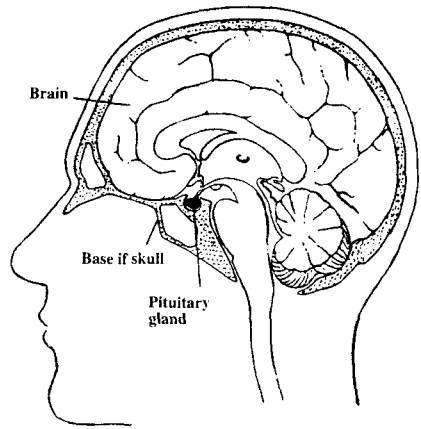

Fig. 8.12 Position of Pituitary gland.

What hormones are secreted by the pituitary gland and what are their functions?
The pituitary gland comprises of *pars nervosa, pars intermediate and pars anterior* portions. The hypothalamic centres act as mediators in regulating secretion of the thyroid and adrenal cortical hormones. From anterior portion of the pituitary gland, six hormones - FSH, LH, TSH, ACTH, GH and PIF are released which regulate growth, metabolism and reproductive functions.

Are there any diseases that result from under activity of the pituitary gland (by popituitarism)?
Yes, if underactivity occurs in childhood, growth will be retarded. Children so affected will remain small, but well proportioned. This condition is responsible for dwarfism. If underactivity is there in adulthood, growth cannot be stunned but the functions of other endocrine glands are affected.

Where are the adrenal glands located, and what do they look like?
There are two adrenal glands, one on each side of the body and are located just above the kidneys. They are somewhat triangular in shape and composed of two separate parts.

What is the adrenal medulla?
This gland lies enclosed by adrenal cortex. It is supplied and controlled by nerves from sympathetic nervous system. The gland produces two hormones, adrenaline and non-adrenaline.

What are the effects of adrenaline, non-adrenaline and cortical hormones?
Adrenaline and non-adrenaline control heart-beats, pulse rates, glucose metabolism and muscular contraction in the digestive and respiratory tracts. More than twenty hormones are secreted by cortex and these cortical hormones regulate osmotic balance, carbohydrate and mineral metabolism and supplement actions of reproductive hormones from the gonads.

What happens if the adrenal glands are removed or fail to function?
For the continuation of life, these glands are very important. Their total removal will lead to loss of weight, debility and eventually to death unless cortisone is given regularly to maintain chemical balance by controlling salt and water quantities in the blood.

Which disease does arise if cortex of the adrenal fails to function properly?
Addison's disease — wherein there is a chronic deficiency of the adrenal cortex.
Cushing's disease— which is caused by an excessive production of the hormone of the adrenal cortex.

What is Conn's syndrome?
This is caused by tiny tumours of the adrenal glands which manufacture a specialised hormone concerned with the normal maintenance of body minerals and fluids. The diagnosis of this condition however, is complex and specialized.

What are sex hormones?
These are androgens (male hormones) and estrogens and progesterone (female hormones). Excessive production of these hormones in young children would bring premature sexual maturity.

What is the function of ovaries and testosterone?

The ovaries in females produce hormones known as estrogens, which is responsible for producing secondary sexual characteristics in female. The ovaries form the egg cells or ova. It also secretes hormones which regulate the function of uterus and causes the menstrual cycle. They also play an important part in the reproductive cycles of matured women. Testosterone brings about development of masculine characters in man.

What is pancreas and what are its functions?

The pancreas (Fig. 8.13) is a flat yellowish gland that stretches across the upper abdomen for a distance of five inches. It regulates metabolism of glucose and secrete into the blood an anti-diabetic hormone, *insulin*. Insulin regulates the rate at which sugar is utilized by the body. Insulin is secreted by the islets of Langerhans of the pancreas. Its deficiency may cause diabetes mellitus.

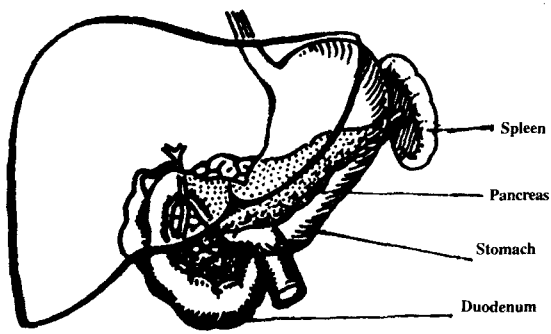

Fig. 8.13 Anatomy of the pancreas

What is pancreatitis?

Pancreatitis is an inflammation of the pancreas and is thought to be caused by infected bile, backing up into the pancreatic ducts. Gallstones are frequently associated with pancreatitis. Also abscess of the pancreas may develop from it.

How can pancreatitis be prevented?

It can be prevented by eating a bland, low fat diet, avoiding overeating, and by restricting alcohol intake. Also any disease within the gall bladder or bile ducts must be eradicated.

What is hyperinsulinism?

Hyperinsulinism or hypoglycaemia is a condition in which insulin producing cells manufacture and secrete an excessive amount of insulin

into the blood stream. Due to this, ulcers of the duodenum may also develop.

What is the Zoolinger — Ellison Syndrome?

In this, there are severe ulcers of the stomach or duodenum caused by a special kind of tumour of the pancreas.

What are the cysts of the pancreas?

Cysts of the pancreas are supposed to be caused by the blockage of one of the pancreatic ducts. They may be the end result of pancreatitis (Fig. 8.14).

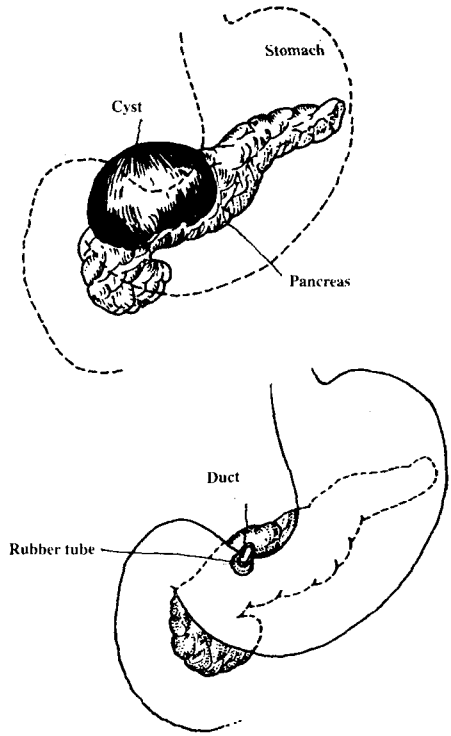

Fig. 8.14 Cyst of pancreas.

What are the common symptoms of over-activity of thyroid?

Symptoms of over-activity of the thyroid gland (hyperthyroidism) are high rate of metabolism, high rate of heat production, increased nervousness and excitement, increased heart beat and protrusion of the eye balls. This condition can be caused by the surgical removal of the part of gland.

What is a goitre?

Goitre is a swelling or enlargement of the thyroid gland. It may be caused due to the deficiency of iodine which is one of the important constituents of thyroxin. This can be cured to some extent by giving iodine in required quantities to the affected persons.

What is thyroiditis?

An inflammatory reaction within the gland, caused by bacteria, viruses or auto-immune mechanisms. It can be treated by antibiotics or X-ray therapy.

What is thymus?
Thymus is a small gland situated below the breast bone and extending above into the neck region. It is better developed in childhood, but gradually shrinks in size in adults. The exact function of thymus is yet not known.

What are parathyroid glands and what is their function?
These are four small glands situated on the dorsal surface of the thyroid, two on each side. These glands produce a hormone, parathormone, which regulates calcium and phosphorous metabolism and the level of these minerals in the blood. They help in blood clotting and nervous activity.

What is hyper-parathyroidism?
This is a condition when there is overproduction of parathyroid hormone. This results in an increase in the amount of calcium circulating in the bloodstream and in the excretion of an abnormally large amount of calcium in the urine. It can also lead to the formation of stones in the kidneys and subsequent impairment of kidney function. It can also cause calcium to be withdrawn from the bones.

What will happen, if there is under-activity of Parathyroid hormone?
Due to this, the blood calcium declines and the phosphorus rises. This results in tetany, muscular twitching, cramps or convulsions.

(H) AILMENTS OF URINARY SYSTEM

What is excretion?
It is the removal of nitrogenous non-gaseous matter from the body.

Where are kidneys located in the body?
The kidneys are a pair of bean shaped, reddish brown organs about four inches long, weighing about 150 gram. They lie on either side of the posterior portion of the abdomen, just below the level of the stomach.

What are the main functions of the kidneys?
They are composed of hundreds of thousands of tiny units known as nephrons, which form urine as the plasma of the blood passes through.

Approximately one-fourth of the blood output of the heart is conveyed to the kidneys. It is also the function of the kidneys not to extract certain needed chemicals and substances from the blood.

What are the different components of urinary system of man?
The urinary system of man consists of the kidneys, ureters, urinary bladder and urethra (Fig. 8.15).

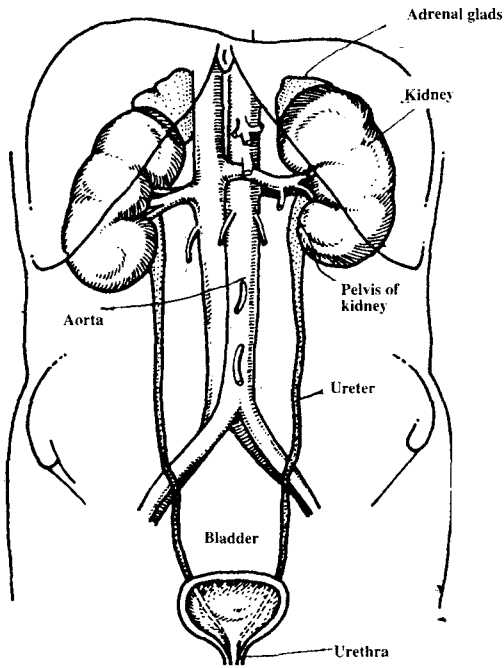

Fig. 8.15 Normal kidney and ureters.

Can one live a normal healthy life with only one kidney?
Yes, provided the remaining kidney functions normally.

What is Bright's disease?
This is an old term, named after a famous physician which denotes a variety of diseases. It is also called nephritis. In most cases the kidney as a whole is generally damaged.

What is glomerulonephritis?
It is a specific disease that affects the nephrons of the kidney. It is caused by inflammation of nephrons and can lead to scarring and destruction of these structures with consequent impairment of kidney function.

What is uaemia?
This term denotes the abnormal chemical changes in the blood and symptoms of an advanced stage of kidney failure, when kidney is no more able to eliminate waste products.

How tuberculosis occurs in the kidney?
This usually results from blood-borne infection from tuberculosis elsewhere in the body. The disease is more common in women than in man.

What is nephrosis?
It is a general term relating to certain types of kidney disorder in which there is generalized water logging and swelling of the body tissues. This swelling is visible on the face, abdomen and legs.

What is the significance of blood in the urine?
This indicates that something is wrong somewhere in the urinary tract and the patient should seek medical advice promptly.

What are kidney stones?
Kidney stones are a combination of inorganic salts such as calcium, phosphorus, ammonium, etc., or may be composed of organic compounds such as uric or amino acids.

What causes kidney stones?
These stones may be caused by improper diet, chemical imbalances in the urine, vitamin deficiency, infections within the kidney, disorders of the endocrine glands. It may also be caused by poor drainage in one or more parts of the urinary tract or by drinking hard water.

Who is most likely to get a tumour of the kidney?
Tumours of the kidney occur after the age of forty in either sex. One special type, called Wilm's tumour occurs in infancy and childhood. Malignant growths may be primary or secondary and consist of various types. But fortunatly none is very common.

Can stones be found in the ureter?

Ureter is a tube like structure connecting the kidney with the bladder. Stones rarely form in the ureter, but kidney stones often pass down into the ureter and lodge there. When found in ureter they are called ureteral stones (Fig. 8.16).

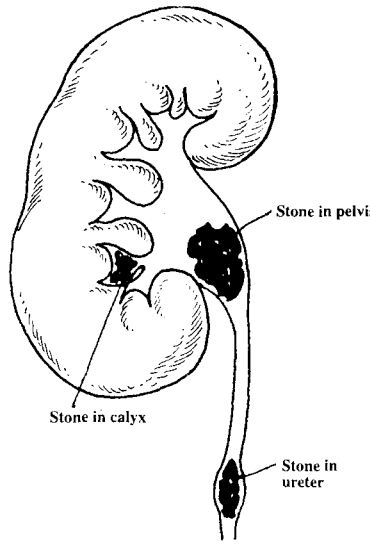

Fig. 8.16 Kidney stone.

What are the congenital defects of the kidney?

They are: one kidney instead of two, one or two small additional kidneys, wrong position the of kidney, both kidneys on the same side, duplication of ureters, horse shoe kidney, etc.

What are the common causes for kidney injuries?

Automobile accidents, athletic events such as football or boxing or fall from a height with a direct blow to the kidney area may cause injuries to the kidney.

What is a dropped or floating kidney?

A kidney detached from its moorings and drops to an abnormally low position in the body (Fig. 8.17) is known as a floating kidney. One third of all such cases of floating kidney have no symptoms, in which, no treatment is necessary.

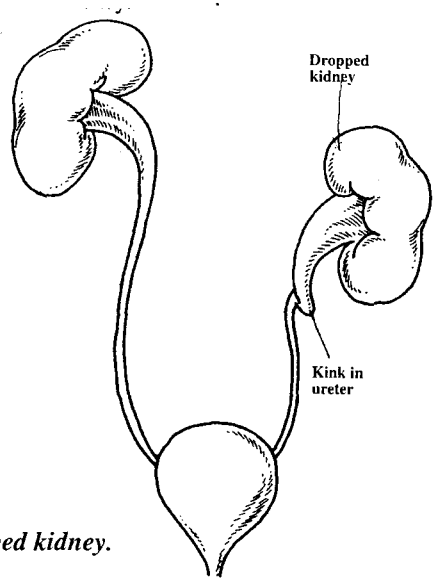

Fig. 8.17 Dropped kidney.

What is a ureterocele?
A cystic formation at the bladder end of the ureter due to an abnormal opening of the ureter into the bladder. There is also a weakness in the wall of the ureter in its lowermost portion, probably the result of a birth deformity.

What is the treatment for a tumour of the ureter?
Removal of the ureter along with its kidney and a portion of the bladder surrounding the entrance of the ureter is the only treatment for a tumour of the ureter.

What is the urinary bladder and what is its function?
It is a hollow muscular organ situated at the bottom of the abdominal cavity, capable of changing size, depending upon the amount of urine it contains or expels. The bladder receives urine from the kidneys via the ureters and expels the urine through the urethra.

Is cystitis a common disease?
Yes, it is perhaps the most prevalent disorder of the urinary tract occurring especially in females. It is caused by bacterial infection.

How do bacteria reach the bladder?
It reaches the bladder from the outside through the urethra, from the kidneys, and from the intestinal tract.

What is a bladder fistulla?
It is an abnormal communication between the bladder and some neighbouring organs such as the vagina, the intestine, the uterus, etc.

What causes bladder stones?
Stones resulting from bladder produce disease like a tumor, or diverticulum of bladder wall. Infection of gallbladder favours the formation of gallstones. Many stones originate in the kidney and pass down into the bladder from above. Some stones are formed directly in the bladder due to stagnation and pooling of urine.

What is the structure of the urethra?
An abnormal narrowing in the canal usually caused by scar tissues

formation. It may be a birth deformity or caused by an infection of the urethra.

What is the carbuncle of the urethra?
A small piece of overgrown tissue located at the opening of the urethra is the carbuncle of the urethra.

What are the commonest causes of infection of the urethra?
Gonorrhoea, fungus, bacteria or chlamydia may cause infection of the urethra.

What is a diverticulum of the urethra?
It is a small outpounching of the urethral canal resulting from a birth deformity or secondary infection in the wall of the urethra. It occurs almost exclusively in women.

(I) PROBLEMS OF MALE AND FEMALE REPRODUCTIVE SYSTEM

What is reproduction?
Reproduction is the process of producing young offspring who resemable the parents in many respects with some or similar characteristics.

What are the types of reproduction?
These are—sexual reproduction and asexual reproduction. In sexual reproduction both organisms, male and female, take part, while in asexual reproduction, only one organism takes part.

What kinds of cells are involved in reproduction?
Two kinds of sex cells or gametes are involved in the process: the male gametes — sperm, and the female gametes — ovum or egg.

How many chromosomes are there in a zygote nucleus?
There are 46 or 23 pairs of chromosomes in a zygote nucleus.

How is ovum produced in females?
Within the ovary of a sexually matured female, one of the primitive Graafian fol-licles begins to mature from time to time. The cells sur-

rounding the primitive ovum multiply until they form several layers. Finally, the follicle ruputres and the ovum is discharged from it. This process is called ovulation. The ovum enters the uterus via the fallopian tubes. If the egg is not fertilized, it passes out in the menstrual flow.

What happens in the course of the act of copulation?

In this, the seminal vesicles emit a secretion in which the sperm coming from the testes are suspended. These products are transported to the upper end of the urethra, where they mix with secretions from the prostate gland. The mixture of sperm and secretions from the prostate gland is called semen. Each sperm has a somewhat spadelike head, attached to a long filament, the *flagellum*, which propels the sperm by means of lashing movements.

What is the result of copulation?

Semen deposited in the vagina and the sperm make their way up to the uterus by their own movements and by contractions of the uterus. They enter the fallopian tubes. If there is a matured egg in one of the fallopian tubes at this time a sperm may penetrate the egg and fertilization takes place. The cell is now known as zygote.

Where are sperms produced in males?

The male germ cells or spermatozoa develop in the testes. They are transported to the female sex organs through the external male organ called the penis. The penis also serves to discharge urine. Structure of sperm in mammals is shown in Fig. 8.18.

What is menstruation?

It is a bloody discharge from the vagina occuring at more or less regular intervals of 20-28 days throughout the child bearing period of a woman's life.

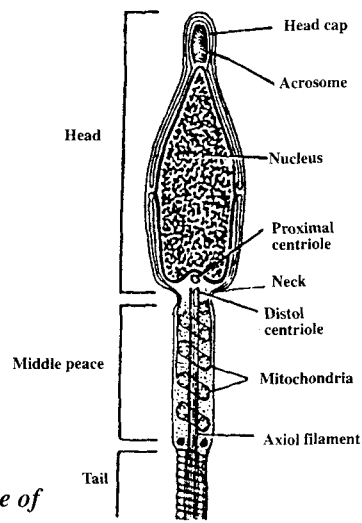

Fig. 8.18 Structure of mammalian sperms.

The cycle of 20-28 discharges begins somewhere between the ages of eleven and sixteen years. It is dependent upon climate, race and general health.

What is menopause?

It is that period in a woman's life during which the production of matured eggs and menstruation comes to an abrupt end. In other words, reproductive life ends at the menopause. In most women, it occurs between the age of forty-five and fifty.

What is the uterus?

The uterus or womb is a pear-shaped muscular organ lying in the middle of the pelvis. It is a thick walled sac, approximately three inches long, two inches wide and one inch thick. The cavity of the uterus connects with the vagina through the cervix and connects with the abdominal cavity through the fallopian tube.

What are the functions of the uterus?

Reception of a fertilized egg, nurturing and harbouring of the embryo during its development and expelling the baby when it is mature and ready for delivery are some of the functions of the uterus.

What is hydrocele?

It is a collection of clear fluid other than blood or pus within a membraneous sac surrounding the testicle. It may also occur in the spermatic cord. The treatment of the common or primary hydrocele containing clear fluid any consist in palliave measures; other measure is the removal of the sac by an opnatin.

What determines the sex of a child?

There are two sex chromosomes named ***X*** and ***Y*** because of the way they look under microscope. Ovum of the female and the sperm of male contain sex chromosomes. Ovum has only ***X*** chromosomes but sperm has both type of chromosomes ***X*** and ***Y***. If during the process of conception ***X*** chromosome from the sperm fertilizes the ovum, a girl is born. If however, a ***Y*** chromosome fertilizes the ovum, a male child is born.

What is the scrotum or scortal sac?
A semi-elastic muscular sac covered by skin, located beneath the penis. It is divided into two compartments, each of which contains a testicle, an epididymis and a spermatic cord.

Can sex be predicted before birth?
Yes, by a test known as *amniocentesis*. In this test a long needle is inserted through the abdominal wall into the pregnant woman's uterus and some fluid is withdrawn and is examined microscopi-cally. If *chromatin* bodies are seen then the foetus is female, if not, then male.

What is an abortion?
The spontaneous or artificially induced expulsion from the mother's womb of a non-living embryo or child during the early stages of development. The spontaneous abortion is often called a miscarriage. The word "abortion" is used medically to cover all expulsions of the embryo baby before it is born.

What is the difference between incomplete and complete abortion?
In a complete abortion, the entire foetal sac along with the placenta are fully expelled from the uterus. In an incomplete abortion the patient herself expels most of the uterine contents but a small piece of membrane or placenta remains attached to the wall of the uterus.

What is the difference between threatened abortion and inevitable abortion?
In a threatened abortion, the cervix remains undilated and the products of conception are not expelled; while in the inevitable abortion, nothing can be done to prevent expulsion of the foetus from the uterus.

What is the function of the fallopian tubes?
Their function is to transport the egg dis-charged from the ovary down to the uterine cavity and to permit sperm to pass from uterine cavity up towards the egg.

What is a metrorrhagia?
Irregular and acyclical bleeding from the uterus is termed as metror-rhagia. It occurs at any time in menstrual cycle and may vary from continuous heavy loss of blood to a slight staining by clot.

What are the most common sexual disorders?

In men, premature ejaculation and impotence whereas in woman, frigidity and painful intercourse are some of the disorders.

What is hernia?

It is a defect in a body compartment (cavity) that permits a structure to leave its normal confines and extend into a region, where it does not belong.

What are the types of twins?

a) Identical or uniovular twins: Identical twins arise from the same egg and are always of the same sex (Fig. 8.19)

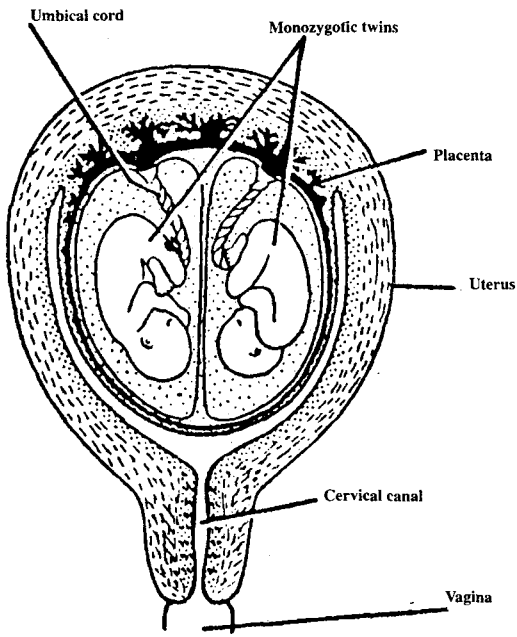

Fig. 8.19 Identical twins.

b) Unidentical or fraternal twins: Fraternal twins arise from two separate ova that have been liberated and fertilised within a relatively short period of time. They may be of different sex.

c) Conjoined or siamese: Conjoined twins arise when they are being fused with each other wholly or in part. Most of these do not survive.

What is a veneral disease?

A condition that is contracted as a result of sexual contact or exposure to kissing, nursing or even simple handling of any infected material. The most prevalent diseases are gonorrhoea, syphilis, chlamydia.

What is syphilis?

The word syphilis comes from a greek word meaning "filthy". This disease starts as a sore in the region of contact. It is caused by a bacterial organism known the *Treponema pallidum.* It is usually passed from one person to another during sexual intercourse or it may be inherited from syphilitic parents.

What is gonorrhoea?

It is caused by an organism, which is localized to the genitals and is characterized by frequency of urination, painful swelling and discharge from the region.

Where is milk produced in the female body?

Milk is produced in the mammary glands which are bag-shaped and located in the breast (Fig. 8.20). Breasts of women however, are the secondary sex organs.

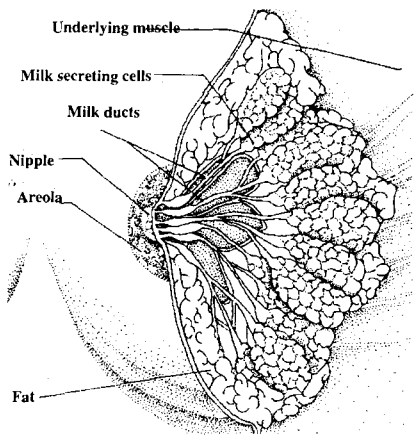

Fig. 8.20 Milk producing organs in females.

OOO

9.

Mental Health and Illness

What is mental illness?
Mental illness is, when a person cannot think rationally and his behaviour differs from a normal human being. Mental illness usually begins after a period of emotional stress. About 15% of world's population is suffering from mental diseases of some kind or the other. Muscle relaxation, deep breathing, meditation, exercises help us to remain mentally fit.

What is neurosis?
Neurosis consist of large number of functional disorders which are coused by internal conflicts, anxiety, depression, phobias and compersions. In neurosis, the patient reacts unreasonably to everyday stresses.

What are phobias?
Fear of common objects or situations are called phobias such as agora-phobia (fear of public places), social phobia (excessive shyness), fear of heights, fear of a particular animal. Phobia can be treated with behavioral therapy.

What is depression?
Depression is a mental disorder manifested by the lowering of spirits and a pessimistic outlook. It is usually associated with tension, anxiety and agitation. It is treated by antidepressant medicines.

What is hypnotherapy?
In hypnotherapy, the therapist will discuss a patient's problems and try to establish a rapport, so that the sufferer is responsive to hypnosis. The patient is then susceptible to any suggestions—the hypnotist may make

about changes in the patient's behaviour. Post-hypnotic positive suggestions are given to the patient to overcome his/her problems.

What does IQ mean?

These two letters stand for 'Intelligence Quotient'. This is a numerical figure arrived at by a ratio of mental age as obtained by intelligence tests, to actual age of the person.

What is electroshock therapy?

Electroshock therapy is a form of physical treatment in which a small amount of electrical current is applied to the brain for a fraction of a second. It is a safe and effective treatment for mental disorders.

What is the difference between a psychiatrist, psychologist and psychotherapist?

A psychiatrist is a specialised doctor in mental disorders and being medically qualified can prescribe appropriate drugs. A psychologist employs psychological techniques like behavioral therapy. For a psychotherapist, there is no clinical training as such.

What is metamorphic technique?

A relationship between foot and the body's development during the first nine months of life in the womb form the basis of the metamorphic technique.

Its practitioners believe that gentle mani- pulation of the feet, hands and head can help recipients to come to terms with many long-standing problems, including physical and emotional disorders.

OOO

10.

Skin Diseases

What is the function of skin in human body?
Skin is a sense organ of our body. With the help of it, sensation of touch, cold, heat and pain are experienced. It protects the body against water loss, injury and infection, maintains body shape and helps in regulating its temperature. It also acts like an excretary organ, by removing excess water and body wastes in the form of sweat.

What are the parts of skin?
Skin consists of two main layers. Outer layer or epidermis consists of hair, the colour pigment melanin and a layer of dead cells covering an inner lining of living cells. The inner layer of skin is called dermis which consists of blood vessels, nerve endings, sebaceous (oil) glands, sweat glands and hair follicles.

What is the function of the pigment melanin in the skin?
Skin and hair colour depend on the brown pigment melanin. It also protects the skin from harmful effects of the sunlight.

What harm is caused by overexposure to the sun?
An actual burn may result. Also there are skin diseases which can result directly from sun sensitivity.

What is acne?
A condition characterised by the appearance of black heads and pimples on the face, neck and body. The common type of acne that occurs in adolescence, is known as *Acne vulgaris*. *Acne vulgaris* is caused by oversecretion of sebum by the sebaceous glands, under the influence of

sex hormones. Acne almost always disappears with maturity. Treatment, however, is aimed at reducing the amount of sebum produced.

What are the main causes of skin diseases?

The cause of skin diseases are numerous. Immediate causes are: a) hereditary defects or maldevelop- ments, b) physical factors such as friction, heat and cold or irradiation, c) chemical agents such as acids, drugs, dyes, alkalis etc., and d) other causes include parasites, nervous, hormone or gland disorders and synthetic diseases.

What is fungus and what are the skin diseases caused by them?

A fungus is a very small microscopic plant that grows on the skin and causes infection. Athlete's foot and ringworm are the two contagious fungal infections of the skin. In athlete's foot, small blisters are caused, between the toes which may crack with severe itching. In ringworm, the fungus produces circular red patches on the skin with severe itching. The treatment for both the diseases includes antifungal ointments and oral drugs.

What is ichthyosis?

It is a harsh dry condition of the skin, usually appearing in the new born infant or in early life, *scales warty* growths and fissures are commonly associated with the disease.

What is *Herpes simplex* (cold sores)?

Herpes simplex (cold sores) is a viral skin infection. It affects the skin around the lips. A small blister is formed, which bursts to leave a crust. Infection may occur again and again at the same place. Anti-viral drugs and ointments are used for the treatment.

What is albinism?

It denotes a hereditary lack of pigment in the skin, hair and eyes. 'Albinos' are characteristic in appearance and have white skin, pink irises and very fair body hairs.

What is eczema and how does it differ from dermatitis?

Eczema is the inflammation of skin due to an allergy or heredity. A rash may occur anywhere from hands, chest to legs and feet, with itching. The rash becomes encrusted after some time. A steroid ointment is given to ease the itching and inflammation.

Eczema is often confused with many other skin disorders. Dermatitis is caused either by infection or allergy, whereas the cause of eczema is mainly allergic or some hereditary reasons.

What is housewife's eczema?
This is an irritation of hands, usually due to excessive or careless use of detergents and other chemicals used in the routine of household work. It can be prevented by using gloves, while washing and cleaning. In extreme cases, a steroid ointment is given.

What is psoriasis?
Psoriasis is an inherited disease of skin, nails and joints. These areas are covered with dry silvery scale, which are not easily removeable. It can appear at any time of life. It is characterised by well defined raised patches of red colour, called plaques. Usually there is no itching. The disease is non-contagious and a treatment with ultra-violet light and drugs is given.

What is scabies?
It is a parasitic skin infection due to the itch mite. The itch mite burrow in the skin to deposit its eggs, which causes intense itching. A treatment with insecticide lotion proves to be successful in controlling the disease.

Can anything be done for excessive growth of hair on a young woman's face or body?
Yes, it can be removed by electrolysis. In electrolysis, a small needle which acts as an electrode is placed deep into the hair follicle and an electric current is passed through it. This destroys the root of the hair. The hair is then removed by the operator. If electrolysis is done accurately, it results in permanent removal of hair. (Fig. 10.1).

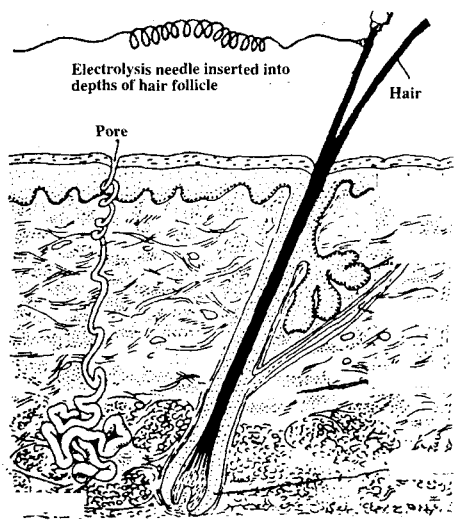

Fig. 10.1 Hair removal by electrolysis.

11.

Disorders of the Eyes and Ears

What are the important parts of a human eye?

Each eye consists of three layers. Outermost white layer is the sclera with a transparent window in the middle called cornea. Choroid is the thin pigmented middle layer, rich in blood vessels, and the iris which fits into the corneal window. The innermost layer is the retina with millions of light sensitive cells called rods and cones and the optic nerve that connects to the brain (Fig. 11.1).

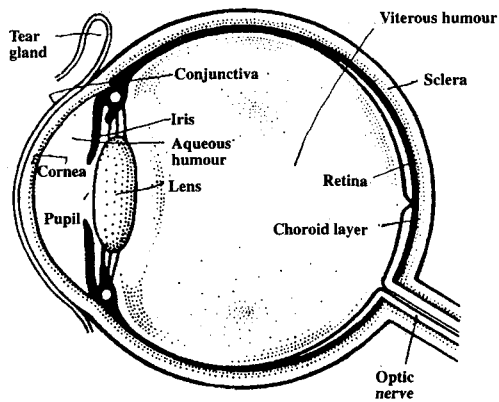

Fig. 11.1 Structure of the eyes.

How do our eyes see objects?

Light rays coming from any object enter into our eyes, which control the amount of light entering inside. A lens inside the eye produces an inverted image of the object on the retina. This image is carried to the brain in the form of electrical impulses by optic nerves. The brain again inverts the

image and it becomes erect. This is how we see objects (Fig. 11.2). The two eyes provide us the stereoscopic vision in a three dimensional image (Fig. 11.3).

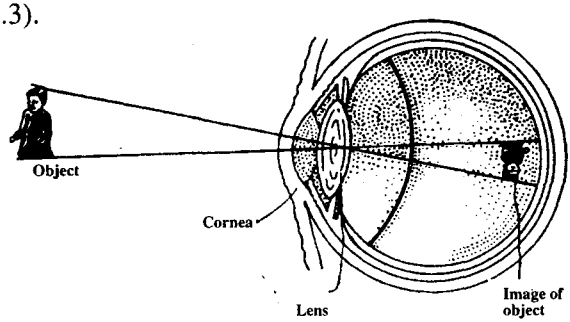

Fig. 11.2 Stereoscopic vision.

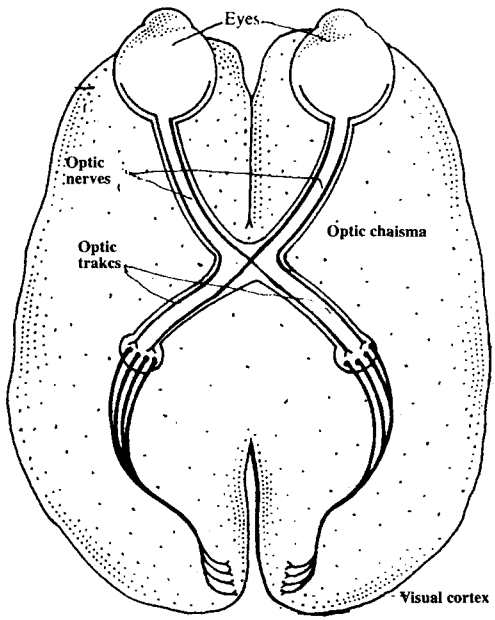

Fig. 11.3 Sight mechanisms

What is a squint (strabismus)?

A squint is the name given to a condition, in which both eyes do not point in the same direction. It may be either due to weak eye muscles or other eye problems. Squint condition can be corrected by some eye exercises or by operation.

What causes tears in the eyes?

Tears are secreted by lacrimal glands. The main functions of tears are to keep the eye surface moist and wash away the dust and other particles. However, they act as a mild antiseptic. Irritating substances, allergies, smoke, any foreign body in the eye and emotions cause overflow of tears.

W at are the common e ects of the eyes?

a) *Short sightedness (Myopia)*: The image is focused in front of the retina (Fig. 11.4). The sufferer is unable to distinguish istant objects clearly. Concave lenses are used for myopia (Fig. 11.5) .

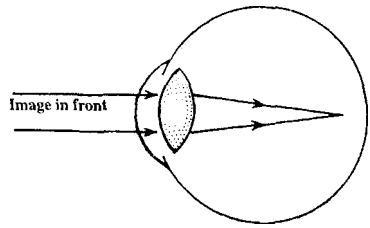

Fig. 11.4 Myopic eye.

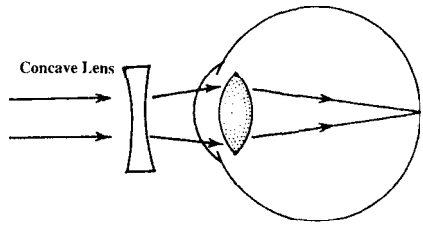

Fig. 11.5 Myopic correction.

b) *Long sightedness (hypermetropia)*: The image of an object is focused be- ind the retina (Fig. 11.6). The vision is better for distant objects than for near objects. It is corrected by using convex lenses. (Fig. 11.7).

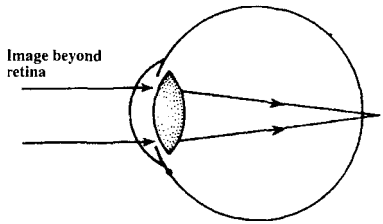

Fig. 11.6 Hypermetropia

c) *Pressbyopia*: A person suffering from pressbyopia is not able to see both near and d stan objec s clearly. It is corrected by both con- ex and concave enses.

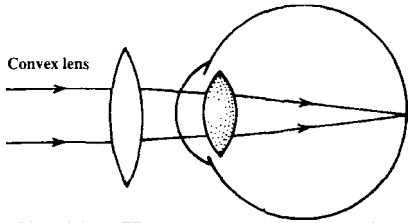

Fig. 11.7 Hypermetropic correction.

d) *Astigmatism*: In astigmatism, both vertical and horizontal lines are not focussed properly. It is due

to the effect on the curvature of the cornea or lens. It is corrected by using cylindrical lenses (Fig. 11.8).

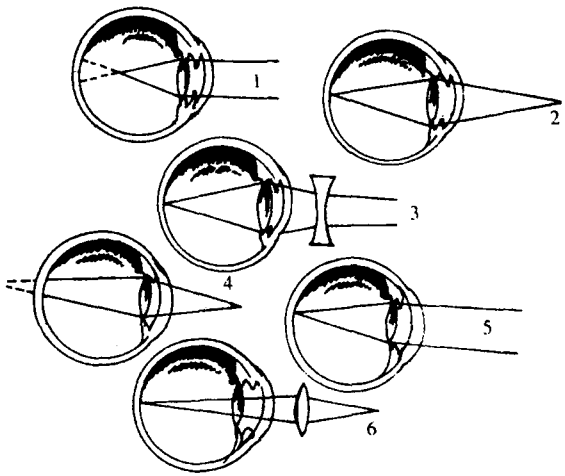

Fig. 11.8 Astigmatism correction.

What is Irido-cyclitis?
It is a chronic disease of slow progress, occurring in persons with poor health. Small white points are formed in the corona as a result of the inflammatory process.

What are the common causes for itching and swelling of the eyes and lids?
Itching may be due to an allergic condition, while swelling of the lids may be due to insufficient sleep or some abnormality in the kidney or harmonal imbalance.

What causes bulging of the eyes?
It may be due to overactivity of the thyroid gland, inflammation, tumour behind the eye, or excessive nearsightedness.

What causes red lid margins?
This is due to dandruff or exposure to smoke, dust or wind, eyestrain, allergy or chronic conjunctivitis. Rubbing the eyes with dirty hands may also give rise to red lid margins.

What is conjunctivitis?
Conjunctivitis is an inflammation of the thin mebrane that covers the white part of the eyeball. There is a mucous discharge which may make the lids adhere to each other. An injury, air infection, or an allergy can cause conjunctivitis. Acute conjunc- tivitis, commonly known as 'pink eye', is infectious and caused by a special bacteria. In pink eye, the eyes become red and sore and there may be a yellow discharge. Antibiotic drops or ointments are used for its treatment.

What are styes and chalazions?
Stye is a painful swelling in the root of an eyelash due to infection. To clean away the pus, a stye should be bathed with tepid salt water. The blockage of an oil producing gland on the eyelid causes a small, hard painless lump which is known as Chalazion or Meibomium Cyst. It should be treated by a doctor.

What are entropion and ectropion?
Entropion is a condition in which the margin of the upper or lower eyelid turns in, causing eyelashes to rub against and thus irritate the eyeball. In ectropion, the margin of the upper or lower eyelid turns outward. Both, entropion and ectropion can be corrected by a simple operation.

What is dacryocystitis?
It is an inflammation of the tear sac of the eyes. It is usually caused after the blocking of tear canal.

What is iritis?
Iritis is inflammation of the iris. Iritis may be caused by some local infection, or a general disease such as rheumatoid arthritis, syphilis, gonorrhea, etc.

What is glaucoma?
In glaucoma, the pressure within the eye ball is elevated above normal. About 2 per cent of all adults over the age of forty develop glaucoma. It may be caused by an injury, haemorrhage in the eye ball or by displacement of the lens. Glaucoma may be painful and if not treated in time, there is damage to the retina and optic nerve resulting in complete loss of sight.

i) Acute type: There is severe pain, redness of the eye, vomiting and blurring of vision.

ii) Chronic type: There are no symptoms as such. By the time the patient knows about the disease, it will be too late to treat.

What is eye cataract?

Cataract is an opacity or a clouding of the lens. It may be due to diabetes, injury or infection in the eye. The tendency to develop cataract increases with age. Cataract can be successfully treated by changing the diseased lens surgically with a contact lens. If not treated in time it may cause severe inflammation and possible loss of the eyeball.

What is a retinal tear?

It is a rip in the retina, which is often caused by an injury.

What is detachment of the retina?

It is a painless condition in which the retina is pulled away from its attachments to the inside of the eyeball. A detached retina, if not treated, may lead to blindness, but it can be treated successfully by surgery.

What is trachoma?

Trachoma is a serious, specific chronic infection of eyelids and surface of the eyes. If not treated in time, it causes scarring of cornea leading to blindness. The cause of trachoma is unknown, but poor hygiene and diet seems to be a cause of it.

What are sympathetic ophthalmia and retinal thrombosis?

Sympathetic ophthalmia: It is a strange inflammation that affects a healthy eye after a penetrating injury to the other eye.

Retina thrombosis: A condition in which clots form within the retinal blood vessels. Due to this, the vision gets either blurred or lost.

What are the common types of tumours within the eye ball?

a) *Melanomas* — It arises in the choroid.

b) *Gliomas* — It arises in the retina.

How does diabetes affect the eyes?

Variation in blood sugar can cause variation in vision. Diabetes is one of the leading causes of blindness.

What is the structure and function of the ear?
Ear detects vibrations of sound in the air, converts them into electrical impulses and transmits to the brain. It also helps in maintaining the body balance. There are three parts of the ear. i) External ear which consists of ear flap and external auditory canal. ii) Middle ear: eardrum, eustachian tube and three small bones. iii) Inner ear: cochlea, ear fluid and labyrinth (balancing organ).

What are *Olitis externa* and *Olitis media*?
Olitis externa: It is an outer ear infection causing the inflammation of the lining of the ear canal. The ear should be kept dry and eardrops are used for its treatment.
Olitis media: This infection occurs in the middle ear with throbbing pain. The cause can be cold, influenza, tonsillitis, measles. Doctors should immediately be consulted, who may prescribe antibiotics.

What is the range of sounds that an ear can detect?
The frequencies ranging from 16Hz (cycles per second) to 20,000 Hz are within the limit of human hearing.

What is otosclerosis?
It is a common cause of chronic deafness. In otosclerosis the middle-ear bones stiffen by a new deposit of bone. Since the bones cannot move, the sound waves cannot be transmitted to the fluid of internal ear resulting in deafness. The only treatment for otosclerosis is surgery.

OOO

12.

Mouth and its Parts

Why do the lips swell after a slight injury?
Blood clots in the affected area due to spongy nature of the lips. Direct pressure with cold water application would reduce the swelling in a few y .

What is harelip?
When a baby is born with an open or cleft upper lip, it is known as harelip. It occurs about once in every thousand births. Harelip is caused by the failure of the two sides of the upper lip to fuse together during the development of the embryo (Fig. 12.1).

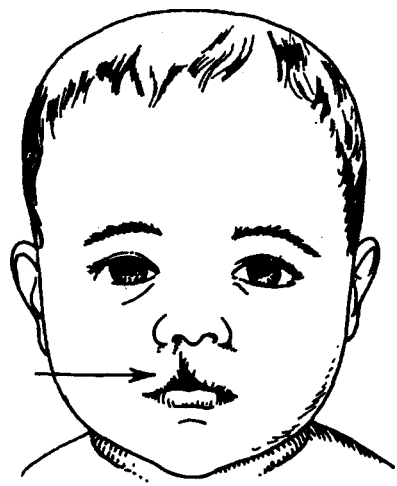

Fig. 12.1 Harelip.

Does a cleft palate interfere with speaking?
Yes. Normal sounds of speech cannot be developed, as there is a loss of the resonating factor of the closed plate. The defector fusion of the palate can be corrected by surgery. Many children benefit from speech therapy, but this can only help those with good mobile, soft plates and is no substitute for surgery.

What are the common conditions affecting the jaws?
Infections, fractures of the jaws and cysts or tumours of the jaws are the common conditions affecting the jaws. Infection of the bones jaw occur

from abscessed teeth or infected sinus. It can be treated by antibiotic drugs or removal of the infected bone by surgical methods.

What is a cleft palate?

Cleft palate is the deformity, which is sometimes associated with harelip. It is a malformation of the roof of the mouth of the new born child which allows straight communication between the nose and the mouth during the sixth and twelfth week of development of the foetus (Fig. 12.2).

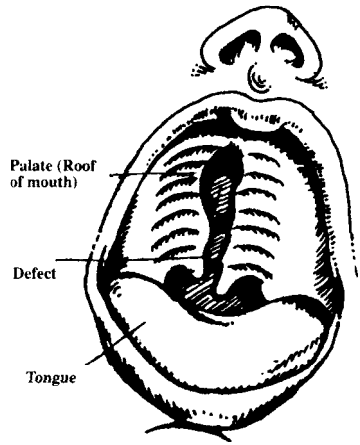

Fig. 12.2 Cleft palate.

Are fractures of the jaw common?

Yes. Fractures usually take place in the lower jaw and in the centre at the level of the pre-molar teeth (Fig. 12.3) due to fatal accidents. A jaw fracture is treated by surgery (Fig. 12.4) and the patient is confined to completely liquid diet, since the jaws are wired together not allowing him to bite or chew.

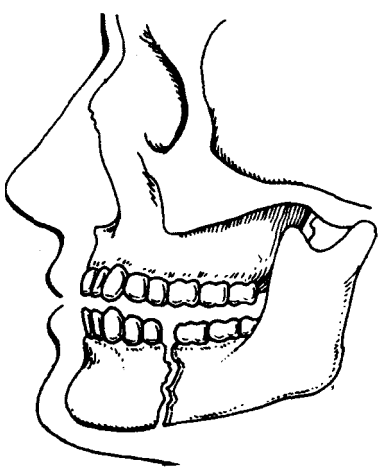

Fig. 12.3 Fracture of the lower jaw.

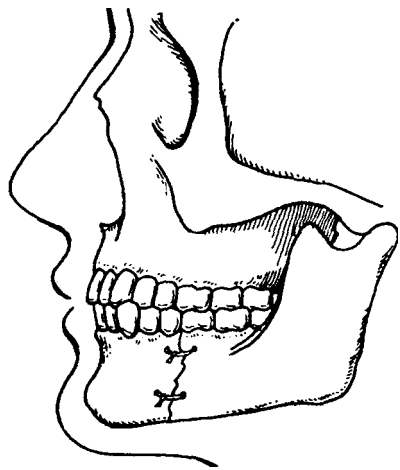

Fig. 12.4 Fracture wired and fragments brought into alignment.

Are cysts of the jaws common?

Yes. Malformation of the teeth, with failure of the tooth to emerge beyond the jaw margins, often leads to the formation of the cysts. These cysts are called dentigerous cysts. For the treatment of the cyst, the bone overlying the cyst is opened by a surgeon and the tooth is removed. The cyst then fills up with bone.

What causes bad breath?

The condition may be transitory and may develop after eating certain foods, taking certain medications, or after excessive smoking or drinking of alcoholic beverages. Indigestion with a furred tongue or infected sinuses may also give rise to the offensive breath.

What is pyorrhoea?

Pyorrhoea is an infection of the gums involving the margin of the teeth with the gums. It usually begins in early adult life. By removing tartar and correcting dental defects pyorrhoea may be treated. A dentist should be consulted for the treatment.

What do you understand by milk teeth and permanent teeth?

H g ets teeth. The first set of teeth which begins to appear from the age of seven months to two years is called milk teeth. These are 20 in number. The second set consisting of 32 permanent teeth begins replacing milk teeth at about six years of age. All the teeth are covered with the hardest substance in the human body called the tooth enamel (Fig.12.5).

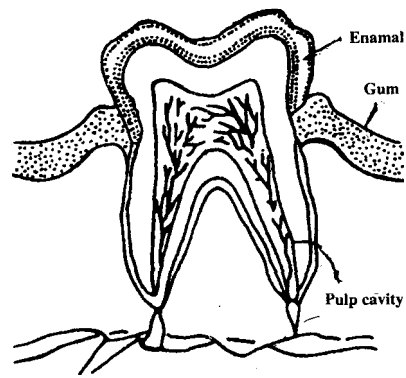

Fig. 12.5 Tooth enamel.

What is trench mouth?

Trench mouth or Vincent's angina is a frequently encountered infection which involves the inflammation of the lining of the mouth. It occurs in debilitated persons or in crowded communities. Bad taste of mouth, bad breath, painful ulcerations on the tongue, or gums with bleeding are the

symptoms of trench mouth. By avoiding contact with infected person and proper use of antibiotics one can prevent trench mouth.

What is wisdom teeth?

The third molars are called wisdom teeth because they usually appear around the age of 20. They are four in number.

How are teeth arranged in human beings?

There are four types of teeth present in human beings : Eight incisors, four canines, eight premolars and twelve molars (Fig. 12.6). These 32 permanent teeth are arranged in pairs on each side of the upper and lower jaws. The incisors are the eight front teeth, four in each jaw. The canines are four pointed teeth, one on each side of incisors, two in each jaw. Next to each canine are two premolars four in each jaw and three molars, six in each jaw respectively (Fig. 12.7).

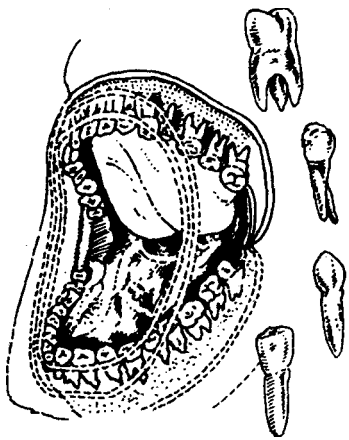

Fig. 12.6 Four types of teeth.

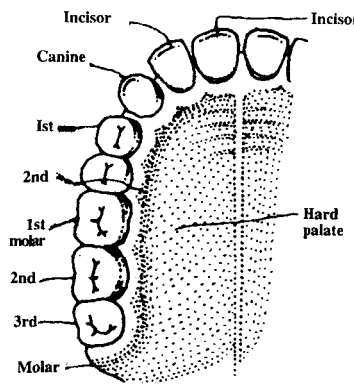

Fig. 12.7 Teeth arrangement.

What causes cavities of the teeth?

Cavities of the teeth are caused by certain acid producing bacteria or germs that grow in the mouth. Surgery foods, poor hygiene and irritation of teeth by poorly fitting dentures also cause cavities. Regular dental check-up is absolutely necessary for prevention of cavities.

What are false teeth made of?

False teeth are made of materials that are strong and do not dissolve in the mouth. People once had false teeth made of ivory, rubber or gold, but nowadays dentists make them of plastics or porcelain. These materials are very tough and they can be coloured to look exactly like real teeth.

Which is the sense organ for taste and how does it detect?

Tongue is the sense organ for detecting tastes. The granular lumps on its upper side, called taste buds, however, detect different tastes. The front portion has the taste buds which are sensitive to sweet and salty tastes. Back portion detects bitter while the buds on the edges are sensitive to sour taste. Taste buds are connected with the brain through nerves which carry information into the brain to detect a particular taste. About 10,000 taste buds are present on the tongue (Fig. 12.8).

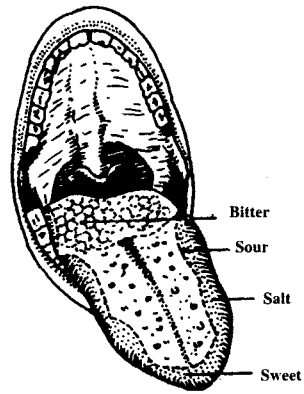

Fig. 12.8 Taste buds.

What is black tongue?

In this condition the back of the tongue is stained black. It occurs due to the growth of a yeast-like organism. The infection often develops during treatment with penicillin lozenges when the usual flora of the mouth are killed.

What is glossitis?

It is an inflammation of the tongue. It may be associated with stomatitis of various type. It is caused by smoking, dyspepsia, anaemia, too hot food or tertiary syphilis. There may be swelling of the tongue with difficulty in speaking.

What diseases of the body are frequently reflected by the changes in the appearance of the tongue?

Deficiency diseases, such as certain types of anaemia, generalized skin conditions, are reflected in changes of the appearance of the tongue. The

state of hydration or dehydration—the tongue appears dry and coated whenever the patient lacks the proper amount of fluids within the body.

What is leukoplakia?

Leukoplakia means white plate. It is frequently called smoker's tongue or smoker's patches. It is manifested as a disease appearing on the mucous membrane or lining of the oral cavity and presents itself as whitish blue thickening on the inner aspects of the cheeks, palate, gums, tongue, walls of the pharynx and sometimes the larynx.

○○○

13.

Allergy

What is an allergy?
Allergy is a state of abnormal sensitivity to one or more ordinarily harmless substances. It is an unwanted reaction of after body's immune system.
Substances that produce allergies are called allergens. The pollen grass, dust, animal hair, certain foods, drugs and cosmetics are some common allergens. Allergies are curable, but may recur occasionally. They are very rarely, fated. The best treatment for an allergy is by avoiding the substance that causes the particular allergy.

What are the common symptoms of allergy?
Sneezing, shortness of breath, itching and rashes on the skin are the common symptoms of allergy.

What are the most common form of allergies?
Hay fever, bronchial asthma, eczema, hives, migraine etc., are common allergic diseases. Allergies may also be inherited but, is never contagious. The chances of a child (whose parents are allergic) are higher towards developing an allergy.

Are skin tests for allergy always reliable?
No. Sometimes an individual may show positive results without being allergic to a particular substance.

What is hay fever?
Hay fever is a respiratory allergy caused by sensitivity to pollens or molds

or both. Repeated sneezing, headache, fever are some of its main symptoms. Hay fever is especially common in May, June and July.

What is bronchial asthma?

A condition associated with bronchial tubes characterised by high cough and difficulty in breathing. It is a chronic disease. The common symptoms of asthma are wheezing, suffocation, dry cough and difficulty in breathing. About 3 to 4 per cent people in the world have bronchial asthma.

What is the treatment for asthma?

By avoiding the allergen that causes asthma, giving steroid medications and inhalation of some special medicines, asthma could be treated. Asthma can never be said to have completely cured because it has a tendency to recur frequently, due to dependent on respiration process for one's survival.

What is food allergy?

Disorders of the stomach come under the category of food allergy. Eggs, cow's milk, sea foods and alcoholic drinks are found to be particularly allergenic.

What is the treatment for drug allergies?

Anti-histamines and steroids are most helpful in the treatment of drug allergies.

OOO

14.

Cancer

What is cancer (Malignancy)?
Cancer is a condition in which certain body cells multiply without any apparent control and destroy healthy tissues. This uncontrolled and rapid multiplication of cells results in a localized lump, called malignant tumour. Cancer cells can grow in any part of the body.

Who are prone to cancer — man or woman?
Both. But, certain types of cancer occur more in man than woman. For example lung cancer is more prevalent among men, while breast cancer is more prevalent among woman. Cancer occurs more frequently in the latter half of the life.

What causes cancer?
Though the cause is not clearly understood, the environmental factors — many chemicals in industrial processes and certain types of radiation have been shown to be carcinogenic (cancer-causing). It is now proved that cigarette smoke is the major cause of lung cancer. Similarly, tobacco chewing results in cancers of mouth and tongue.

How cancer is treated?
Surgery, radiotherapy, and chemotherapy are the most common weapons used to fight cancer. But treatment varies depending on the nature of the cancer.

What is a benign tumour?
Lumps of tissues that are not cancerous are said to be benign tumours. A benign tumour does not invade healthy tissues.

What are the symptoms of cancer?

The researchers in the field list many warning signals that may indicate that the disease is developing. They are:

a) Any changes in bowel or bladder habits indicate colon, bladder and prostate cancer.

b) A sore that does not heal indicates mouth or tongue cancer.

c) Unusual bleeding or discharge—

i) Blood in urine may be a symptom of kidney or bladder cancer.

ii) Vaginal discharge or unusual bleeding might be a sign of cancer of the reproductive organs of women.

d) Persistence indigestion or difficulty in swallowing. These may be warning of stomach or throat cancer.

e) Thickening or lump in the breast—breast cancer.

f) Obvious change in a mole or wart. Any sudden change in its size of colour could signal of skin cancer.

g) Nagging cough or chronic hoarse-ness—a sign of lung cancer.

h) Tiredness, persistent severe headache and frequent blackouts—brain cancer.

What are those categories in which cancer can be diagnosed?

a) Those in which early detection and treatment is possible, viz., cancer of skin, breast, cervix, lung, bladder and Hodgkin's disease.

b) Those which can rarely be detected at an early stage, like cancer of pancreas or stomach.

c) Those when detected initially have already spread carcinogens throughout the body, as in leukemia.

Will cancer prove fatal if not treated?

No. Certain types of cancer spread very slowly enabling the patient to live a normal life. Treatment of other types of cancer depends on their location and the stage at which they are first discovered and treated.

How does cancer spread?

A malignant tumour can destroy any organ. Some carcinogens break away from the tumour and carried through the blood stream to other parts of the body, where they multiply and start more tumours. The tumours can eventually destroy the vital organs. Normal and abnormal malignant cells are shown in Fig.14.1.

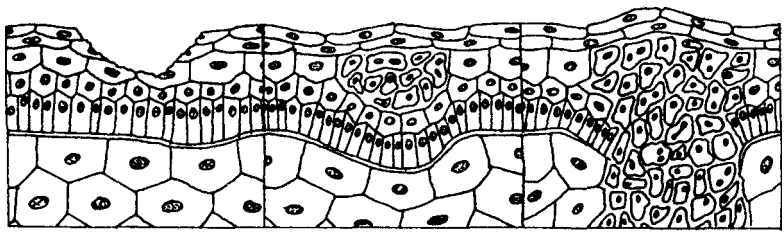

Fig. 14.1 Normal and abnormal malignant cells

What is leukemia?

Leukemia or blood cancer is a disease of the bone-marrow and blood forming tissues. It involves the spreading of the undeveloped white blood cells.

What are different types of leukemia?

There are two types of leukemia : i) acute or rapidly progressing and ii) chronic or slowly progressing. The treatment involves bone marrow transplants. Though complete success is yet not achieved, the researches in this field are still in progress.

What are Enzymes?

Enzymes are chemical substances, produced by living cells, that act as catalysts and speed up the rates of chemical changes.

Can cancer be inherited?

There is an inherited tendency for a few cancers such as a rare eye cancer that occurs in children under three years of age. Also cancer of the breast and colon occurs among members of the same family at a higher than average rate.

What is the recognized treatment for a cancer of the breast?

A lump in the breast indicates the possibility of breast cancer. Removal of the breast with or without its underlying muscles and the lymph glands, is carried out by mastectomy.

What are the cancers of female genital tract?

i) Cancer of the uterus arises from the lining membrane of the uterus and ocours at a later age of cancer of the cervix.

ii) A cystic growth arising from one or both ovaries indicate the possibility of cancer of the ovary.

iii) In an extremely rare situation – cancer may take place in the fallopian tubes.

However, the complete removal of the affected part would rid of any malefic effect.

What is the treatment for cancer of the oesophagus?

Cancer of oesophagus mainly affects males in the age group of fifty to seventy, an eighty percent of cases occurring in men. Surgery and radiotherapy are used for its treatment. In surgery, through a chest incision, it is possible to remove the part of the oesophagus involved in tumour formation along with a little portion of normal oesophagus surrounding it. Through an opening is made in the diaphragm, the stomach is drawn up into the chest and is sutured to the remaining stump of oesophagus (Fig. 14.2).

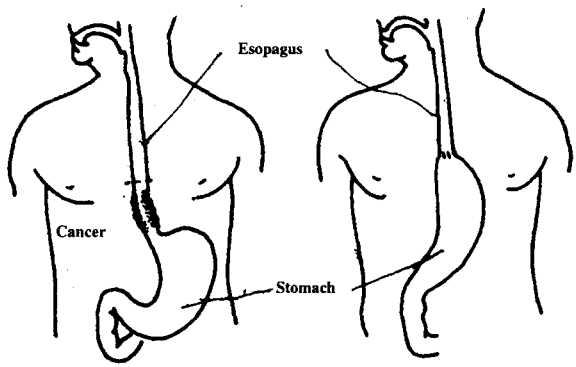

Fig. 14.2 Cancer of oesophagus.

Is the liver prone to cancer?
Yes. There may be a primary cancer, in which either the cells of the liver themselves develop cancer, or its metastatic involvement where carcinogens originate elsewhere in the body and travel to liver giving rise to liver cancer. The liver becomes enlarged, abnormally hard and irregular in shape. It occurs most frequently after the age of 50.

What is lung cancer?
It is one of the most frequently encountered cancers. It occurs about eight times as often in males as in females, and most frequently between ages of 40 and 60. In men its root cause is smoking and with increasing number of women indulged in smoking. Surgical removal of the diseased portion of the lung (lobectomy), removal of the entire lung (pneumonec- tomy) or chemotherapy are the treatments for lung cancer.

Can malignant tumours occur in salivary glands?
Yes. They grow rapidly and become adherent to the skin and surrounding tissues. Chemotherapy is the best treatment.

Where does skin cancer occur most frequently?
It becomes either on the exposed surfaces of the body, around the nose and eyes, or on the back of the hands. However, skin cancer if treated in the early stages, is completely curable.

What is basal cell cancer?
It is a common type of skin cancer frequently found on the side of the nose. It is curable by surgery or X-ray treatment.

What causes cancer of the stomach?
Although the exact cause is unknown, in some cases, it has proved to have its origin in ulcers of the stomach. It is commonest between the ages of 45 and 65, and is more common in men than in women. It may also occasionally develop from a sequel of chronic gastritis. Prompt surgery with gastrectomy is the treatment for cancer of the stomach.

What causes cancer of the tongue?
Cancer of the tongue generally occurs in men over 40 years of age; it often follows chronic irritation from decayed or rough teeth, and excessive smoking. The disease often starts at the side of the tongue, which is first

hard or fissured, or there may be a raised warty patch. Treatment is either surgical removal of the affected part or by radium irradiation.

Where is the cancer of the oral cavity?
Cancer of the mouth forms about 2% of all cancers in the human body. It is seen along the tongue margins or at the edge of the tongue and inner or outer lining of lips. Chemotherapy is the best form of treatment.

What is radiotherapy?
Radiotherapy is the treatment of malignant tumours by exposing them to radiation, without causing undue damage to surrounding normal tissues. Radiotherapy involves variety of radioactive isotopes to kill the diseased cells. Tiredness, loss of appetite and sore throat are the side-effects. The exposed skin around the focus may also become red. Radiation on testes and ovaries may result in infertility of the organs.

What is chemotherapy ?
The treatment of cancer with anti-cancer drugs (chemotherapeutic drugs) is usually done when cancer has spread throughout the body. It is in a much later stage for effective surgery or in the areas where surgery cannot be performed successfully. Unlike radiation, chemotherapy involves the whole body. It attacks on any multiplying cell, relying on the fact that cancer cells multiply more rapidly. Side effects include nausea, tiredness, constipation and acute mouth ulcers.

Are the benefits from radiation, hormone or chemotherapy temporary in nature?
Yes, but life-span can be extended after these treatment.

OOO

15.

Diabetes

What is diabetes?

When the body is unable to use the sugar provided by foods properly, it accumulates in the blood and is excreted by the kidney, hence large quantities of sugar are found in the urine of diabetics. Diabetes can occur at any age. About 2% of entire population suffer from this disease.What causes diabetes?

When the pancreas is unable to produce sufficient amount of insulin — a hormone responsible for the storage of sugar in the body — it leads to diabetes. Obese and people with family history are more prone to diabetes. Fig. 15.1 shows sugar metabolism of pancreas.

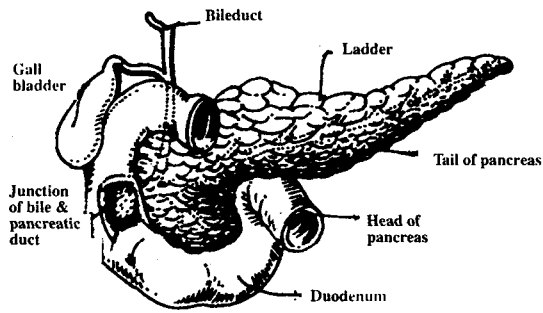

Fig. 15.1 Sugar metabolism of pancreas.

What are the symptoms of diabetes?

Excessive urination, thirst, hunger and sleep. Although, food intake increases in the patient, he may still feel weak. Clinically, diabetes can be diagnosed by testing blood and urine sugar.

What are the types of diabetes?

There are two types of diabetes:

a) **Diabetes Mellitus**: This is the common type of diabetes. It is again of two types.

   i) Non-insulin dependent diabetes mellitus (NIDDM or type-2): In NIDDM, some insulin is produced by pancreas, but not enough to cope with the amount of glucose in the body. Its main cause is obesity and can be treated by dieting successfully.

   ii) Insulin dependent diabetes mellitus (IDDM or type 1): There is a total failure of pancreas to produce insulin. The patient has to take daily insulin injection for the rest of his life.

b) **Diabetes Insipidus**: It is a rare chronic disorder arising from some hereditary defect in pituitary glands causing deficiency of ADH. There is no sugar present in the urine. It is treated by supplying the missing hormone.

What is hypoglycaemia?

When the sugar level is reduced to a dangerously low level, perhaps after taking too much insulin, it results in hypoglycaemia. Sweating, shaking, double vision and finally unconsciousness are the main symptoms. Glucose should immediately be given, either through injection or by mouth. If the patient is able to swallow, orange juice or sweet drink may be given.

What is hyperglycaemia?

If the blood sugar level rises above the normal level, the patient may go into coma, which can be fatal. Extra insulin should be given to bring the sugar level down.

What are the common complications in diabetic persons?

Boils and carbuncles are common in diabetic persons and are apt to be recurrent; the later being especially dangerous. Irritation of the skin around the valva and rectum is often complained of.

How is timing important in taking insulin injection?

Insulin is usually injected just before a meal. This is important because, if action of insulin in lowering blood glucose starts before enough sugar

has been absorbed from food into the blood, it may cause a low blood sugar level leading to hypoglycaemia.

What are the long range effects of diabetes?
In its long run, the patient may suffer from heart disease, eye trouble, kidney failure, nervous disorders, or paralysis. Nevertheless, if diabetes is under control, a diabetic patient can live as long as a non-diabetic.

Is there any way to avoid getting diabetic?
Diabetes can be avoided by taking a balanced diet with a relatively low sugar intake and keeping the weight down to normal limits. Exercise would be a boon for the patients.

Can a diabetic patient be operated upon safely?
Yes. With modern methods of management, a diabetic patient can be operated upon safely. Though in diabetic patients, healing of wounds would be rather slow but if the blood sugar content is under control, it does not create any problem in surgery.

What precautions should be taken by a diabetic patient?
He should take a controlled diet as adviced by the physician besides regular exercise to burn sugar contents that may get deposited in his body. He should give up consuming candy, pastries, ice-creams or table sugar in his menu.

OOO

16.

Bacterial and Viral Infections

What are bacterial diseases?
Diseases caused by bacteria are called bacterial diseases — pneumonia, tuberculosis, typhoid fever, etc.

What are bacteria?
Bacteria are unicellular micro-organisms. They proliferate through the process of cell division — which then divides again and so on. Bacteria are of four types — *coccus* (spherical shaped), *bacillus* (rod shap), *spirillium* (spiral shaped) and *vibrio* (comma shaped) (Fig. 16.1).

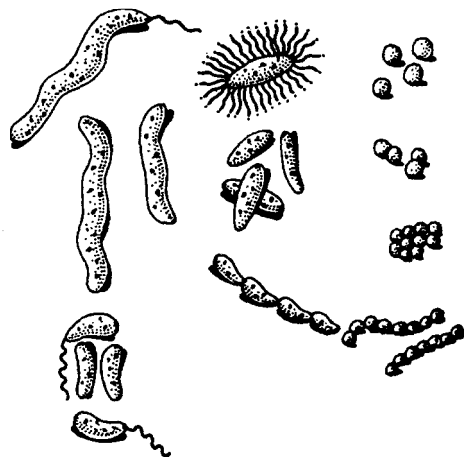

Fig. 16.1 Different types of bacteria.

What are viral diseases?
The diseases caused by virus are called viral diseases — small pox, rabies, measles, AIDS etc. These diseases spread either by contact droplet infection in the air or mosquitoes, lice, etc.

What is a virus?
A virus is the smallest living thing. Viruses are particles only about a millionth of a centimeter across. In people viruses cause many diseases, including colds, influenza measles, mumps and chicken pox. They are present in air, water and the soil.

Is there any difference between virus and bacteria?
Yes, bacteria can be seen with an ordinary microscope, but viruses are so small that they can be seen only with an electron microscope. The cells of all living bodies, including bacteria, contain both kind of nucleic acids whereas viruses contain RNA or DNA, not both.

What is pulmonary tuberculosis?
It is a disease of lungs caused by a bacteriae called *Mycrobacterium tuberculii* (Fig. 16.2). It is acquired through inhalation of air containing organism from an infected person.

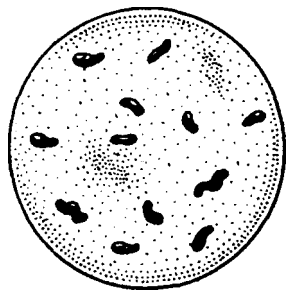

Fig. 16.2 Mycrobacterium tuberculii.

What is typhoid fever?
Typhoid fever is caused by *Salmonella typhi* bacteria and transmitted through infected food, milk or water. It can also be spread by flies, who come in direct contact of faeces or urine of the infected people. The symptoms are — fever, severe headache, abdominal pain and constipation, rash on abdomen followed by chronic infection of gall bladder and rupture of intestines in severe cases. The typhoid is treated with a course of antibiotics.

What is meant by the incubation period of a disease?
The period between the entry of germs into the body and appearance of actual symptoms — the incubation period for typhoid fever is approximately ten to fourteen days and the recovery takes about four to six weeks.

What is Rabbit fever?
Rabbit fever or Tularaemia is an acute disease caused by a bacillus and characterised by the appearance of a skin sore, accompanied by fever that resembles typhoid fever.

What is plague?
Plague, also known as the Black Death, is a serious disease, which ravaged throughout Europe and Asia in ancient times and in medieval ages. Plague is caused by bacteria which is found in fleas on the bodies of rats. The lymph nodes swell to form painful pus filled boils. Preventive

actions are very important, particularly to eliminate the carriers. If antibiotics are given in early stages one can control the disease.

What is botulism?

Botulism is a disease of the nervous system and is caused by a bacteria called botulinus. The bacterium is found in oxygen-free environment e.g. in contaminated food in bottles or containers.

What causes leprosy?

Leprosy is believed to be caused by Hanser's bacillus. It affects the skin and nerves. The incubation period of the disease is two to four years. Numbness, white patches and finally paralysis are the symptoms of leprosy. The disease is curable if detected in early stages.

What is meningitis?

Meningitis is a bacterial disease caused by *Neisseria meningtidis*. It attacks the brain and spinal cord. If not treated immediately, the patient dies (Fig. 16.3).

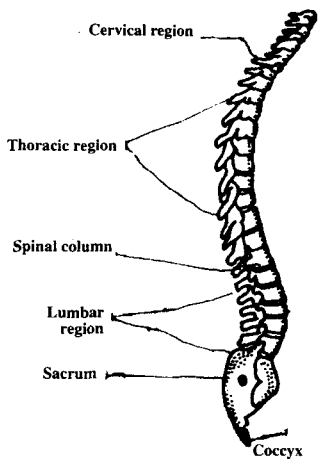

Fig. 16.3 Meningitis.

What is tetanus?

Tetanus or lockjaw is a bacterial disease caused by *Clostriduim tetane* which is found in spores of soil and animal faeces and infects the body through wounds. It is very serious and sometimes fatal. It attacks nerve cells leading to spasm of muscles. The spasm of the jaw muscles accounts for the name 'lockjaw'. Often there is a high fever resulting in rigidity.

What is cholera?

Cholera is a disease of the intestinal tract and is caused by vibrio choleral bacteria. It is spread through contaminated water and faeces. Severe diarrhoea and vomiting result in dehydration which is the main cause of death. The fluids lost in the body should be replaced immediately. Vaccination against cholera is only effective for 6 months.

What is anthrax and how is it transmitted?
Anthrax is caused by the anthrax bacillus and can be transmitted to men directly or indirectly. It occurs mainly in goats, cattle, sheep, horses and hogs who further transmit either by their faeces or after death, from their products like hair, leather etc. Thus, people who have contact with these animals or processing of animal products develop the disease.

What is yellow fever?
Yellow fever is a viral disease transmitted by the bite of a female mosquito. It starts as a mild flue, which turns into severe jaundice with internal bleeding and failure of liver and kidney. Yellow fever can be prevented by vaccination.

What is Q fever?
It is a rickettsial disease and is so named because it was first noticed in Queensland in 1937. Infection occurs from sheep and cattle through drinking infected milk. Symptoms are those of pneumonia with headache and fever.

What is dengue fever?
Dengue fever, known as break-bone fever, is caused by a virus and transmitted by the bite of a mosquito. Cold, headache, backache and a fluctuating high fever are the main symptoms of dengue. It takes almost a week for the fever to subside. Painkillers and proper rest are the only treatment.

What is infectious mononucleosis or glandular fever?
It is a viral disease and is transmitted by air borne droplet infection. Fever, headache, pains and swelling of the lymph glands in the neck and groin are the common symptoms of the disease.

What is rabies and how is it transmit-ted?
Rabies is a very dangerous viral disease transmitted by biting of dogs, cats, fox, or squirrels. The virus is present in the saliva of the infected animal. The virus affects the central nervous system resulting in fever, paralysis and hydrophobia. If antiserum is not given to the victim in time, the result can be fatal.

What is relapsing fever?
This is an acute fever with alternating bouts of fever and normal temperature. It occurs about a week after infection, with rigors, headache, sweating, vomiting, giddiness, pain in bones. It is generally spread by lice or by ticks.

What is AIDS?
AIDS stands for Acquired Immune Deficiency Syndrome and is caused by a virus called HTLV-lll/LAV. This virus attacks T-cell lymphocytes and destroys them. Due to this, the body's ability to overcome bacterial, viral or other harmful invaders is diminished. AIDS is transmitted through exchange of body fluids during sexual contact or by direct contact with blood from infected persons. It may also be caused by using unsterile needles. It can't affect simply by touching a sufferer.

What are the main symptoms of AIDS?
Loss of appetite and weight, unexplained fever, enlarged lymph glands, dry, persistent cough, white spots in the mouth, persistent fatigue and weakness are the main symptoms of AIDS. At present, AIDS is incurable. Treatment consists only of combating the infection as and when it arises. A protection against sexually transmitted AIDS, expert advise is centered on use of condom.

What is meant by the term 'Carrier'?
A carrier is an individual who does not have the disease within because he is immune, but carries the potent organisms and spreads the disease to others.

COMMON CHILDHOOD INFECTIONS

1. Measles **2. German measles** **3. Scarlet fever**
4. Chicken-pox **5. Mumps** **6. Diphtheria**
7. Whooping cough

a) **Measles (morbilli)** — It is a contagious, viral disease. The virus develops in the respiratory tract. Its symptoms are similar to the common cold. The temperature rises to 104°F and the pink coloured skin rash occur. There is no specific treatment except to make the patient comfortable; the illness takes its own time. Measles can be prevented by vaccination.

b) **German measles (rubella)** — It is milder than measles. A rash and swollen lymph glands are the main symptoms. The disease is very dangerous for pregnant women specially during the first trimester as it may lead to congenital abnormalities in the baby.

c) **Scarlet fever** — It is not a very common bacterial injection nowadays. The symptoms are high fever, sore throat, shivering and headache, tonsils and lymph glands in the neck are enlarged. Scarlet fever can be completely cured with antibiotics.

d) **Chicken-pox (varicella)** — Chicken-pox is a highly infectious viral disease. The incubation period is fourteen to twenty-three days. First symptoms are slight fever with headache followed by itchy red spots with blisters all over the body. The rash disappears itself after a few days. The only treatment may be some soothing lotions to prevent itching.

e) **Mumps** — Mumps is the inflammation and enlargement of salivary glands. It is a viral disease. The illness begins with fever and enlargement of parotid glands below the ears. The fever and swelling subsides within seven to ten days.

f) **Diphtheria** — Diphtheria is a bacterial disease which may, at times, prone to be fatal. The bacteria multiply in the throat and produce a toxin, which in turn attacks nerve cells and destroys them. This disease is especially dangerous to children under 5 years, particularly young infants. This results in paralysis of

throat, larynx, and breathing muscles. If a child is pale, restless and has white specks on the tonsils which rapidly join together and form a continuous brown membrane over the tonsils, he is surely suffering from diphtheria. If detected in early stage, it can be treated with anti-toxin injection but in severe cases, surgery is the only alternative.

g) **Whooping cough (pestussis)** — It is caused by a bacteria *Bordetella pertussis*. In whooping cough, the breathing passage is clogged with muscles which may result into brain damage due to the lack of oxygen. These are attacks of cough from time to time which end with whooping noise – caused by the sufferer gasping for breath. Antibiotics are given for the treatment.

h) **Poliomyelitis** — This virus *poliovirus*, attacks the body through digestive system and damages the motor nerves. A severe head-ache, stiff neck, weakness of muscles and finally paralysis are the main signs of polio.

If the child is given proper vaccinations, in time, under the guidance of a paediatrician, the above infections can be prevented .

OOO

17.

Diseases by Close Contacts

What are contagious diseases?
They are those diseases spread by direct contact (touching) with a patient or the patient's belongings.

What is chicken-pox?
It is a contagious disease of childhood caused by a virus, appearing from third month of life through adolescent stage. Chicken-pox is usually transmitted by direct contact. It may appear anywhere on the body, including the hair, scalp, mouth or eyelids.

Can chicken-pox be contracted a second time?
No. The patient becomes immune after one attack.

What is diphtheria?
It is a contagious disease of childhood caused by a bacillus *Klebs-loeffler.* It occurs in epidemics affecting the throat and occasionally the larynx. It is transmitted from one patient to another through coughing, sneezing, or droplet infection. The serious complications of diphtheria are: nerve paralysis of the larynx due to which normal speech gets impaired and appreciable damage to the heart muscle.

What is meant by the term "diphtheria carrier"?
A diphtheria carrier is an individual who does not have the disease himself because he is immune, but carries the potent organisms in his throat and spread the disease to others.

What are German measles?
German measles or rubella is an infectious disease caused by a virus, in

the late winter and spring months. It spreads by direct contact from one patient to another.

Is there any vaccine for measles?
Yes, but measles vaccination is newer. It may not always prevent from catching measles, but it will be of milder form without complications.

Where do the rashes appear in measles?
They usually appear on the face, behind the ears, on the forehead, and at the hairline. It then spreads down over the rest of the body.

What are the symptoms of chicken-pox?
At first a mild fever and feeling of tiredness may cause the patient to stay indoors, although intense pain in the head, back and legs, with high temperature, vomiting and even delirium are not uncommon.

At what age do most people get mumps?
Children above six months can get mumps. Mumps are rare in adults, especially those over forty years of age. It is best to get mumps before puberty.

What is infantile paralysis (poliomyelitis)?
It is an acute infection of the spinal cord and brain. It can be caused by three types of viruses viz. Types I, II and III.

How does polio spread?
Polio spreads from person to person through direct contact, i.e., by droplet infection or by coughing or sneezing. It can also spread by milk, drinking water contaminated by sewage and possibly even by flies.

How does polio virus get into the body?
It enters into the body by inhalation of infected material on the body by drinking infected water or eating infected food.

What are the two types of polio vaccines?
Sabin vaccine taken orally and salk vaccine in the form of injection.

What is scarlet fever?
Scarlet fever is a contagious disease of childhood caused by *streptococcus*. The symptoms of scarlet fever are swelling of the glands of the neck,

infection of the ears or sinus, kidney infection and in some cases rheumatic fever.

What is *Roseola infantum*?

It is a viral disease commonly affecting young children and characterised by a high temperature. When temperature returns to normal, rashes appear over the entire body, which last for one or two days.

What is whooping cough?

Wooping cough is a contagious disease of the respiratory system. It is caused by a specific germ and spreads by sneezing, coughing, or droplet infection from a child who has had the disease. Ear inflammations and pneumonia are some complications of it.

OOO

18.

Parasitic Diseases

What is a parasite?
A parasite is an organism which derives its nutrition exclusively from living organisms, sometimes even causing the death of the latter. Some examples of parasites include bacteria, viruses and fungi as well as animals. Parasitology (the study of parasites) is confined to the animal parasites of man.

How these parasites enter human body?
Parasites enter human body by means of contaminated food or drink, or through the skin or mucous membranes.

What is amoebiasis?
Amoebiasis is a parasitic disease caused by an organism *Entamoeba histolytica*. It causes an intestinal disease known as *amoebic colitis* or dysentery. In severe cases, there may be dysentery with mucous and blood in stool. Amoebiasis is transmitted from person to person through consumption of contaminated food or drink. There is no immunization treatment against amoeba (Fig. 18.1).

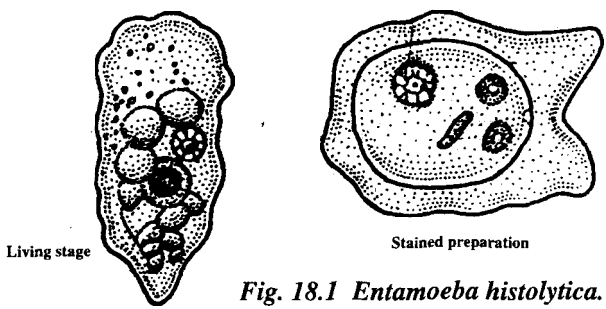

Fig. 18.1 Entamoeba histolytica.

What is kala-azar and its symptoms?

This disease has an incubation period of about a month and is ushered insidiously or as a high fever. The spleen becomes enormously enlarged and the liver mildly so. There are usually symptoms of profound aneamia. This is caused by certain protozoa transmitted by the sand fly.

What is leishmaniasis?

It is a group of disease caused by certain protozoan parasites called *leishmania*. These include *kala azar*, *espundia* and *oriental sore*.

What is African sleeping sickness (trypanosomiasis)?

It is a parasitic disease caused by a protozoan called *trypanosoma*. In one kind, the nervous system is affected and in an other it affects the heart. This is transmitted by *tsetse* flies. If not treated in time *trypanosomiasis* may prove to be fatal.

How many types of malaria are there?

There are at least three types of malaria, each caused by a different malarial parasite, namely:

i) Tertia malaria by *Plasmodium vivax*

ii) Quartan malaria by *Plasmodium malarias* and

iii) Estivo-autumnal malaria by *Plasmodium* and *alciparum.*

What is malaria?

Malaria is one of the oldest destructive diseases for the mankind, spread by Anopheles mosquito with the parasite (*plasmodiu...*) which is inf..cted ..h..n .he mosquito bites. Symptoms of malaria include shaking, chills with rapidly rising temperature accompanied by headache and nausea (Fig. 18.2).

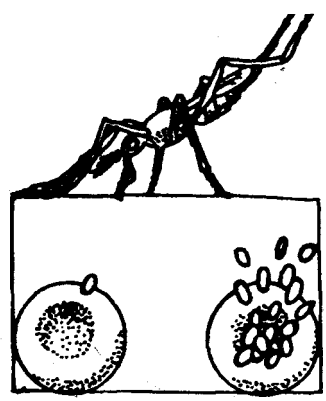

Fig. 18.2 Anopheles mosquito spreading malaria.

What is its treatment?

Effective drugs for complete cure of malaria include chloroquine, quinine and plasmochin. Malaria can be prevented by

the elimination of mosquitoes. Spraying on the walls with DDT or thin film of oil in ditches and puddles help in checking mosquito breeding.

How is trichinosis acquired?
The parasites normally form cysts in the muscles of hogs. When infected pork, badly cooked, is eaten by man, the parasites are released in the body and make their way into the muscles. Trichinosis is rarely fatal but once it enters the muscles, there is no specific treatment.

What is whipworm infection and how can it be prevented?
Whipworm infection is acquired by eating the eggs of the shipworm, which dwells in soil contaminated by faeces. Sanitary disposal of faeces and thorough cleaning of hands before consuming food are effective preventive measures. The drug *metronidazole* is an effective treatment for whipworm infection.

How do hookworms get into our body?
Free-living larval forms can penetrate the intact skin. They generally gain access through the skin between the toes of individuals who walk barefoot on soil contaminated with infected human faeces.

What is "ground itch" ?
This is the first lesion produced by hookworms as they gain access to the body through the skin.

What are the symptoms of hookworm infestation?
The predominant symptoms are lethergy and weekness due to severe aneamia. Abdominal pain and attacks of fever are not uncommon.

How can one prevent hookworm disease?
Adult hookworms reside inside the intestinal canal, which can be prevented by disposing the human faeces carefully and by wearing footwear always.

What are pinworms or seatworms?
Pinworms are found in the caecum, appendix and large intestine of human beings. They are called seatworms because they tend to migrate about the anus, especially at night and cause severe itching in that region of the body. Children are most infected by pinworms.

What is filariasis?

Filariasis is a common disease in tropical regions and is caused by a tiny worm. The worm blocks the lymph channels of the limbs, resulting in tremendous enlargement of the structures. The condition is also known as elephantiasis.

What is a fluke worm?

Fluke worm is a flatworm that has no true body cavity like roundworms. They generally have suckers, by means of which they attach themselves to the human body.

What is Chaga's desease?

It is parasitic desease transmitted by the bite of a triatomid bug. This disease is limited to the western hemisphere, especially in Brazil.

OOO

19.

Immunization and Vaccinations

What is immunity?
It is the ability of a living creature to resist the attack of antigens or pathogens. Immunity is needed against each particular disease or its antigens, so that a person can be immuned to some diseases rather than to others.

What are antigens and pathogens?
Antigen is a foreign substance usually a protein or carbohydrate which stimulates the body to produce some antibodies. Pathogen may a bacterium, virus, fungus or protozoan having the same function as antigen.

What are antibodies?
They are globulin type spherical proteins produced by lymphocytes, in the spleen and lymphnodes. When an antigen enters the animal tissue, the antibody combines chemically with the antigen and makes it harmless. An antibody generally combines with only a particular antigen. Antibodies are carried by blood and lymph in different parts of the body.

What is acquired immunity?
This kind of immunity is obtained by a person when he suffers from a disease and gets well. His blood contains antibodies against the pathogens or toxins which caused the disease, so that his body resists any future attacks. The immunity is for a particular disease and the length of time for which he is protected, however, varies with the disease.

What is artificial immunity?
This kind of immunity is obtained by inoculation and only lasts for a short

period of time, say, some six months or six years, depending upon the disease.

Define passive and active artificial immunity?
Passive immunity (artificial) is obtained from an antiserum. It is given to the affected patient to make him healthy. Active immunity (artificial) is obtained from a vaccine.

It is given to a healthy person which prevents him from being attacked by a particular disease by stimulating the production of antibodies. These forms of immunization are of great use in an epidemic.

What is antiserum and vaccine?
Antiserum is a liquid containing antibodies. The liquid is serum, taken from an animal producing antibodies. Vaccine is a liquid containing dilute or dead pathogens. When put in the body, it causes antibodies to be produced, i.e., the same antibodies as combined with the antigens or the pathogen.

What is meant by inoculation and immunization?
Inoculation means putting the vaccine or an antiserum into the blood of a person whereas, immunization is to give a person an inoculation of vaccine or serum that provides artificial immunity against a particular disease.

Which diseases could be prevented by immunization amongst infants?
Six common infections that could be prevented by immunization are: tuberculosis, diphtheria, whooping cough, tetanus, poliomyelitis and measles.

What is the best immunization schedule for infants?
Immunization against tuberculosis is given by an injection soon after birth. A triple vaccine (DPT) against diphtheria, whooping cough and tetanus is given three times; first, when the child is six weeks old, the second four weeks later and the third at least four weeks after the second. Poliomyelitis vaccine is also given at the same three times when DPT is given. Measles vaccination is done when the child is nine months old. Mumps and German Measles vaccines are given at the age of fifteen

months. Small-pox vaccination is no longer required. A pregnant woman should also be given two injections of the tetanus vaccine. The first, as soon as the pregnancy is known and the second four weeks later.

What are the so-called booster-shots?
Booster shots are the additional injections given a year or two after the original immunization, in order to maintain immunity.

Should all children be vaccinated against small-pox?
No. Because the disease has been almost eradicated from the Earth.

How animal's body defends itself from pathogens?
An animal defends itself by:

a) its skin disallowing pathogens
b) phagocytes — digesting pathogens
c) the acid in and its stomach-destroying pathogens
d) antibodies—making antigens harmless.

How effective is polio vaccination?
It is considered to be tremendously effective and will prevent the disease in more than 95% of those vaccinated.

Should older children and adults be given the polio vaccine?
Yes. Only in this way, the disease can be totally and permanently eradicated.

How long does the immunity to measles last?
By injection of a weakened live virus, vaccination against measles is carried out and it remains permanently.

When should children be given measles vaccination?
Measles vaccination need not be given until a baby is about a year old since it is immune to measles for six months or more due to the presence of material antibodies in its serum.

Should people be vaccinated against German measles?
Yes. German measles vaccine is very effective. It should be given to all children and to women of child-bearing age who do not have the disease.

Is there any vaccine against mumps?

Yes. It should be given to all children who are not allergic to eggs.

Which vaccine is used for typhoid immunization?

Usually a vaccine containing the dead typhoid and paratyphoid germs is used. A series of three injections into the skin or beneath the skin are given one to two weeks apart.

Is there any immunization against tuberculosis?

Yes. BCG vaccine is given for immunization. BCG stands for *Bacillus Calmette Guerin.* It is an anti-tuberculosis vaccine.

When is vaccination against rabies given?

It is given when an individual has been bitten by any animal suspected of being rabid such as a dog, cat, fox, squirrel rabbit, rat, wolf, cow, etc. The victim is treated by injection of serum prepared from the spinal cord of a sheep or rabbit which has been infected with rabies.

Any effective vaccinations against typhus fever, cholera, yellow fever and the plague?

Yes. There are very effective vaccinations against all of these diseases and they should only be given when one is travelling to an area susceptible to viz., Africa, Asia and parts of Central and South America.

When are additional boosters of tetanus given?

These are given after involving any injury an rusty object or one contaminated by dirt. Such boosters may be advisable for any suspicious injury causing a puncture wound if the last tetanus immunization is more than three years old.

OOO

20.

Drugs

What are antibiotics?
Antibiotics are chemical substances produced either synthetically or by living micro-organisms such as bacteria or fungi. They kill disease-causing bacteria in our body. Antibiotics are not effective on viral diseases. The first antibiotic was *pencillin* and was discovered in 1928 by Alexander Fleming. Today we have more than eighty antibiotics of which ampicillin, tetracyclin, chloromycetin, streptomycin, actinomycin are very popular.

What are sulfa drugs?
Sulpha drugs are a specific class of chemical substances, synthetically manufactured, effective in treating bacterial and viral diseases. Sulphonamide is one important sulpha drug.

Are antibiotics more effective than the sulfa drugs in combating most infections?
Yes, except for certain infections involving the urinary or gastrointestinal tracts.

What are analgesics?
Analgesics are pain relieving drugs. Aspirin, codeine, paracetamol are mild analgesics.

What are tranquillizers and barbiturates?
These are the drugs which tend to reduce tension and anxiety, and depress brain functions. Doctors give tranquillizers to relieve nervous tension or to reduce high blood pressure.

Which diseases are treated by narcotics?
Narcotics are the most potent pain killers, and are prescribed only where pain is intolerable. Morphine is a narcotic.

Which are the drugs for reducing obesity?
Apparently, there are no true weight reducing drugs but such drugs tend to make the patient lose his appetite. They are used as weight reducing drugs.

What is a stimulating drug?
A drug which acts upon the higher nervous system to eliminate a sense of physical or emotional fatigue. These drugs are also used to counteract depression, drowsiness and other lethargic states.

What are hallucinatory drugs?
These are chemicals which when taken orally or, by injection, or by inhalation will cause changes in mental processes. These drugs give people a false sense of elation and permit them a brief period of escape from the hardships of their reality.

How allergic reactions are controlled?
Antihistamines are the drugs which relieve the allergic response to anything. They can combat hay fever, asthma, drug rashes, reactions to stings or vaccine.

What are glycosides?
These treat any cardiac failure by causing heart to contract, say *digitalis*.

What are antacids?
Antacids neutralize secretions that activate stomach ulcers and acidity.

What is a placebo?
Sugar pill, or any other 'make believe' drug, but having no active ingredients. It is given as a 'control' during experiments on drugs for determining how effective a particular drug may be. It is sometimes prescribed for psychological relief.

What is an antiseptic?
An antiseptic is a substance which may kill the bacteria or may prevent

its multiplication. It does not harm the living tissues and can be applied on cuts and wounds. Savlon, boric acid, potassium permanganate are examples of antiseptics.

Which drugs are used for serious mental disorders?
For serious mental disorders major tranquillizers such as chlorpromazine, fluphenazine, trifluoperazine are used. These drugs are called antipsychotic and bring tranquility, peace and calmness of mind.

What are local and general anaesthetics?
Local anaesthetics are those drugs which produce loss of sensation in a small area where drug is applied viz., ethyl chloride and procaine. General anaesthetics are drugs which produce total unconsciousness viz., nitrous oxide, cyclopropane, etc.

What are the different forms in which medicines can be taken?
Medicines come in different forms. They can be taken orally either as capsules or tablets, applied as liquid, cream or lotion and spray. It can be inhaled in the form of gases or injected. Injections are given beneath the skin, intramuscularly or intravenously. Sometimes, solid implants in the form of tablets may also be placed beneath the skin.

What are convenient medicines?
Convenient medicines are those which can be taken or administered easily by the patient himself. Oral medicines and inhalants are convenient and a great deal of research is carried out to make these more palatable.

What is LSD?
LSD is the abbreviation for Lysergic Acid Diethyl-amide. It is a psychedelic drug which produces visual and auditory hallucinations.

What are the hydantoin drugs?
These drugs are preferred in the treatment of epilepsy of different types. The common drugs Diphenylhydanatoin, Mephenytoin and Eptoin. These drugs are used either alone or in combination with other drugs.

OOO

21.

Pathological Tests

What is the study of pathology?
Pathology is the study of causes, characteristics and effects of disease on the body fluids and products whether from a living patient or at autopsy.

What types of tests are performed by a pathologist?
A pathologist can perform all types of tests on blood, urine, stool and sputum, gastric analysis, pus cultures and test for malignancy.

What is a complete blood count?
Complete blood count means counting of different constituents of blood. It includes the number of red blood cells, white cells, haemoglobin content etc. The count may be performed manually using a microscope or electronically. Fig. 21.1 shows the photomicrographs of Eosinophil lymphocyte, leukocyte, neutrophil, blood platelets etc.

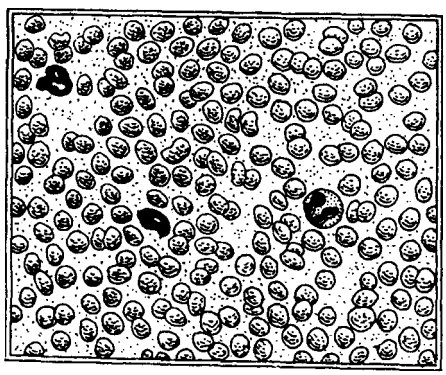

Fig. 21.1 Photomicrographs of different blood cells.

How does the blood count show anaemia?
By counting the number of red blood cells, the amount of haemoglobin and the characteristic appearance of the blood under the microscope, one can say the patient is anaemic.

How does a blood count indicate an acute infection?
If there is an increase in the white cell count and an increase in the number of bands, it indicates acute infection.

What is a serologic test?
In a serologic test, serum is tested from the presence or absence of antigens and antibodies, which indicates the presence or absence of a disease.

What is bone marrow analysis?
It is a test in which a small amount of marrow is taken by a needle from the breast bone or some other bone. Bone marrow analysis enables the physician to see how well the blood is being formed and whether it had some abnormal tissues or cells.

What is a glucose tolerance test?
In this test, the fasting patient is given a known amount of glucose (sugar) orally and the quantity of sugar is tested in the blood, after a regular interval of time. From this test, one can tell if the patient is diabetic.

What are blood cultures?
To detect the bacteria circulating in blood stream, blood cultures are done. Blood is taken to the laboratory and is cultured to see, if the bacteria will grow from the blood. Blood culture is useful in deciding the effectiveness of a particular antibiotic.

Which constituents are tested in urine analysis?
Urine is tested for albumin, sugar, acidity or alkalinity, presence or absence of pus, blood cells, bile pigments, crystals of certain chemicals. It tells about the state of health of the kidneys, or other portions of the urinary tract. It may suggest the presence of diabetes or liver disease.

What is Rh test?
The Rh test determines the presence or absence of the Rh factor in the blood. It is an important test during pregnancy.

What is a Papanicolaou smear test?
In this, cells are wiped from the surface of various organs, usually the uterine cervix or vagina, for the diagnosis of cancer.

What is biopsy?
It is the removal of tissues by a physician or surgeon, who sends it to a pathological laboratory for a diagnosis of cancer. A biopsy can also be undertaken with a hollow needle inserted into the relevant organ.

Why is sputum analysis necessary?
It is carried to determine the presence or absence of the germ causing tuberculosis or other lung infections, and to justify the malignancy of the lungs.

How is sputum analysed?
Concentrated smears are made and examined under the microscope. For isolating the offending bacteria, cultures are made.

What is gastric analysis?
Secretions from the stomach are removed and the constituents are analysed. It is performed by placing a tube into the mouth and passing it down to the stomach (Fig. 21.2). In gastric analysis, presence or absence of hydrochloric acid, lactic acid, blood and cancer cells is looked in.

Why are cultures made from pus?
In order to determine the particular germ that has produced the infection, pus culture is done.

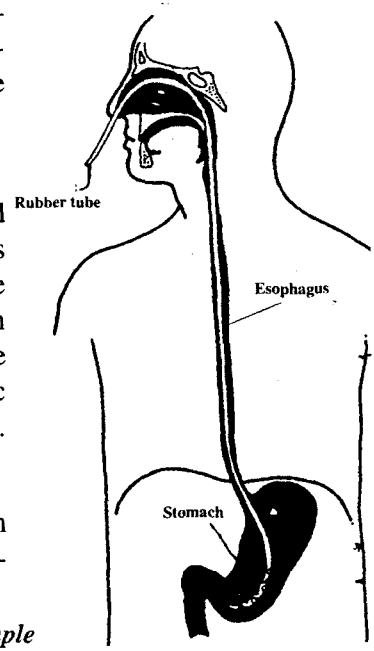

Fig. 21.2 Collection of sample for gastric analysis.

Why is stool analysis done?
Stool analysis is done to ascertain the diarrhoeal disease, colitis or any other infection or celiac disease.

Why is a lung tap performed?
A lung tap is performed to remove accumulated fluid in the chest cavity. This test can determine the presence or absence of cancer of lungs. Germ causing pleurisy can also be identified by this test.

What are guinea pig inoculations used for?
In order to determine the presence or absence of tuberculosis, material taken from a patient's body is injected into a guinea pig. One gets the report of this test, in about six weeks.

What is meant by 'frozen section'?
Frozen section means taking tissue from the patient while operation is going on. This is immediately examined microscopically by a pathologist, in order to test for cancerous tissues.

Why are abdominal taps necessary?
These are carried to remove any fluid accumulated within the abdominal cavity or to determine the presence or absence of malignant cells.

How is pregnancy test conducted?
A pregnancy test is conducted through an urine test of the pregnant woman. This test will tell whether a woman is pregnant or not.

What is the tuberculin test?
This test is used to see if there is a skin reaction to tuberculin, a product of the *tubercle bacillus*. A 'positive' test means that the patient has been infected at some time during his life but does not tell whether the disease is ever active. Only the X-ray examination and sputum analysis can determine whether the disease is active or not.

What tuberculosis tests are available?
(a) The intradermal or Mantoux test and (b) The tine test.
These tests determine sensitivity to the germ of tuberculosis.

OOO

22.

Diagnostic Tests and Instruments

What is meant by a diagnostic test?
Diagnostic tests are an extension of a physical examination and history. They allow the doctor to see things yet invisible to confirm what the doctor, or the patient, already suspects.

How many categories of diagnostic tests are in practice?

i. Those that measure performance (exercise, heart rate, lung function, visual acuity).
ii. Those that take some sample out of the body for study.
iii. Those scanning the body through film of sound (X-ray, scans, ultrasound).
iv. Those which direct hollow tubes and fibre optics to look inside the body directly (endoscopy).

What is the use of radiography?
It is used to show abnormalities in size, shape, position, or functioning of various parts of the body, by production of X-ray photographs.

Which materials are used in radio-isotope scanning?
Small amounts of radioactive materials are used in radio-isotope scanning, to obtain information about the condition or functioning of various organs. The principle behind is that various organs absorb specific minerals or hormones but these substances do not show up on a regular X-ray print but radioactive substance within the organ can be detected with the help of a gamma ray camera or a scintoscope.

What is a CAT scanner?

CAT (Computerised Axial Tomography) is a medical instrument, introduced in 1972, to detect the diseases of the brain, kidney, liver or abdomen by means of soft X-rays and a computer. It was invented by a British electronic engineer G. Hounsfield and a U.S. Physicist Allan Cormack. Fig. 22.1 shows the CAT scan of a patient.

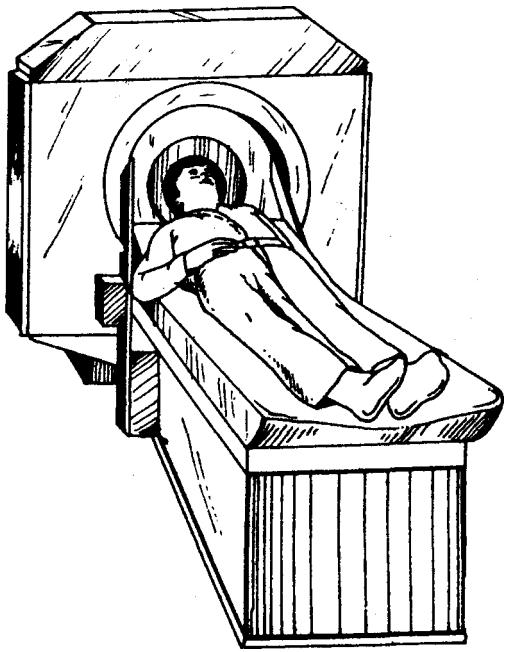

Fig. 22.1 CAT scan of a patient.

What is PET?

PET stands for Positron Emission transaxial Tomography and is similar to CT scanning. It uses glucose tagged with a radio-isotope to measure numerous functions of the brain and has proved very useful for structural and functional imaging of cerebral disorders. It was invented by G.L. Brownell in 1953.

What is endoscopy?

Endoscopy is a general name for a number of test procedures that allow the physician to look inside the body through a hollow tube or a fiber-optic device and see internal organs directly. The instrument is filled with

lenses and a light source. More commonly the tube is generally passed through the body's natural openings – the nose, mouth, anus, urethra or vagina – to view various organs from within. Endoscopy of large intestine is called colonoscopy.

What is ultrasonography?

Ultrasound is a painless technique that uses sound waves and their echoes to locate and visualize internal organs. The area to be examined is first covered with a lubricant such as mineral oil. Then a microphonic type machine that emits sound waves and receives their echoes simultaneously known as transducer, is passed over the body in contact with skin. An oscilloscope or computer translates the sound waves into the picture on a television screen. Certain diseases of kidney or abdomen can be detected.

What is angiography?

Angiography is the X-ray visualization of the arteries and veins to detect any abnormalities in the blood vessels, their organs and sites of internal

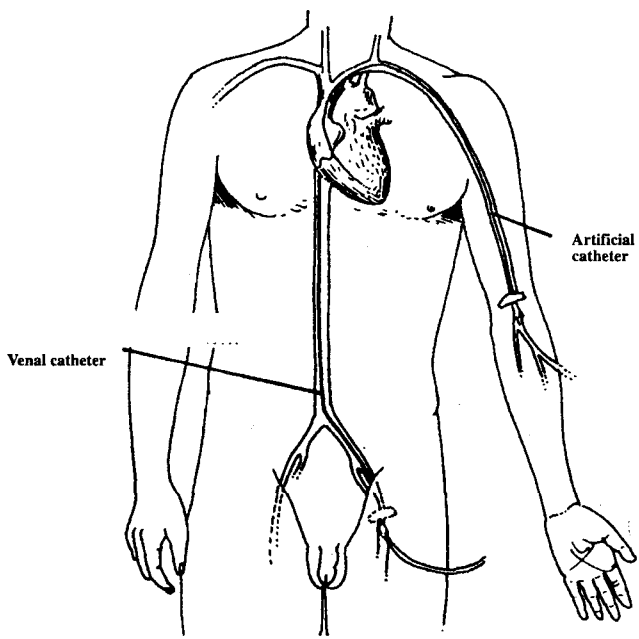

Fig. 22.2 Angiography

bleeding or any clots. A catheter is passed through a vein or artery in the arm or leg to the site to be examined and injecting contrast medium to make X-ray visualization easier. If the blood vessels being examined are arteries it is called arteriography and if virns, venography. (Fig. 22.2).

What is doppler ultrasonograpy?

This is used to study magnitude of blood flow in the major veins and arteries of the arms, legs and head. Technique is similar to ultrasound scanning.

What is echocardiography?

Echocardiography uses sound waves to examine the size, shape and motion of the heart and is useful to diagnose abnormalities of the heart valves or assess cardiac functioning. It is a technique to create an image of the deeper structures of the body based upon the difference in reflection of sound by various parts of the body.

What is EEG or electroencephalo-graphy?

It is a technique of recording the electrical activity of brain by means of attaching electrodes to the scalp to investigate some brain disorders (Fig.22.3). Electrodes on the scalp record the change of electric potential or brain waves.

What is electroretinogram?

The recording of potential changes produced by the eye when retina is exposed to a flash of light is called the electroretinogram. It is used to detect the diseases of retina.

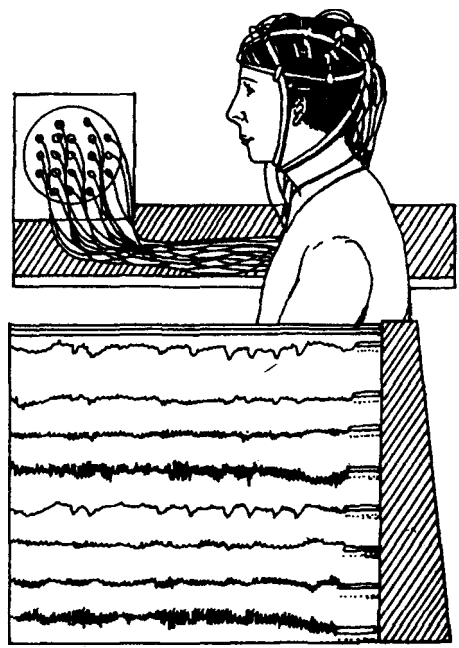

Fig. 22.3 Electroencephalography (EEG.)

What is ECG or electrocardiography?
It is a technique of detecting and recording heart beat for investigating heart diseases Abnormal heart activity is often indicated in the trace and it therefore forms a useful diagnostic aid (Fig.22.4).

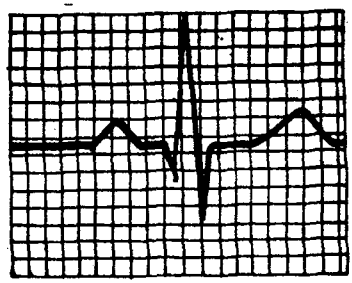

Fig. 22.4 Electrocardiography (ECG.)

What is lymphoangraphy?
It is a contrast X-ray procedure, used to diagnose causes of swelling in legs or feet and the presence or spread of cancer in the lymphatic system.

What is gastroscopy?
This type of endoscopic procedure is used to view the lining of the esophagus, stomach, and duodenum though an endoscopic tube directly (Fig.22.5). It is used to determine the cause of bleeding, or diagnose inflammatory disease, tumours, ulcers and structural abnormalities.

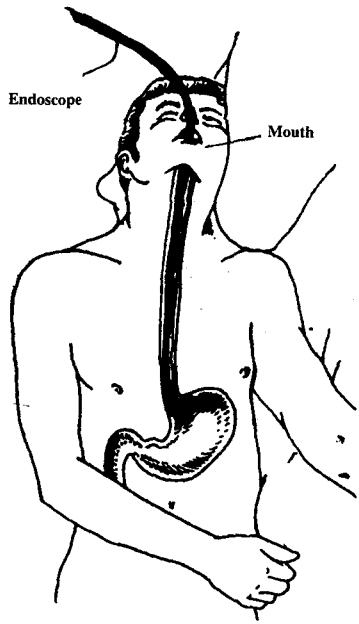

Fig. 22.5 Gastroscopy.

What is proctoscopy?
This procedure allows the doctor to see the rectum and lower part of the large intestine. It may be used to detect haemorrhoids, or scan cancer after the age of 40, or determine the cause of bleeding.

What is EMG or Electromyography?
EMG studies the electrical activity of muscles during contraction. It is used to diagnose diseases that affect the muscles, peripheral nerves and spinal cord. Electrodes are placed on the skin and signals are recorded. Later, needles are inserted into the muscles and the electrical activity is recorded on the paper, to diagnose the disease.

What is lumbar puncture?
Lumbar puncture or spinal tap provides a small amount of cerebrospinal

fluid for laboratory analysis to diagnose viral or bacterial infections, brain haemorrage and tumours (Fig. 22.6).

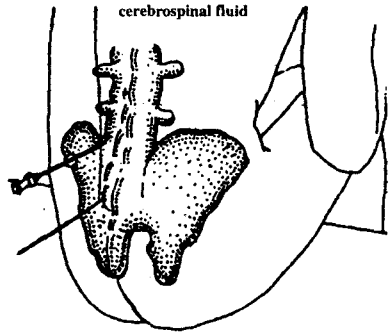

Fig. 22.6 Lumbar puncture.

What is amniocentesis?

Small amount of amniotic fluid from the uterus during pregnancy is withdrawn in this test. It is used to test birth defects or other potential problems. The fluid contains waste material and skin cells normally sloughed off by the foetus, which can tell number of things about the chromosomal makeup of the foetus (Fig. 22.7).

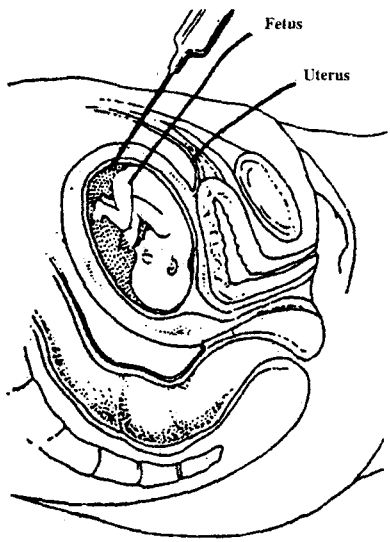

Fig. 22.7 Amniocentesis.

What is bronchography and bronchoscopy?

a) It is an X-ray of the tracheas, used to help locate obstructions, tumours, or cysts in the bronchial tube, or guide a bronchoscope during analysis.

b) This diagnostic procedure allows the doctor to see the inside of the trachea and bronchial tree to check for tumours or foreign bodies, to locate the site of internal bleeding, to muscus remove a foreign body. This is an illuminated instrument Bronchoscopy can diagnose tuberculosis or any other pulmonary disease under anaesthesia with a flexible fibre-optic bronchoscope.

What is arthrography?

This diagnostic procedure provides X-ray visualisation of a joint, especially the knee or shoulder. It is used to diagnose abnormalities or injuries to the cartilage, tendons, and ligaments. A dye is used for the X-ray.

What is colposcopy?

Colposcopy, which allows the doctor direct visualization of the vagina and cervix, is most often used to confirm cervical cancer. In this, the patient lies on her back with feet in stirrups, a speculum is inserted into the vagina to spread the vaginal walls and allow insertion of a colposcope — a tube equipped with light that allow the doctor to examine the cervix and to do the biopsy (Fig. 22.8).

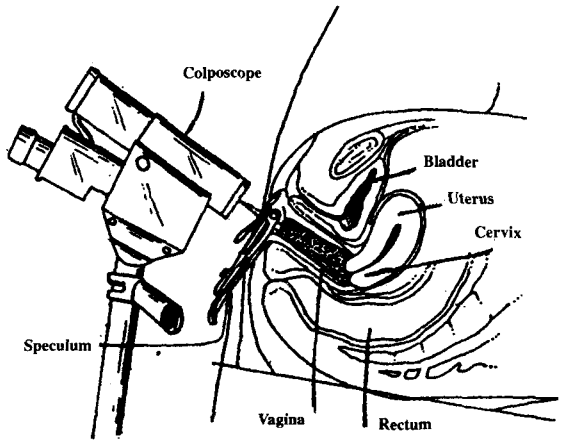

Fig. 22.8 Colposcopy.

What is laparoscopy?

A This diagnostic procedure allows the doctor to look directly at the uterus, fallopian tubes and ovaries. It can be used to perform sterilization or detect pelvic inflammatory disease or other causes of pelvic pain or determining the extent of cancer. It may also be used to check any obstructions in the fallopian tubes. It is done under anaesthesia and a catheter is inserted into the bladder with a small incision made to insert the laparoscope and the observations are made (Fi . 22.9).

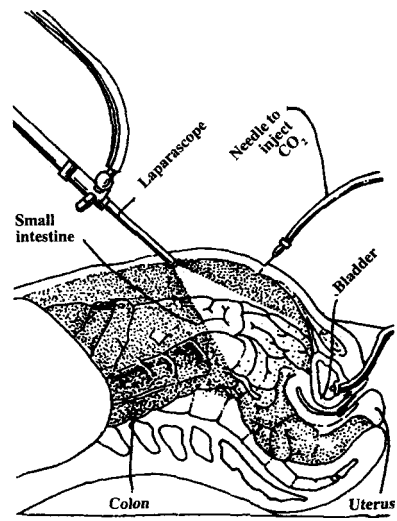

Fig. 22.9 Laparoscopy.

What is arthroscopy?

This procedure uses a fiberoptic endoscope to see the interior of a joint. It is used to diagnose various joint diseases or to perform surgery on the joint (Fig. 22.10).

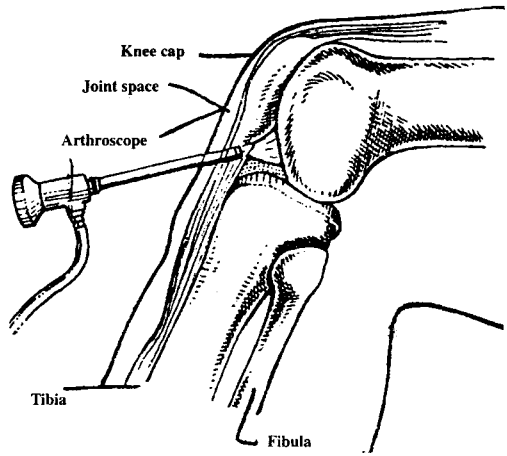

Fig. 22.10 Arthroscopy.

What is a heart lung machine?

It is a life saving machine, used during heart operations. It takes over the function of the patient's heart and lung during operation.

What information is provided by thyroid scan and iodine uptake test?

These two radio-isotope diagnostic procedures done together, will provide information on the size, structure, position and functioning of the thyroid to diagnose hyper and hypo-thyroidism.

What is an artificial pace-maker?

It is a device fitted on the chest of the patient to regularise the irregular heart beats. It is equipped usually with a battery which can last for years together. It is also used as a temporary measure for the cardiac arrest and severe heart damage.

What is artificial kidney machine?

It is a kind of dialyses used to save patients suffering from kidney disorders. The machine is plugged into the patient, which removes the waste products of blood by filtering and returns the pure blood to the body.

What is an auriscope?

It is an instrument used for examining ear disorders. It contains an illuminating bulb to see the inside of the ear.

What is a hearing aid?
A hearing aid is an electronic device that improves the hearing ability of a person who is hard of hearing by amplifying the sound vibration. They are of two types — air conduction aids and bone conduction aids.

What for a sphygmomanometer is used?
It is an instrument used to measure blood pressure connected to an inflatable rubber armband. (Fig. 22.11).

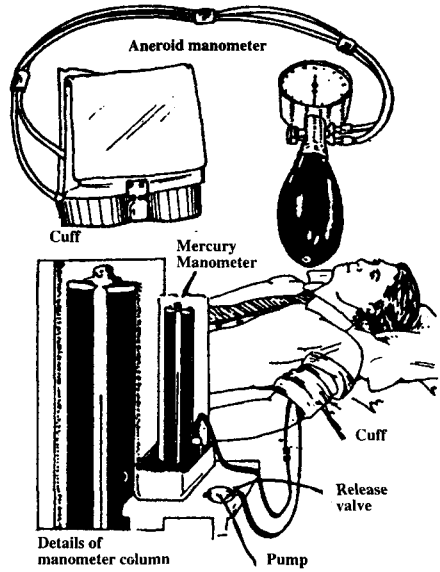

Fig. 22.11 Sphygmomanometer—Instrument for measuring blood pressure.

What is a stethoscope used for?
A stethoscope consists of a hollow end and two thin tubes with ear-pieces. The doctor places the end against the patient's chest or back and puts the ear-pieces in his/her ears. The doctor can hear the sounds of breathing and heart beat and make sure that the lungs and heart are working properly or not.

What is Benedict's test?
It is a test for glucose and reducing sugars. It consists of a solution of copper sulphate, sodium carbonate and sodium citrate to which sample is added. The resulting solution is boiled and sugar is indicated by a rust-coloured precipitate. The test is used to detect sugar in urine if diabetes is suspected.

What is ELISA technique?
It is a technique used to detect the presence of AIDS virus in body fluids. Its kits are available in almost all the countries of the world.

What is NMR Scanner?
It is an instrument used to detect body diseases. It is the most powerful tool for identification of diseases. The technique has been developed into

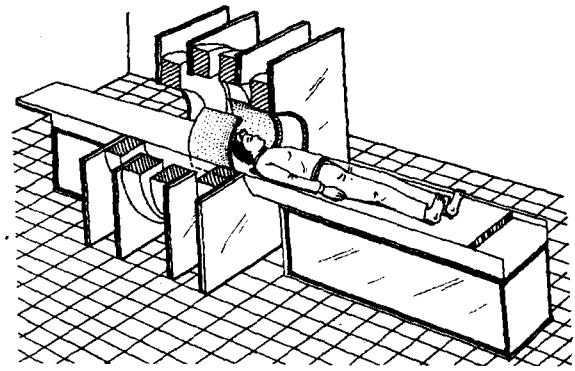

Fig. 22.12 Nuclear Magnetic Resonance Scan (NMR.)

a medical imaging tool which can create an image of soft tissues in any part of the body. It does not use any harmful radiations and gives better result than the original CAT scanner. NMR stands for Nuclear Magnetic Resonance (Fig. 22.12).

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23.

Health Problems of Women

What are the breast problems in women?
Problems affecting the breasts may include pain, tenderness, changes in shape, development of lumps. Many of them are minor and can be easily treated. If any lump is detected, the doctor should be consulted immediately. Lump may be due to breast cancer.

What are the causes of absent periods?
Absence of menstrual cycle may occur in healthy women for a variety of reasons. The suppression occurs normally during pregnancy and lactation. Monthly periods are also affected due to illness, stress and strenuous physical activity. Sometimes, the hymen across the vagina completely blocks the passage, stopping the menstrual flow and resulting in pain and swelling.

What causes heavy periods (Menorrh- agia)?
Heavy periods means more bleeding than normal. With most women, the bleeding lasts for 5 days with the heaviest loss during the initial three days. Heavy periods may be due to the disorders of the lining of the womb or intra-uterine contraceptive devices (IUC). If they recur frequently, one must consult a doctor.

Why some women have painful periods? (Dysmenorrhoea)?
The pain during the periods is a result of internal contraction. The pain comes just before the onset of period and may last a day or so. Painful periods are common in women who have not borne children.

What are the usual pain sites in a woman's body?

Face, neck, chest, breast, abdomen, arm, head, leg, are some of the pain sites in any woman. Figure 23.1 justifies main disorders of female reproductive system.

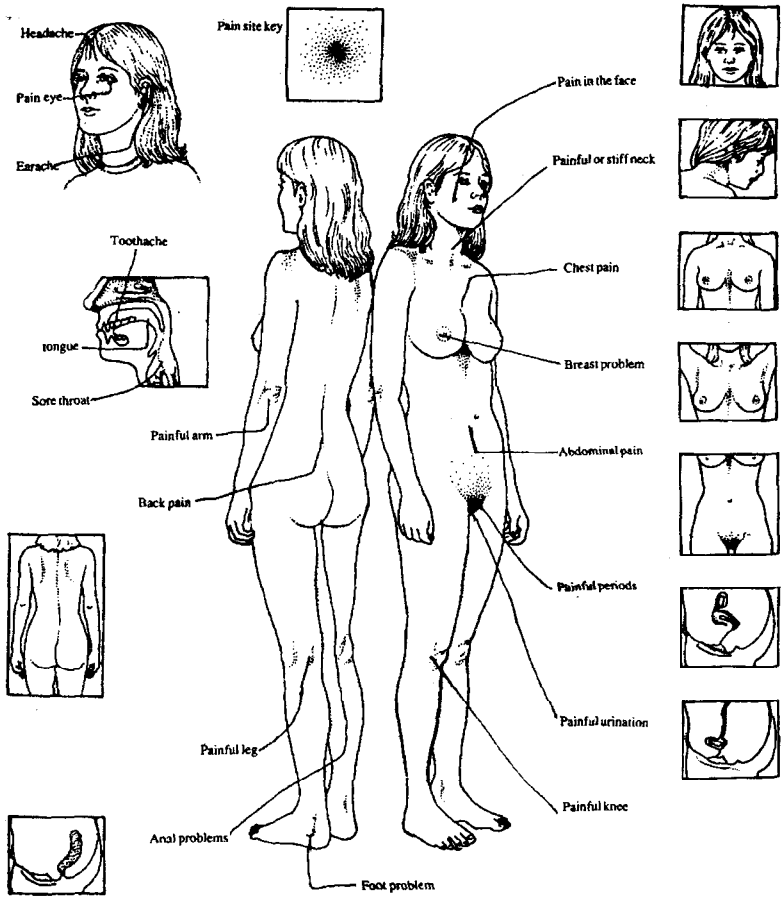

Fig. 23.1 Pain sites in a woman's body.

What causes irregular vaginal bleeding?

Irregular vaginal bleeding includes irregular periods and blood loss between normal periods. Bleeding between periods may be due to an IUCD, oral pills or underlying uterus tumour. Occasionally cancer may present itself in this way. This symptom demands careful assesment by a doctor expert in female diseases.

What causes abnormal vaginal discharge?

Abnormal vaginal discharge and pain during the intercourse especially itching and burning sensation around vagina is a sign of infection and needs medical attention. The genital tract is infected by germs and they make pus.

What is premenstrual tension (PMT)?

This is a common problem of over half of all women. Premenstrual tension gives a feeling of heaviness in the lower abdomen, painful and swollen breasts, headache, constipation and emotional instability. All these symptoms are relieved by menstruation. PMT is attributed to the hormonal changes in the body.

What is the cause of painful urination?

Painful urination is usually the result of infection in the urinary tract or inflammation around the urethral opening.

Main disorders of female reproductive system are:

A) Vaginal disorders

i) **Thrush**:- It is a fungal disease encouraged by oral centraceptives, diabetes and wearing light fitting or nylon under clothes.

ii) **Trichomoniasis:-** It is a parasitic infection transmitted during sexual intercourse. Irritation and burning sensation with a yellowish discharge are the symptoms.

iii) **Prolapse:-** After a difficult childbirth, or in overweight women, the supporting legaments of vagina and uterus are less strong due to which uterus and vagina shift down from their proper position. The only cure for prolapse is surgery.

B) Uterus and cervical disorders

i) **Fibroids and polyps:-** Benign muscular growth in the uterine wall and benign growths on stalks are known as fibroids and polyps respectively. They can be removed by P &C.

ii) **Endometriosis:-** When the endemetrium (uterus lining) breaks off and develops somewhere else in pelvic cavity, it is known as endometrium. It can be treated with a course of hormones.

iii) **Cancer of uterus and cervix :-** They both occur around the time of menopause — heavy irregular bleeding between the periods or

after menopause. Cancer of uterus is treated by hysterectomy (removal of uterus). Cervix cancer can be detected successfully in very early stages by 'Pap Smear Test.'

(C) Disorders of ovaries and fallopian tubes

i) **Infections (Salpingitis):-** Infection of fallopian tubes occurs in sexually active women, caused by abortion, or use of IUCD's. A long course of antibiotics is given for the treatment.

ii) **Tubal or ectopic pregnancy:-** It is a rare condition in which the fertilized egg develops in the fallopian tube instead of the uterus resulting in the rupture of tube into the abdominal cavity. Appendicitis and salpingitis infections increase the chances of tubal pregnancy.

What is pre-eclampisia conditon?

This condition occurs mostly in those having their first baby. The first symptom is swelling of the feet and legs. The condition increases slowly and may occur also in hands and face.In such condition the best treatment is extra rest and other remedial medicines as prescribed by the doctor.

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24.

Plastic and Cosmetic Surgery

What is surgery?
Surgery is the branch of the medical science that cures diseases, corrects deformities and heals any wounds by operation or manipulation.

Which abnormalities of the brain can be treated by surgery?
Brain tumours, clots or lesions, can be treated by brain surgery.

What is micro-surgery?
It deals with the reattachment of severed limbs and repair of broken or crushed bones. Some body tissues cut in an accident can also be rejoined with almost unnoticeable scar by micro-surgery.

What is laser surgery?
Laser is a unique source of light beam which is highly intense, coherent, monochromatic and directional. This beam is used for the delicate operations of retina, glaucoma or cataract surgery of kidney stones, artery obstructions.

What is plastic surgery?
A branch of surgery devoted to restoration, repair and correction of malformations of tissues. It was started in nineteenth century in the USA. Nose, lips, eyelids, face, chin, breasts, skin are commonly operated upon by this surgery.

Are the results of cosmetic surgery permanent?
Results of the operations upon the nose, ears, abdoman or breasts however, are permanent. But cosmetic surgery done to rectify the problems of ageing is not permanent.

In plastic surgery, which tissues of the body are exposed?
Skin, cartilage, bone, and muscle of the body can be used by the plastic surgeon.

Can the tissues of an individual be transferred to another?
In plastic surgery, tissues of one person are not transferred to another until they match with each other in all respects.

What are flaps?
These are the grafts composed of skin and underlying tissues.

What is cosmetic surgery?
It is a form of surgery done to improve a person's appearance. It is a branch of plastic surgery.

Why do people undergo cosmetic surgery?
Usually, because they are distressed or dissatisfied by their natural face or figure or because they have been involved in a disfiguring accident.

Can birth deformities be corrected by plastic surgery?
Yes. Some birth deformities can be corrected by plastic surgery say, if a child is born with the upper lip slited (harelip), such surgery can join the slit portions of the lip so nicely that one is unable to detect any deformity (Fig. 24.1).

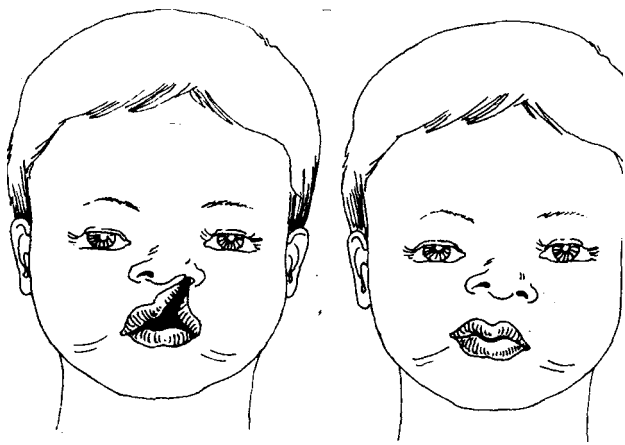

Fig. 24.1 Plastic surgery of upper lip.

Why are skin graftings made?
Skin grafting is sometimes made to cover large raw areas as in severe burn and to serve as an efficient dressing to protect the raw area from infection and loss of body-fluid.

What is the method of skin grafting?
By this method, a thin layer of skin is surgically removed from one part of the body and laid over the injured area where the skin cells are soon nourished by tiny bood-vessels of the injured area.

Can plastic surgery be done to make the breasts appear larger?
Yes. A sac made of a plastic material can be placed beneath the tissues of the breast. This sac is then filled either with a salt solution or silicon gel with the insertion of this sac, breasts appear larger.

Can a breast be reconstructed after mastectomy (removal of a breast for cancer)?
Yes, in certain cases a breast can be reconstructed. Breast reconstruction can only be done after one year of mastectomy operation.

Under what conditions the plastic surgery of the ear is recommended?
Plastic surgery can be performed in deformities of external ear. They are: (a) Protruding ears (b) Folded or lop ears and (c) Deformities of the ears and canal.

Hearing is not affected with plastic surgery upon the external ear.

Any scars visible after plastic surgery upon the nose?
No. Because incisions are made within the nasal cavity. If nostrils are made smaller, external incisions are used, but they are well hidden. The plastic surgery of nose has proved to be very successful.

What is dermabrasion?
It is used to improve the complexion damaged by acne scars. The outer skin is rubbed away completely, along with scars and a new skin grows in place of the old. It is called sand-papering technique.

What is the scope of surgery?
Surgery in the modern world has become so advanced that almost all parts of the body can be operated upon for their deformities, abnormalities and disorders. The surgery however, increases the life span and gives a boost to the morale of the sufferers.

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25.

Transplantation of Organs

Is it practically feasible to transplant an entire organ from one human to another?
The heart, the lung, the liver, the kidney, the adrenal glands and cornea can be transplanted from one human being to another. Transplantation does not guarantee that the organ will survive indefinitely.

What are the most frequently transplanted tissues or organs?
Most frequently transplanted tissue is skin, but cartilage, bone, blood vessels, a kidney or adrenal gland are sometimes transplanted from one part of the body to another.

What is the term used for the graft of an organ or tissue from one part of the same body to another?
Auto-transplant.

What are homo-transplant and Auto-transplant?
Homo-transplant is a graft of an organ or tissue from one human to another.
Auto-transplant is the graft of an organ or tissue from one part of the same body to another.

Is it practically feasible to transplant an entire organ?
Yes. From the purely surgical point of view, entire heart, kidney, liver or lung can be transplanted.

Is it ever possible to have a successful graft of tissue from an animal to a human being?
Yes. Animal cartilege has been frequently transplanted in plastic surgery.

Recently there were several reports in the medical literature of grafts of whole kidneys transplanted from chimpanzees or dogs that have survived for several months and up to two years.

How is a heart transplant operation performed?

In this technique, the circulatory and respiratory functions of the recipient are temporarily taken over by a heart-lung machine. The patient's heart is then removed, leaving only a small piece of the right and left atria. The donor heart is removed in the same manner and is attached to the corresponding parts in the atria. The new heart must be joined to the recipient's aorta and pulmonary artery (Fig. 25.1).

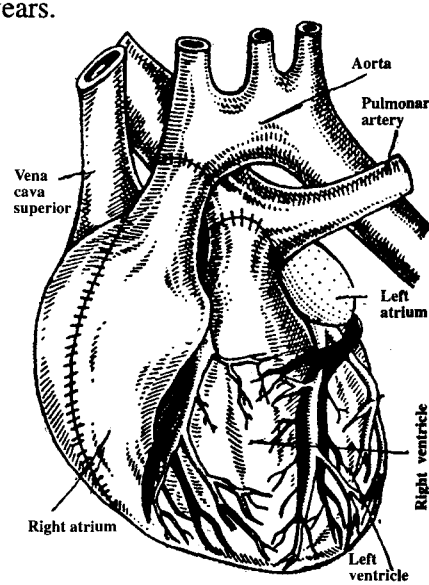

Fig. 25.1 Heart transplantation.

What operations are performed upon those with coronary artery disease?

The most popular procedure involves using a patient's leg vein as a graft to bypass coronary artery obstruction, known as coronary bypass

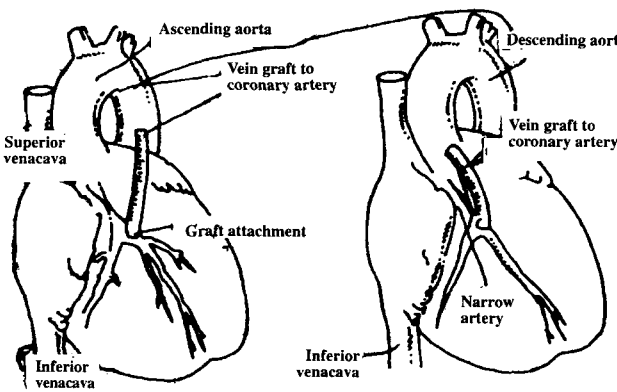

Fig. 25.2 Coronary bypass operation.

operation. Another one consists of transplanting the internal mammary artery from beneath the breast bone into the heart muscle. Coronary bypass operation is shown in Fig. 25.2.

When was the first heart transplant operation performed?
The first operation was performed on 3 December 1967 at the Groote Schuur Hospital, Cape Town by a team of 30, headed by Prof. Christiaan Barned. The operation was performed on Louis Washkansky (55). He survived for 18 days after the operation.

What are the chances of surviving a heart transplantation?
Nearly fifty per cent of those operated upon have survived for a year and some have lived for more than five years.

Can kidneys be successfully transplanted from an individual to another?
Yes. The new or donor's kidney is transplanted lower in the abdomen, creating a shortened ureter, which will be less likely to deteriorate. (Fig. 25.3).

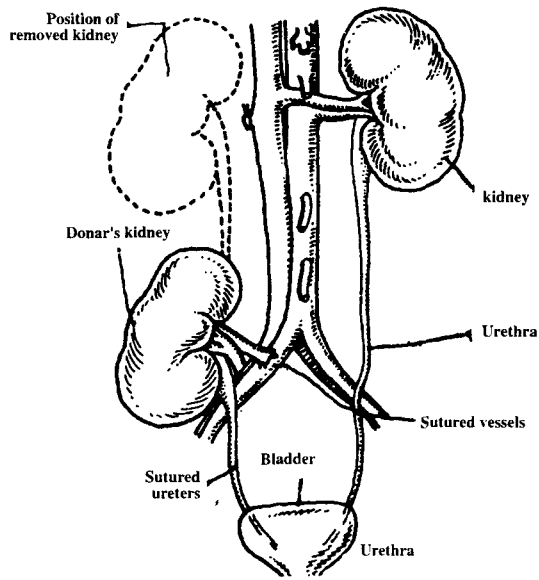

Fig. 25.3 Kidney transplant.

What are rejection reactions?

When an organ has been transplanted, then the body of the host reacts to this organ as a foreign body and the protective cells of the host react against it. This is called rejection reaction or transplantation immunity.

Under what conditions, a kidney transplantation is done?

It is performed as a life-saving measure in a patient who would die due to kidney failure. Uremia, polycystic kidney, inflammation of kidney due to stones or infection of a malignant tumour of a kidney in a patient are those conditions under which kidney transplantation is done.

What should be done, if the transplanted kidney fails to survive?

The patient can be placed on dialysis or can be reoperated and a new kidney from another donor can be transplanted. One kidney is sufficient to lead a normal life.

What is the surgical technique involved in lung transplantation?

The new lung is to be connected to four large tubes — the pulmonary artery, the two pulmonary veins and the bronchus (Fig. 25.4). The problems associated with transplantation are threat of rejection as well as infection of the transplanted organ. Since the new organ has no nervous connection with the brain, normal functioning of the lung gets disturbed. However, fluid tends to accumulate in the organ.

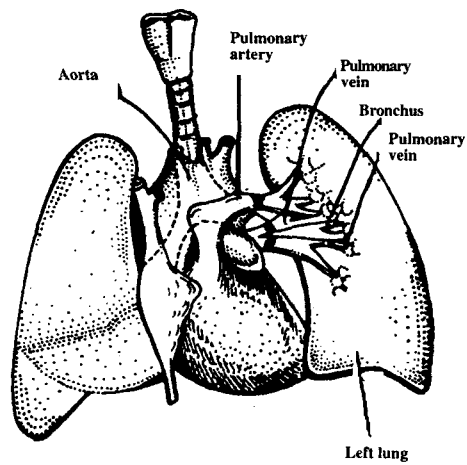

Fig. 25.4 Lung transplantation.

What is a kidney machine?

A kidney machine is a large and complex machine that can do the work of normal kidneys for people whose own kidneys have stopped working. The machine filters all the waste matter from the blood of patients connected to the machine.

Why liver transplant is much more difficult?
Because the connections of the liver to surrounding structures are much more complex. The liver too is very sensitive to interruption of its blood supply. It is usually done on people suffering from liver cancer.

On which patients, liver transplantation is done?
People suffering from cancer of liver are suitable for it.

What are the chances of survival in lung transplantation?
Very remote. Most lung recipients have died not of rejection, but of severe infection.

Can human cornea be transplanted successfully?
Yes. By removing the diseased cornea and grafting an entire cornea onto the eye, the lost sight can be restored.

What is the potential cure for leukemia?
Bone-marrow transplantation is the potential cure for leukemia.

Can diseased arteries and blood vessels be replaced with a transplant?
Yes. This is one of the most successful areas for grafts and transplants. Artificial materials are proving more satisfactory than the living tissue.

Is transplantation of organs pose problem in identical twins?
Not much, because their tissues match since the twins are genetically alike and the transplanted organ is not attacked by antibodies.

Which methods are used to prevent or diminish the intensity of rejection phenomenon?
The methods used to prevent the intensity of rejection phenomenon are radiation, immuno-suppressive drugs and tissue typing.

What is biopsy?
Biopsy is an adjunct to diagnosis which involves removing a small sample of living tissue from the body for examination under a microscope. The technique is particularly important in differentating between benign and malignant tumours.

What are bio-materials?
Bio-materials are those materials put inside the body to replace organs as a part of the organ. Within the body, it comes in contact with tissue, blood or biological fluids. Polymers, metals and alloys, ceramics and composites can be used as bio-materials.

What is the meaning of bio-compati-bility?
Bio-compatibility means that a bio-material is accepted by the body, it is non-toxic, inert and non-carcinogenic.

On what conditions does the implantation of bio-material depends?
It depends on the structure and biocompatibility of bio-material, condition of the patient and competency of the surgeon.

What are the basic requirements for the development of bio-material?
Requirements for bio-material are: it should be of sound engineering design and adequate mechanical structure, good fatigue life and easy fabrication process, besides remaining cheap and easily reproduceable.

Which polymers can be used as bio-materials?
Polymers of natural as well as synthetic origin can be used as bio-materials. They include PVC, PE, PTFE, PMMA, polysters, nylon, silicons etc. These polymers are available in rod, tubes, and granular form.

What are the uses of polymers as bio-materials?
Polymers have vast number of uses as bio-materials. For example, polypropylene (PP) can be used in disposable syringes, calipers, heart valve occuluder, catheters. PVC can be used for medical tubings and blood donation bags. Some polymers are used as bone cement, sutures.

Which metal and alloys are used as bio-materials?
Titanium, cobalt and their alloys are used as bio-materials. Stainless steel is a good bio-material for bones, screws, nails etc. The main use of these are in orthopedics.

Name some ceramics which can be used as bio-materials?
Aluminium oxide, hydroxy apatite, glass-ceramic, are some ceramics

which can be used as bio-materials. These are used as dental and orthopaedic material.

Who has lived the longest life with an artificial heart?

William Schroeder, received a Jarvik-7 heart at Humana Hospital, Audubon in Louisville, Kentucky, and has lived the longest life with an artificial heart. Jarvik-7 artificial heart runs on an external compressor as shown in Fig. 25.5.

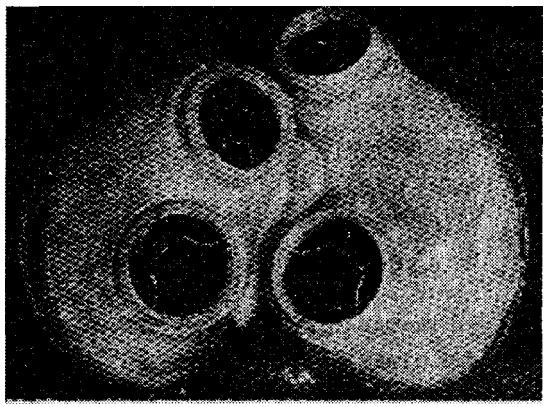

Fig. 25.5 Jarvik artificial heart.

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26.

Physical and Chemical Injuries

What are meant by physical and chemical injuries?
Health is not caused by infections and illness within the body alone but external factors such as trauma, excessive heat or cold, toxins, side effects of drugs can also damage body.

What is trauma?
A violent blow to the body damages the tissues and causes continuous bleeding. However, structures lying deep may be injured by a severe blow. It also causes an emotional shock brought about by harmful and upsetting circumstances. Stab or bullet injuries may create serious wounds. Damage to spinal cord can paralyse the muscles.

What is the effect of severe air pressure on the body?
Blast injury is produced by the force of an explosion transmitted by the surrounding air or water. It affects organs like lungs, stomach or intestines. Sudden changes in air pressure may also damage ears. Loud noise may affect hearing.

What are the effects of severe heat and cold upon the body?
Severe heat can char the skin and long exposures can cause heat strokes. Severe cold produces shivering and contraction of muscles. It can adversely affect the body. Exposure to severe heat or cold may even cause death.

What is sun burn and snow blindness?
Sun burn is caused by over exposure to sunlight through visible or ultraviolet rays. Snow blindness is the sun burn of the eye surface. When

sunlight falls on snow, a strong glare is produced which is so strong that it can adversely affect the vision. The damage due to snow glare occurs at the centre of retina. One should use dark glasses when traversing snow bound areas.

What is a poison?

A poison is a substance which by its direct action on body tissue or its action after absorption into circulation, injuriously affects health or destroys life.

What is the effect of poisonous chemicals?

A poisonous chemical can damage the body whether it is swallowed, inhaled or absorbed through the skin. Chemicals like weed killers, pesticides or lead are poisonous substances.

What are drug induced diseases?

Drugs should be taken exactly as prescribed with a full course. The remaining medicine should be thrown away. Before taking any medicine its shelf life should be checked. Drugs can cause severe damages to health e.g., barbiturates cause coma and death, aspirin affects stomach, chloramphenicol causes blood disorders, digoxin causes heart effects, sulphonamides can cause jaundice, digitalis causes nausea. Streptomycin causes kidney or liver defects.

What is toilet?

The toxic substance of poisonous plants has more effect on children because of their smaller size. Arum lily berries and laburnum seeds are common causes of plant poisoning. Fig. 26.1.

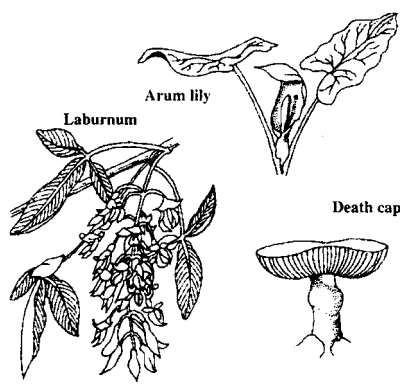

Fig. 26.1 Arum Lily and Laburnum plants.

What are the common poisons found at home and any precautions for safety?

Poisons commonly found at home include medicines,

ointments, inhalants, insecticides, disinfectants, antiseptics, bleach, kerosene, caustic soda, alcoholic drinks or any cleaning material. Such things should be kept in their respective containers duly labelled and not mixed up with soft drink bottles or containers of food. This should be kept out of the reach of children.

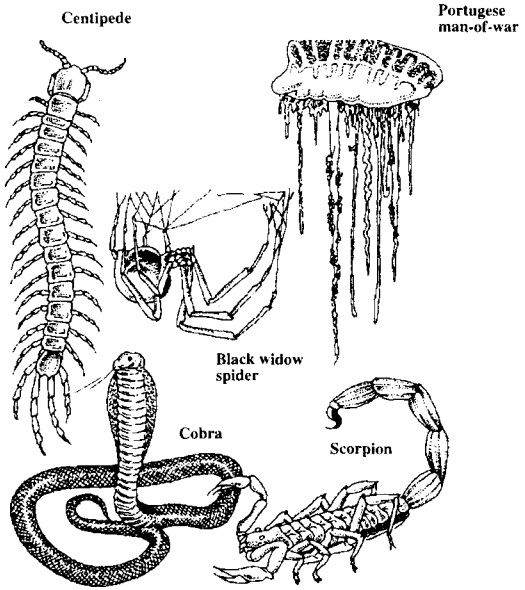

Fig. 26.2 Scorpion, black widow spider, centipede and cobra

Which are the dangerous insects to human beings?

Scorpions, spiders, centipedes and snakes are very dangerous species whose bite may be poisonous. Bees, wasps, hornets and ants are the commonly found insects with venomous stings (Fig. 26.2).

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27.

Birth Control Methods

What is birth control?
Birth control, also known as contraception, refers to the prevention of fertilization, the union of the sperm and the egg. One can plan his family and lead a happy life with the help of birth control devices.

Why family planning is significant in the world?
The population explosion is outstripping our ability to procure food, cloth and shelter to all the inhabitants of the Earth. If the population explosion is controlled these problems would become less significant.

What are the methods of birth-control?
Methods of birth-control are: a) Natural methods (b) Barrier methods (c) Intrauterine devices(d) Oral contraceptives and (e) Sterilization.

What are the two important natural methods of birth-control?
The two important natural methods of birth control are the rhythm or safe period method and coitus interruptus. The rhythm method is based on the ovulation period. For women who have regular 28-day menstrual cycles, abstinence from intercourse, three days before and three days after the predicated time of ovulation, may prove a successful method of birth control. But not all women fit into an ideal pattern; for those with irregular cycles, the safe period is unreliable.
The coitus interruptus involves the withdrawal of penis from vagina before ejaculation. This is always not safe, because there is a small but constant leakage of seamen containing sperms from tip of penis during intercourse.

What are barrier methods?

Barrier methods are those which prevent the sperms from either entering the vagina or from reaching the uterus. These methods include the use of condom, diaphragm, and gainful chemical contraceptives. If used properly, these methods would prove to become 99% effective.

What are condoms and how are they used?

Condoms are thin rubber sheaths. They are unrolled over the erect penis before intercourse so that sperms remain within the condoms and disposed off afterwards. In case a condom does break allowing the sperms to enter, a spermicidal cream or jelly should immediately be applied into the vaginal canal to kill the sperms.

What is a viginal diaphragm?

It is a circular rubber device that fits tightly in the vagina and completely covers the cervix. It works by forming barrier between neck of the womb and rest of vagina and prevents sperms from gaining access to the uterus. A physician should be consulted to get the proper size of diaphragm that fits well into the vagina (Fig. 27.1). It should be removed from vagina atleast after five hours of intercourse.

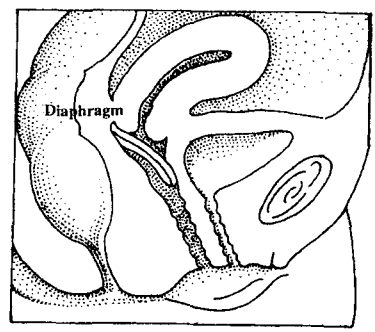

Fig. 27.1 Use of a diaphragm.

What are contraceptive jellies, foams, creams, tablets and suppositories?

These are commercial products, highly effective in destroying sperms within the vagina. When these substances are inserted properly in sufficient quantities into the vagina within an hour prior to intercourse, they will give satisfactory results.

What are oral contraceptives and how do they control births?

Oral contraceptives known as 'the pill' inhibit ovulation or egg formation. Each tablet contains two female hormones — estrogen and progestegen. Without ovulation, pregnancy is impossible regardless of how many sperms enter the vagina. In order to allow a small regular

period to occur, pill is taken for 21 days and then stopped for 7 days. They are 100 per cent effective. Oral contraceptives should be taken under a physician's supervision.

What is the tubal litigation for woman?

It is a major operation necessitating a stay in hospital/nursing home of about 10 days. It can be performed either 2 or 3 days after delivery.

What are intrauterine devices of contraception (IUCD) and how are they used?

These are plastic or plastic-metal objects inserted into the uterine cavity by a gynaecologist. They include loops, spirals, coils, Delkom Shields, copper T's multi-loads (Fig. 27.2). For the insertion, the cervix is dilated usually during a menstrual cycle and the device is pushed into the uterine cavity. Insertion is not painful and no anesthesia is required. They will show 99 per cent optimum results. Nowadays, a smaller copper device is also available. One should get these devices changed after every three years.

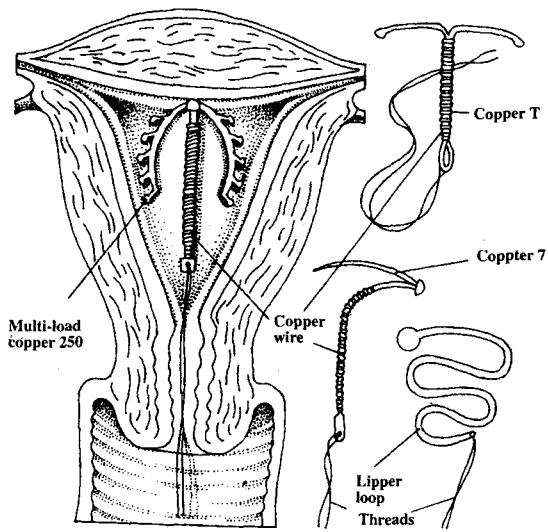

Fig. 27.2 Different types of intrauterine devices.

What is sterilization?

Sterilization is an extremely effective method of contraception because it is permanent and can be performed on both men and women.

What is vasectomy?

It is a sterilization technique used on men and carried out by a surgeon. In this technique, sperms are prevented from leaving the testes where they are formed, by cutting and typing the '*Vas deferens*'. This operation 'vasectomy' is normally irreversible.

After vasectomy, a person must get his semen checked by a doctor before resuming sexual relations. It should show no sperm.

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28.

Nutrition and Health Habits

What are the causes of vitamin deficiency?

a) Inadequate or unbalanced food intake,

b) Poor vitamin metabolism due to disease,

c) Inadequate vitamin absorption due to intestinal disease, and

d) Unusual vitamin demands during sickness, pregnancy, period of stress are some of the causes. Normally, such deficiency is not limited to one vitamin but of multiple vitamin.

Why should one avoid repeated washing of sliced vegetables?
It should be avoided in order to prevent the loss of water soluble vitamins like B and C.

How do we define nutrition?
Nutrition is a process which includes ingestion of food, digestion or assimilation of the nutrients and their utilisation for maintenance of the body.

Which diseases are caused due to malnutrition?
Kwashiorkor and *marasmus* are the major diseases caused due to malnutrition. In Kwashiorkor, the body is swollen, skin becomes pale with dark patches and hairs start falling. Weight is reduced, with slow growth and the child suffers from mental retardation. It is common in Bihar, Assam, Bengal, Tamil Nadu and Orissa. In marasmus, skin becomes wrinkled and inelastic. Child remains underweight and growth is stationary. Face becomes monkey-like in appearance.

What is a balanced diet?
A diet rich in nutrients is a balanced diet. Spices and pickles should be avoided as far as possible since they irritate the stomach and have no food value. One essential requirement of a good diet is supply of safe drinking water.

Which vegetables are good for teeth?
Carrot, raddish and cucumber provide good exercise to the gums by which teeth remain healthy. They also go as roughage into the stomach by which digestion remains well.

Why should one avoid consuming more salt?
More salt deprives our body tissues from oxygen. It causes chronic high blood pressure and leads to variety of circulatory problems. To reduce salt intake, it is not only necessary to restrict its use in cooking, but to avoid many processed food. We should consume limited quantities of iodized salt which prevents goitre.

What is cleanliness?
Cleanliness is keeping the body clean by taking bath every day. Similarly, brushing the teeth, cleaning the ears, nose and eyes regularly are part of daily cleanliness.

Why is it necessary to keep our body clean?
Daily bath cleans the pores of the skin which, if plugged by dirt, may give rise to skin diseases. Tooth decay can be prevented by brushing teeth twice a day. Mouth should be rinsed after every meal and sweet foods should be avoided.

How should we care ears, nose and eyes?
Ears should never be cleaned with a pencil or a match stick as it may damage its drum. Inserting anything in the nose may damage its inner lining. Eyes should be washed four to five times a day. *Kajal* should be avoided. Book should be kept one foot away from the eyes while reading. Ensure proper lighting. Avoid watching TV for long hours.

How can we keep our skin healthy?
Stay out of the strong sunlight. Avoid the use of talcum powder, lotion or cream. Avoid wearing wet clothes. They may attract ring worms.

How can we keep our hair healthy?
Frequent washing and combing keeps hair clean and healthy. Massaging the scalp is a good exercise. Regular trimming is necessary, otherwise hair may develop split ends giving a shabby look.

How should we care our feet?
Wear chappels at home. Wash your feet and put on socks and shoes. If you move barefooted, sharp nails, stones, broken glass, and thorns can create wounds. You should not wear tight and stretch socks because they can distort the growing foot.

What is the importance of cleaning hands before meals?
Millions of disease-causing germs stick to our hands during working hours. They get into our body alongwith eatables. To prevent this, the hands should always be washed before consuming food. Similarly, long nails carry dirt and germs deposited under them enters the body while eating and will cause several diseases. So, the nails should also be kept short and clean.

Why should one avoid edibles sold exposed?
Food items sold in the market uncovered, get disease-causing bacteria from dust particles.

Why should one wash fruits and vegetables before eating?
Fruits and vegetables contain many bacteria and impurities on their outer skins. They should be cleaned with water containing small quantities of potassium permanganate else would attract many diseases, if consumed unwashed.

How can one get sound sleep?
Clean one's hands and feet with soap and water. One should not go to bed on a full stomach. Meals should be taken at least 3 hours before going to bed. Avoid covering one's face while asleep. Do not sleep together on one bed. It may cause infections.

How can one prevent the attack of water borne diseases?
Always drink fresh and clean water. However, boiled and filtered water is free from bacteria.

ROUTINE

1. Wash your hands before meals and returning from toilet.
2. Brush your teeth and keep your tongue clean.
3. Wear clean clothes and take bath regularly.
4. Do not spit in the open places.
5. Attend the calls of nature in time.
6. Keep physically fit by doing exercises regularly.
7. Wash fruits and vegetables before eating.
8. Do not become a victim of drug, smoking and alcohol.
9. Avoid cold drinks and sweets.
10. Do not breathe through mouth but through nose.
11. Avoid over-eating.

ESSENTIAL NUTRIENTS OF FOOD

Name	Food source	What it does	Disease caused by deficiency
Carbo-	Starch, sugar, cereals, hydrates	Provides energy cellulose	Fatigue, tiredress
Fats	Ghee, butter, oils, Groundnut	Provides energy; excess use increases cholesterol	-do-
Fibre	Raw fruits, vegetables, bran, whole grain, salads	Provides roughage to intestines	Acute constipation
Fluid	Mainly water	Keeps the kidneys functioning	Urinary diseases
Minerals			
Calcium	Milk and other dairy products, fish	Healthy bones and teeth	Rickets
Iodine	Iodised salts	Growth of the body	Goitre
Iron	Kidney, liver, egg yolk, red meat, nuts	Healthy function of red blood cells	Anaemia
Proteins	All dairy products, eggs, fish, meat, pulses, nuts, sprouted beans	A body building food	Hampered growth

Name	Food source	What it does	Disease caused by deficiency
Vitamins			
Vit. A (Retinal)	Milk, fish, green vegetables, carrots	Essential for good vision	Night-blindness, xerophthalmia, xerosis
Vit. B_1 (Thiamine)	Whole grain, pulses, brewer's yeast destroyed by overcooking	Helps digestion needed for fertilisation and growth	Beri-beri, loss of appetite
Vit. B_2 (Riboflavin)	Milk, egg, green vegetables, liver destroyed if exposed to light	Prevents eyes & skin problems	Skin disorder sore toungue
Vit. B_3 (Niacin)	Milk, egg, brewer's yeast	Builds brain cells, prevents infections	Bleeding of gums
Vit. B_5 (Partothenic acid)	Egg, whole grain, cheese, liver, kidney	Essential for normal reproductive function	Anaemia
Vit B_6 (Pyridoxine)	Brewer's yeast, banana potato, mushroom, dried vegetables, destroyed by excessive washing	Produces antibodies to fight disease	Nervous disorders, convulsions
Vit. B_{12} (Cyanocobalamin)	Soyabean, fish, milk	To develop red blood cells.	Anaemia
Vit C (Ascorbic Acid)	Citrus fruits, red, green or yellow vegetables, destroyed by overcooking	Helps absorption of iron from intestine, act as detoxicant, important for repairs and wound-healing	Scurvy, chapping of skin
Vit. D (Calciferol)	Milk, egg. sunshine activates a pre-vitamin in the skin	Promotes absorption of calcium	Ricketes
Vit. E	Wheatgerm, milk, oils	Maintenance of cell membrane, reproductive system	Sterility
Folic acid	Raw leafy vegetables, walnuts	Blood formation, development of central nervous system.	Neural tube defects as spina bifida
Vit K.	Green vegetables manufactured by the body from bacteria in gut.	Coagulation of blood	Delayed healing of wounds.

29.

Fitness and Exercise

What are the benefits of regular exercise?

Regular exercise increases the strength of heart and lungs, improves blood circulation and maintains the strength and flexibility of joints and muscles. It controls the body weight, increases stamina and alertness making one smart, good looking and happy. Fig. 29.1 shows the parts of body benefited by regular exercise.

Fig. 29.1 Different body parts benefited by exercises.

What are meridians in the language of exercises?

A series of exercises to strengthen 'energy channels' is called meridians. They are linked to the heart, lungs, liver, gall bladder and other organs keeping them in a healthy condition.

What should be our exercise programme?

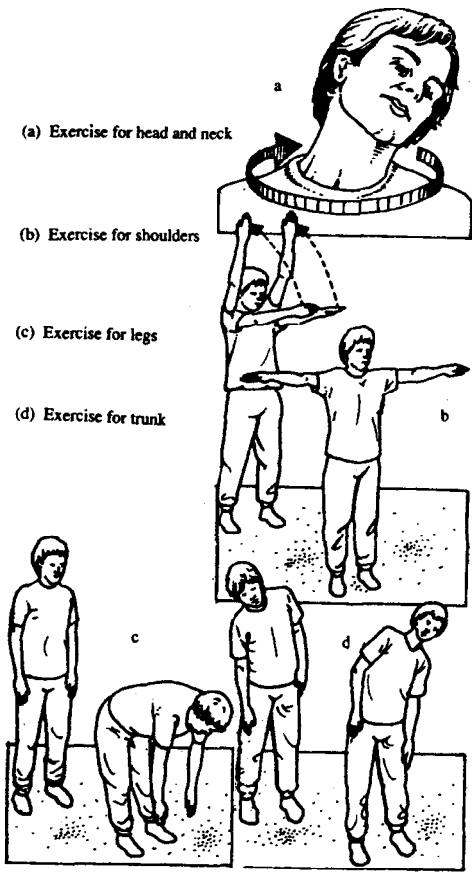
Three twenty-minutes sessions a week at regular intervals are sufficient to put you on the path of fitness and well being. You can practice exercise regularly. Choose a level of activity, intense enough to make you sweaty, breathless and aware of your heart beat. You should never exert to the point where you feel dizzy or faint.

What are sensible precautions for exercise?

You must do exercise regularly. Irregular exercises are potentially dangerous. Increase your level of exercise gradually. Always warm-up yourself before any rigorous session, with suitable clothing and equipment. If any exercise is painful or produces any discomfort, it should be stopped altogether.

What are warming-up exercises?

Some warming up exercises of head and neck, shoulders and chest, legs and trunk are illustrated below:



i) Slowly roll your head in a full circle as in Figure 29.2a.

ii) Extend both arms in front of you. Lift them up above your head and then lower them to your side as in Figure 29.2b

iii) Stand upright with your feet wide apart and hands on the hips. Lean forward, bending at the hips and keeping your back straight. Lower your arms towards the floor in front as shown in Fig. 29.2c.

iv) Stand upright and bend towards left and right as shown in Fig. 29.2d.

Fig. 29.2 a, b, c, d Warm up exercises.

What are the different types of exercises?

There are (a) Sports (b) Keep-fit and (c) Hatha Yoga.

a) Sports are more sociable and competitive in nature, which includes football, volleyball, table tennis, kabaddi, basketball, golf, badminton, etc.

b) Keep-fit exercises are divided into Isotonic and Isometric.

   Isotonic exercises involve contraction of muscles. They increase muscle power and improve circulation system. Push ups, touching knees by sitting are some of the isotonic exercises. Isometric exercises include lifting of weight, pressing against some fixed thing. Various machines are also used for isometric exercises.

c) Hatha Yoga includes various Yogic exercises which should be done under the guidance of a good instructor.

What type of clothes and foot wear should be used?

Choose clothes that are comfortable and do not restrict movements. Cotton clothes are the best for exercises. One should use shoes with cushioned flexible soles. There should be at least half an inch clearance between the toes and shoe front so that toes will move freely.

Which exercises keep our lungs and brain healthy?

Running, jogging, cycling, swimming, rowing and skipping are very useful exercises for keeping the lungs and brain healthy. Due to increased blood circulation, there is more oxygen available to brain tissues, which is good for our mental fitness.

What are the drawbacks of exercises?

Although sports and exercises are on the whole harmless, certain injuries strains or stress may occur occasionally. Knee, ankle and head injuries are common in ball games and cycling.

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30.

Environment and Health Hazards

How is environment related to human health and behaviour?

The world in which we live includes air, water, plants, animals, land, constructed buildings — they are all part of our environment and play a major role in our day-to-day life. Growing industries and population are adding wastes, garbage, smoke and many other unwanted things continuously into the environment, thereby contaminating the

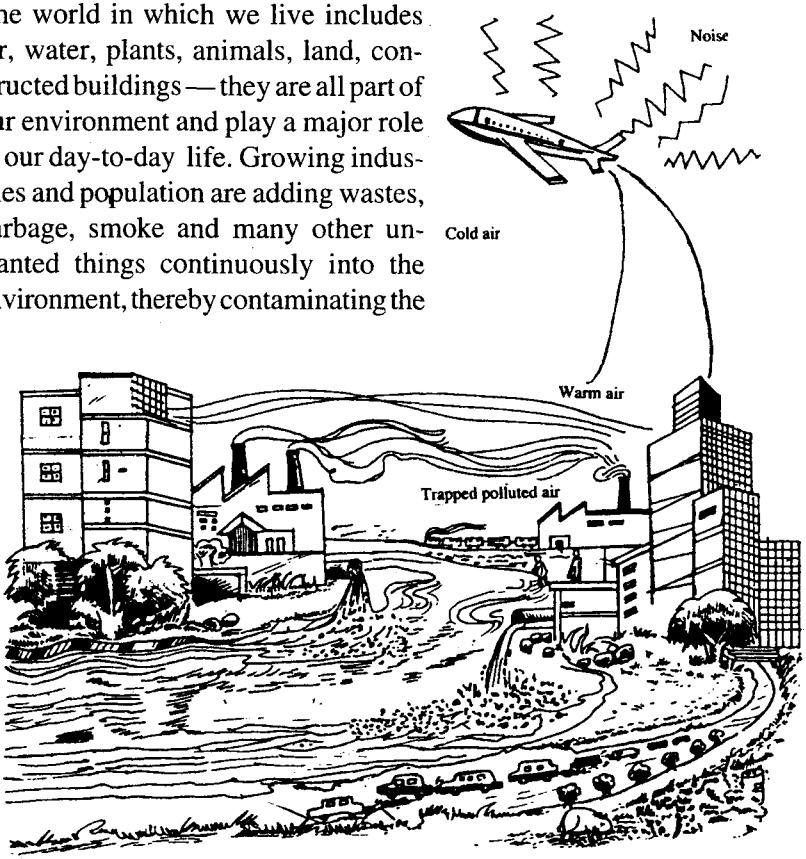

Fig. 30.1 Causes of environmental pollution.

air we breathe, the water we drink and the food we eat. Pollution of the environment causes diseases, increases susceptibility to diseases and reduces the physical capabilities of the people. It has become a big health hazard of modern times. Figure 30.1 illustrates the source of environmental pollution.

What are the major schemes of environmental research programmes in India?

The major schemes include (a) man and biosphere research program (b) environment research scheme (c) co-ordinated research project on ethnobiology and (d) impact of global warming on sea level rise.

How air gets polluted and affects the health of the people?

Motor vehicles and industries discharge large amounts of carbon monoxide, carbondioxide, oxides of sulphur and nitrogen, metal fumes, etc., which pollute the air. These substances are hazardous to our health. Oxides of nitrogen, sulphur and chlorine produce respiratory disorders, bleeding in lungs and cardiac failure. Hydrogen sulphide can paralyse the central nervous system. Carbon monoxide and lead are highly poisonous and can even cause sudden death. Particulate matter causes silicosis, asbestosis and similar diseases.

Which diseases are caused by polluted water?

DDT, petroleum, insecticides, pesticides, heavy metals, mercury, cadmium, arsenic fertilizers, nuclear wastes, human wastes, dyes, detergents, soaps, sewage, etc., are water pollutants. Polluted water is very harmful for health. Several kinds of bacteria and virus grow in polluted water and spread diseases like cholera, typhoid, jaundice, diarrhoea, tuberculosis, stomach ailments and liver disorders.

What is Central Ganga Authority and Ganga action plan?

The Ganga action plan was set up in 1985 under the Central Ganga Authority (CGA) to oversee the plan, drawn up for cleaning polluted stretches of the Ganga. Different methods have already been taken up for Uttarpradesh, Bihar and West Bengal for the purpose.

How soil pollution is hazardous to health?

Massive amount of solid wastes from consumers and factories, household refuse, construction debris, agricultural wastes, garbage, old papers,

trash, cans, bottles, etc., are responsible for soil pollution. The latter would give birth to disease-causing bacteria which attack human beings as well as animals.

What are the effects of noise on human health?
Noise pollution can cause loss of hearing, increase pulse rate and blood pressure besides raising the blood cholesterol. It can arrest heart functions and cause peptic ulcer. High level noises produce irritability, tension, nervousness and anxiety.

What are common occupational diseases?
Certain diseases known as occupational diseases are caused due to the particulate matter present in the occupational environment. For example, silicosis is caused in coal miners, beryllosis is caused in beryllium mine workers, asbestosis is caused in asbestos workers. Asthma is also caused due to the allergic particles present in the occupational surroundings.

How cancer and environment are related to each other?
About 60 to 90 per cent cancers of all kind are produced by environmental factors such as water, air, solar radiations, chemicals, diet and ways of life. Tobacco produces cancer deaths to 30%, alcohol to 30%, diet to 35% and occupation to 4% of the entire world population.

How environment is responsible for allergic diseases?
The pollen of flowers, grasses, weeds, house dust, animal hairs, certain drugs, dyes, chemicals are common allergens present in our environment. They may cause allergic diseases like hayfever, bronchial asthma, eczema, hives migraine, etc.

How radioactivity is hazardous to mankind?
Radioactivity from the nuclear power plants and testing of nuclear weapons can bring about genetic disorders, cause cancers and shorten life span.

What was the nuclear disaster of Chernobyl?
An explosion of a nuclear reactor at Chernobyl in Ukraine, took place on 25 April, 1986. It has been reported as the worstever disaster which, in future, may cause many deaths due to cancer. The latest estimate for the eventual death toll has been put as high as 7500.

What was Bhopal gas tragedy?

Leakage of Methyle Isocyanate (MIC) gas from the tank of Union Carbide factory at Bhopal on the night of 3 December 1984, converted the entire Bhopal township into a gas chamber. It affected about 2 lakh people of which about 10,000 have died. The ones surviving are still suffering from aftermath of the gas. This has been the biggest environmental disaster to mankind.

How smog affects the health of the people?

Smog produces many disorders of ear, nose and throat. A killer smog in London in 1952 caused 4000 deaths and about 8000 people of Tokyo suffered from smog in 1972.

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31.

Sex Education

At what age should sex education be imparted?
At the age of three, normal children becomes aware of the difference between boys and girls. He should be explained in simple ways about the functioning of appendicitis. By the time adolescence is reached, children should know a great deal about sex so that they are able to manage with their sexual urges.

How should their curiosity be satisfied?
The child should never be hushed and discouraged from asking questions about sex. Parents should answer correctly without any made-up stories. During puberty, with commencement of menstrual cycle and physical developments, a girl needs to be assured that she should foresee the adulthood as these are natural developments and there is nothing to be embarrassed about. Similarly, boys should be guided about the inherent physical changes during such period.

What should be the attitude of parents towards the increased sexual urges of their children during adolescence?
This is a natural phenomenon and need not be discouraged. It is quite normal for boys and girls to know one another. During such period, sexual curiosity should be controlled gently and children should be directed so that their curiosity does not result in harmful pursuits.

Should the adolescent be permitted to get married during the teen years?
Teenage marriages are usually love-marriages. To allow them for marriage is unwise since physical and emotional maturity is rarely achieved in teenagers.

SOME IMPORTANT QUESTIONS ABOUT SEX

Is it natural for boys and girls to masturbate during the adolescent period?

Yes. It may begin because of an irritation in the genital area. Let them not feel guilty about this practice. Arrange them to keep busy most of the day with plenty of outdoor activity. They should not be allowed to stay alone for longer periods. In fact, masturbation is not harmful in any way.

What are the causes of low sex drive in men?

Male sexual arousal is governed by psychological factors and the male sex hormone — testosterone. If a man has a very low level of this hormone, he will have lesser interest in sex and may find it difficult to become sexually aroused.

What is sexual pervers?

It is difficult to give a satisfactory psychological definition of sexual perversion. In general, however, the perverse sexual act tends either to exclude or replace male-female or heterosexual genital intercourse or to relegate it to a subordinate role.

What causes homosexuality?

It is a condition that arises from emotional problems and attitudes within the home during early childhood. It is very harmful and could lead to vulnerable disease like AIDS. A homosexual enjoys sex with a partner of the same gender.

What is premature ejaculation? Is it a sexual disorder?

Some people experience a rapid orgasm, either before or soon after insertion of the penis into the vagina. Premature ejaculation interferes with successful sexual relations and is often accompanied by a sense of performance failure in the male and a feeling of lack of fulfilment in the female. It is a sexual disorder and one should get treatment from a physician and psychiatrist or a sex therapist.

Do virgins always bleed upon first contact?

There is a fold of mucous membrane that partially or completely covers the vaginal opening. It is this membrane that gets ruptured on first sexual contact leading to bleeding. But, this membrane can also get ruptured due to cycling, exercise or other outdoor activities.

Is the first sexual act very painful for a woman?
No. There may be some pain but a tender attitude on the part of the man in action and proper instructions may avoid a great deal of pain, viz., caressing, cuddling, etc.

Which diseases are contracted from sexual contact or exposure?
The diseases contracted from sexual contact are called venereal diseases (VD). Most prevalent venereal diseases are gonorrhoea, syphilis, herpes and chlamydia. These are very dangerous diseases. Gonorrhoea is caused by an organism and is localized to the genitals. It is characterised by frequency of urination, painful swelling and discharge from the region. Syphilis is caused by bacteria and ultimately produces grave damage to organs such as brain, heart, liver etc. Herpes is a viral infection to the nerve endings in the skin, in which small superficial blisters appear.

PS: Please see the next chapter on *'myths and misconceptions'*.

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32.

Myths and Misconceptions

Some people blame their wives for the birth of a female child. Is it fair on their part?

No. Sex of a child is not decided by females but by the males only. The male sperms contain equal number of X and Y chromosomes, while the ova of women contain only X chromosomes. When a X chromosome of male sperm fertilizes the X chromosome of the female egg, the resul would be a girl. If a sperm containing a Y chromosome fertilizes the egg, the child will be a boy. Since women do not have any Y chromosomes, they are not responsible for the birth of a boy. Blaming women for the birth of girls is simply a misconception. Figure 32.1 shows, how the sex of a baby is decided.

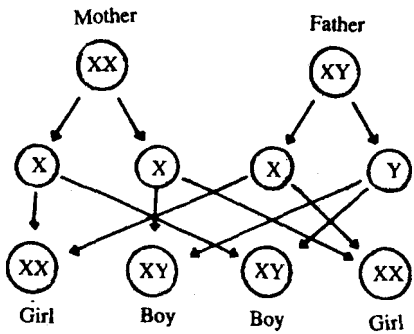


Fig. 32.1 Determination of the sex of a baby.

Why some women give birth to only boys while others only girls?

This occurs because the sperm of some men do not have equal number of X and Y chromosomes. Thus, a man whose sperm contain more number of Y chromosomes is likely to get boys, while one having more X chromosomes would get more girls. The distribution of X and Y chromosomes can be examined microscopically in the semen .

Is it possible to change the sex of a person?

Yes, but only to a certain extent. A male undergoing a trans-sex operation

can have his penis and testicles removed and through a plastic surgery can have an artificial vagina constructed. He can grow breasts by taking female sex hormones.
A woman can have her breast, uterus, tubes, ovaries and vagina excised surgically. However, the construction of a functioning penis is not possible. A transformed male cannot impregnate a female and a transformed female can never become pregnant.

Is masturbation an indication of emotional or mental disturbance or does it lead to such disturbances?
No. The old belief that masturbation could cause neurotic or mental illness is absolutely false. Many people achieve their first orgasm in this way and continue to find it an enjoyable method of achieving sexual satisfaction. However, a sense of guilt about masturbating may create emotional anxieties.

Does the removal of the uterus, tubes or ovaries alter a woman's sexual desire or ability?
No.

Most of the young boys think that erotic dreams are a disease. Is it true?
No. It is a normal phenomenon occurring most often in adolescence and early adulthood stages.

In India, there are many clinics to cure sexual weakness. Should a person go to such clinics for treatment?
No. These sex clinics simply befool the people.

Is it natural for men to reach a climax more rapidly than women?
Yes, usually it happens.

Can sexual relations be consummated during menstruation without harmful effects?
Yes. However, it is often considered unpleasant.

Is it true that a man becomes sexually weak after vasectomy operation?
No, it is a misconception.

We see many advertisements regarding the health tonics. Are they effective from the practical point?
The advertisements are mainly meant to increase the sale of the products. The way the tonics are illustrated are very ineffective.

Women failing to deliver children are usually accused by their husbands and family members as sterile. Is it fair on their part?
In such cases either the wife or the husband or both may have some abnormality. Such an abnormality can be identified by the doctors alone.

People comment that alcoholic beverages would reduce colds, sinusitis. How far it is true?
It is a myth. Alcohol is harmful for health.

Is wheat flour grinded at home more nutritious to that available in the market?
No. Both are equally nutritious. This is simply a belief.

Is it true that eating mangoes before it rains causes boils and diarrhoea?
It is a misconception. Eating mangoes before or after rains is equally good for health.

Most believe that a woman never gets pregnant as long as she breast feeds her child. Is it true?
This does not have any scientific justification. Chances of pregnancy are equal during breast feeding period or otherwise.

Mothers usually do not allow their children to eat curd and milk together. Is it really harmful?
No. It is simply a misconception.

Is it true that consuming much sugar or sweets causes diabetes?
No. They are only harmful for diabetic patients.

Is it true that one should not eat oranges on cold days or nights during winter?
No. Oranges are good a source of vitamin C and can be eaten at any time during any season.

Does cutting or shaving of the hair makes it grow denser?
No. Growth of the hair depends upon good diet and genetic factors.

Is it true that, repeated pregnancies make a woman look older?
No. If a woman is healthy and has taken proper care, repeated pregnancies will not have any affect on her age factor.

It is a common belief that by eating coconut or drinking milk with saffron during pregnancy, a woman can give birth to a fair complexioned child?
It is a misconception. The complexion of a child depends upon the melanin pigment in the skin.

Some superstitious beliefs and misconceptions

- Brown eggs are more nutritious than white eggs.
- Fish is a brain food.
- Raw milk is the best quality milk.
- Canned vegetables are less nutritious than fresh and cooked ones.
- Care given to baby teeth is unimportant since they will be replaced by permanent teeth.
- Boils are caused by bad blood in the human body.
- Tuberculosis is inherited.
- Running water is ever safe for drinking.
- Cooking food in aluminium utensils causes cancer.
- Bannana and orange produce cough and phlegm.

33.

Measures for Safety and First Aid

What are the common accidents which occur at homes?
Falls, fires, suffocation, choking, poisoning and cuts are some of the accidents occurring at homes.

If the clothes of a person catch fire, what should be done immediately?
In case, the clothes of a person catch fire, try to roll him in a rug or blanket enveloped or simply roll him on the floor to put out the flames. Warm sweet tea may be given to the patient if he complains of feeling thirsty.

How can one avoid suffocation and choking incidents?
Kerosene or coal stoves should not be used for room heating because they produce poisonous carbon monoxide. Cooking gas cylinder should be properly closed after use. The odour of gas should never be ignored.

What are the principles of First Aid?
The First Aid is ninety percent common sense and ten percent knowledge. The scope of first Aid is:

(a) to determine the nature of the case and to decide on the immediate treatment required.

(b) to apply these conclusions intelligently quickly and gently.

(c) to arrange for the casualty to remove to a shelter-either to his home or to any other suitable shelter to await further assistance or to any hospital.

What precautions one should take while working in a workshop?
Avoid loose clothes like flowing ties, dhoti or loose shirts while working in a workshop. Floors should be grease-free. Use precise tools for right job.

What is the First Aid treatment for animal or human bites?
Wash wounds freely with soap water for a period of five to ten minutes. Apply a sterile bandage or a clean handkerchief, and consult a doctor as soon as possible.

What is the First Aid treatment for insect bite?
If a sting has been left in place, it should be gently plucked out. Place a tourniquet above the bite on the extremity so that the absorption of poison will take place more slowly. Apply a weak solution of household ammonia. If a greater degree of swelling continues a physician should be consulted.

How should we treat frost bites?
Frost bites are burn caused by exposure to excessive cold. Frost bite area should be exposed to cool air or placed in cold water so that thawing will occur gradually. Do not rub or expose to fire.

How we should give first aid treatment for choking?
Children can swallow small things which might cause choking. The child should be held upside down and one should slap him on the back for easing respiration (Fig. 33.1).

How should we provide First Aid treatment for a snake bite?
A tourniquet should be placed just above the site of bite. A cross incision should be made over the site of the bite and the bite should be sucked out. The greatest danger of snake bites is from shock, so it is important

Fig. 33.1 First aid for choking.

to calm and reassure the patient. The patient should be transported to the nearest hospital.

What first aid treatment should be given for bruises?

Apply ice bag or soggy clothes for about half an hour. Immerse part alternately in hot and cold water.

What is the first aid treatment for convulsions?

Convulsions are strong jerking movements of various body parts due to fits.

Loosen the clothes of convulsed men and put a piece of cloth between his teeth to prevent him from biting his tongue. Lift up the chin to improve his breathing. Rub his limbs to promote blood circulation.

How does one carry out mouth-to-mouth resuscitation?

Mouth-to-mouth resuscitation as first aid is very helpful in cases of drowning, electric shock and sudden heart failures. It is carried out as follows:

Stretch out the patient on his back. Loosen the tight clothing around his neck, chest or waist. Lift up his chin and tilt his head. Pinch the patient's nose with your finger, shut to prevent your breath from escaping. Place your mouth tightly over his mouth and blow as hard as you can. Take your mouth away to permit air to be expelled from the lungs. Repeat this process every five to six seconds and continue for several hours to revive him unless you feel his pulse or heart beat (Fig. 33.2).

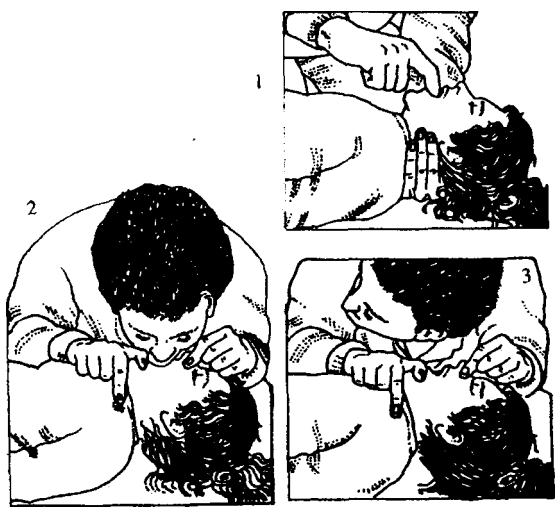


Fig. 33.2 Mouth to mouth resuscitation.

How can you help a person if some foreign body has gone into the eye?
The eye should be irrigated with luke warm water. Make no attempt to remove it, take the patient to a doctor. Don't try home remedies and thereby endanger your sight. Never rub the eye.

What is the first-aid treatment for fainting, dizziness or vertigo?
Place the patient in a lying-down position, with his face up and head level slightly down. Raise his legs slightly above the level of the rest of the body. Loosen his clothes. If necessary give him artificial respiration (Fig.33.3).

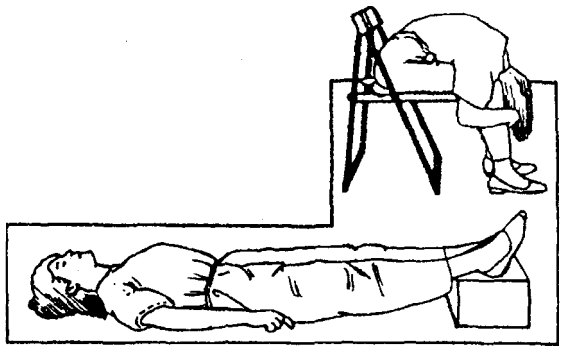
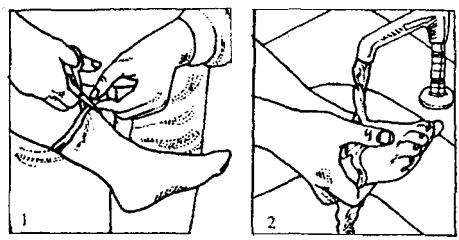


Fig. 33.3 First aid for fainting.

What is the first aid treatment for minor burns and scalds?
Burns and scalds should be cooled as quickly as possible. Apply ointment to the burnt area and bandage lightly with sterile gauge (Fig. 33.4). For deep burns, a doctor should be consulted.



What hould be done if some foreign body has gone into the nose?
Get the patient to sneeze. It can be accomplished by mak-

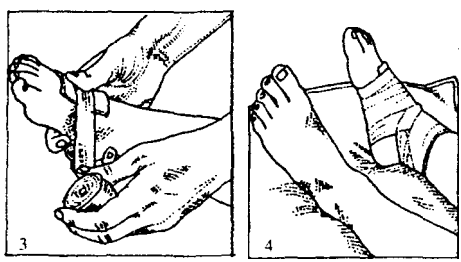


Fig. 34.4 Tr_a.ment for burns.

ing him inhale some pepper through the nostrils. Never try to remove it with a pin.

What should be done to remove the foreign body from the ear?
Put some mineral oil or mustard oil into the ear track and let it stay for a few minutes. It will bringout the foreign body.

How can you help a person with a minor cut?
Wash the hands thoroughly. Cleanse the injured area with soap and water. Apply sterile gauge and bandage to the affected part.

How can you stop bleeding from nose?
Press the nostrils together with fingers for ten to fifteen minutes and ask the patient to breathe through his mouth (Fig. 33.5). If the bleeding does not stop in thirty minutes, then consult a doctor.

Fig. 33.5 First aid for nose bleeding.

How can you help a person affected with gas poisoning?
Shut off the gas and open the windows. Loosen the clothes of the victim and move him to the open place where he can breathe fresh air.

What is the first aid treatment for severe bleedings?
Apply pressure using finger tips on the wound for a few minutes. This will stop the bleeding. The wounded part should be raised to reduce the blood flow towards the bleeding part.

What is the first aid treatment for toothache?
Moisten a small piece of cotton with clove oil and apply it to the aching tooth. Consult your dentist.

What is the first aid treatment for sprains?
Elevate the injured part and apply ice bag or cold clothes for at least half an hour. Always get the sprains X-rayed.

What is the first aid treatment for fractures?
Keep the patient quiet and do not move his injured part. Body-splint the injured part by securing it to the rest of the body. Always move the patient to a hospital in a lying down position.

What is the first aid treatment for drowning?
After the patient is taken out of water, he should be given artificial respiration. Roll him on stomach to drain out the water from the lungs and stomach. Keep him warm and take him to a nearby hospital.

How can you lower the temperature in high fever?
Remove as much clothing as possible. Sponge the forehead of the patient repeatedly with tepid water. Give a tablet of paracetamol (Fig. 33.6).

Fig. 33.6 How to lower temperature.

What is a first aid kid?
A well stocked first aid kit should be kept in a fixed place in a prominently labelled box. Anything used should be replaced immediately. The main contents of a first aid kit are – sterile white gauze, cotton wool. *Band aid* dressing strips and ordinary adhesive strappings, tweezers, scissors and safety pins. All these should be fairly sterilized. Antiseptic tubes, pain-killer tablets, aspirin and paracetamol, also should be available in its medicine chest. Ideally the box should have its contents listed on a card pasted inside the lid. Anything used should be replaced as soon as possible.

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34.

National and Inter-national Health Organisations

When was World Health Organisation (WHO) established and what are its functions?

WHO was established in 1946. Its headquarters is in Geneva, Switzerland. For South-east Asia, its headquarters is in New Delhi. At present WHO has over 150 member countries. Its main functions are:

a) Planning and co-ordination of health activities on global basis.
b) Promotion of medical research.
c) Making of health regulations on international levels.
d) Control of communicable diseases.
e) Production of vaccines and eradication of certain diseases.

The emblem of WHO is shown in Fig. 34.1

Fig. 34.1 Emblem of WHO.

What is the _ _l_ _ UNICEF for the health of children?

UNICEF is mainly concerned with welfare measures of children. The programmes of UNICEF also include water supply and sanitation and other urban civic services. It assists in the control of diseases p y m g mothers and children *viz.*, vitamin deficiencies, anaemia, trachoma etc. It provides equipments and drugs to child health services. Its emblem is shown in Fig. 34.2.

Fig. 34.2 Emblem of UNICEF.

When was FAO established and what are its objectives concerning the health of the people?

Food and Agricultural Organisation (FAO) was established in 1945 at Quebec in Canada. It has its headquarters in Rome. Its main objectives are:

a) to rise levels of nutrition and standards of living and

b) to improve the economic condition of the rural people.

c) to invest in aggriculture to ensure emergency food supplly.

Emblem of FAO is shown in Fig. 34.3.

Fig. 34.3 Emblem of FAO.

What role is being played by Cooperative American Relief Everywhere (CARE) in India:

CARE is the largest non-governmental international voluntary relief and development organisation. It operates in 36 countries. Its ongoing programmes in India included, the noon meal programme, the pre-school feeding programme, nutrition, education, mass communication etc. It has been rendering assistance to raise the nutritional status of school-going children for the past three decades.

Which organisation is considered as a friend of the entire community?

Red Cross Society. It came into existence in 1864. It has three organs: The International Committee of the Red Cross, League of Red Cross Societies and the National Red Cross Societies. In the times of war, the Red Cross Society looks after wounded soldiers and prisoners of war. It takes care of their mail and establishes contact with their relatives. In addition to dealing with the associated problems of war, such as care of refugees and the disabled, the Red Cross is increasingly getting involved with disasters of peace—epidemics, floods, earthquakes, accidents, and famines.

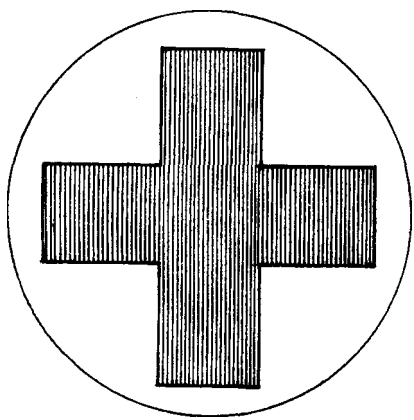

Fig. 34.4 Emblem of Red Cross.

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35.

Health Services in India

How health services are organised in India?
The Ministry of Health is the ultimate authority responsible for all the health services in the country. The Council of Health, set up in 1952, promotes and coordinates between the Centre and the States in the implementation of health programmes. The Union Health Minister is the Chairman and the State Health Ministers are its members. States give directives at district levels. Districts manage hospitals, blocks and their health centres. Services are rendered to the people from qualified medical personnel from such places (See Fig. 33.1 — next page).

How maternal and child care programmes are organised in India?
The programme ensures effective ante-natal care, safe delivery, care of mother and infants for immunization, control of diarrhoeal diseases and provision of basic medical care, throughout the country including rural areas.

Which is the Directorate General of Health Service and what are its functions?
The Technical Department of the Union Ministry of Health and Family Planning is the Directorate General of Health Services. Its main functions are: (i) International health relations (ii) Control of drug standards (iii) Maintenance of medical stores (iv) Postgraduate training (v) Overall medical education (v) Medical research (vii) National health programmes (viii) Health Intelligence (ix) Maintenance of Medical Libraries and (x) Health Education.

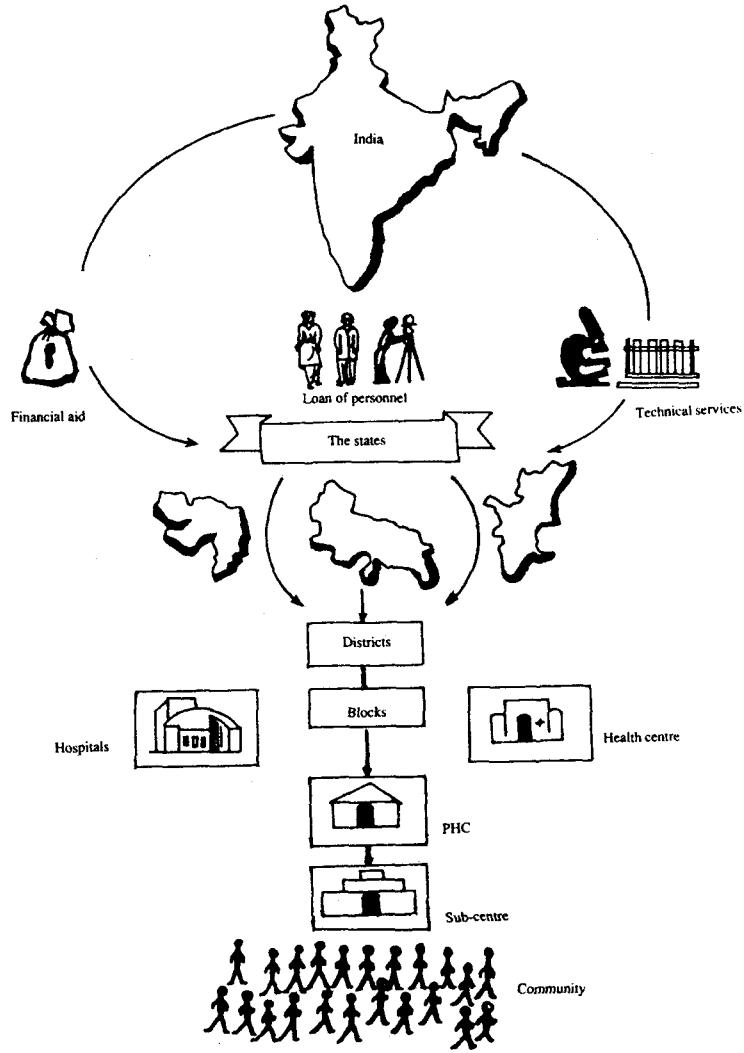

Fig. 35.1 Health services in India.

How health services are being provided in rural areas?

Health services in rural areas are being provided by the government through Primary Health Centres (PHC). A PHC is usually located at the block headquarters with an average of six or more sub-centres spread in the surrounding areas. PHC's main functions are medical care; child care and family planning; environmental sanitation and health education.

How health services are provided in urban areas?

In urban areas, health services are provided by municipal committee or corporation authorities of the city. Such authorities have hospitals and dispensaries to render medical care. The number of hospitals and dispensaries depends upon the size of the township.

What contributions are being made by the voluntary organisations for the promotion of health of the people of India?

The important voluntary organisations are:

a) **All India Blind Relief Society** – This society co-ordinates the activities of different organisations for the blinds. It arranges eye relief camps and provides free eye education.

b) **Association for Moral and Social Hygiene**–Main aim of this body is to combat sexually transmitted diseases (STD). It also prevents immoral traffic amongst women.

c) **Family Planning Association of India**– It helps in the implementation of the family planning programmes of the Government of India. It also educates people about the family planning measures.

d) **Hind Kusht Nivaran Sangh** – Indian Leprosy Association plays an important role in research, training and treatment of leprosy.

e) **Indian Council for Child Welfare** – This national council provides the opportunities and facilities to Indian Children to develop physically, mentally, morally, spiritually and socially in a healthy and normal manner.

f) **Prohibition Council of India** – It educates public regarding harmful effects of alcohol, arranges conferences, provides model institutions for diagnoses and treatment, besides training tuberculosis eradication to workers etc.

What are the other voluntary organisations with varieties of professionals?

Various organisations of professionals are : Indian Medical Association, The Indian Public Health Association and the Trained Nurses Association of India.

In addition to these, some semi-official organisations are: Medical Council of India, Pharmaceutical Council of India, The Indian Nursing

Council, Dental Council of India and the Central Social Welfare Board. Central Council for Research in Ayurveda and Siddha (CCRAS), Central council for Research in Unani Medicines (CCRUM), Central Council of Research in Yoga and Naturopathy (CCRYN).

Which national eradication programmes are on the pipeline in the country?

The national eradication programmes going on in the country are: National Malaria Eradication Programme, National Smallpox Eradication Programme, Filariasis and its Control in India, National Cholera Control Programme, National Leprosy Control Programme, National Polio Eradication Programme, National STD (Sexually Transmitted Diseases) Control Program and Medium Term Plan for prevention and control of AIDS in India.

What are the nutritional programmes being carried out in India?

There are several nutritional programmes being carried out in our country. Some of them are : Special Nutritional Programme, Prophylaxis Programme against Nutrition, Applied Nutrition Programme, Integrated Child Development Services and Noon Meal Programme. In the latter, nutritional foods are distributed amongst primary school children.

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36.

Milestones in Medicine

1.	A. E. Fick	—	Invented contact lenses (1887).
2.	Alexander Fleming	—	Discovered penicillin (1929).
3.	Alfred Binet	—	Devised Binet-Simon test to measure intelligence.
4.	Almorth Wright	—	Typhoid vaccine (1862-1947, U.K.).
5.	Anton Ven Leuwenhock	—	Discovered bacteria and other microbes (1632-1723, Dutch Scientist).
6.	Christian Bernard	—	First human heart transplant (1963, South Africa)
7.	Denton A. Cooley	—	Implantation of a Dacron and Silastic Heart (1969, Texas).
8.	Edward Jenner	—	Small-pox vaccine (1796, U.K.).
9.	Florence Nightingale	—	Originator of nursing (1854, U.K.).
10.	Galileo	—	Thermometer (1593, Italy).
11.	Hipocrates	—	Father of Medicine (377-460 B.C., Greece).
12.	Humphry Davy	—	First anaesthetic, the laughing gas (1799, U.K.).
13.	Ivan Pavlov	—	First laboratory experiments on conditional reflexes.

14. James D. Hardy — First lung transplant (1963, University of Mississipi).
15. James Lind — Cure for scurvy (1716-94, U.K.).
16. Jonas Salk — Polio vaccine (1954, USA).
17. Joseph Lister — First surgeon to use antiseptics (1865, London).
18. Louise Joy Brown — First test-tube baby born on 25 July, 1978 (U.K.).
19. Louis Pasteur — Pasteurization (French chemist).
20. Philip Drinker — Invented Iron-lung machine (1929, USA).
21. Rene Theophile Hyacinthe Laennec — Invented stethoscope (1816, France).
22. Ronald Ross — Cause of malaria (1902, U.K.).
23. Shen Nung — Acupuncture (2700 B.C. China).
24. Thomas E. Starzl — First Liver Transplant (1963, Univ. of Denver).
25. William Harvey — Theory of Blood Circulation (1628, U.K.).
26. Wilhelm Roentgen — Discovered X-rays (1895, Germany).
27. Zacharias Janssen — Invented Microscope (1590, Dutch optician).

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37.

Medical Specialists

Sl. No	Name	Field of Specialisation
1.	Anaesthetist	Surgery with anaesthetics
2.	Cardiologist	Heart and circulatory system
3.	Dermatologist	Skin diseases
4.	Endocrinologist	Hormones and glands
5.	E.N.T.	Ear, Nose and Throat
6.	Gastroenterologist	Digestive system
7.	Gynaecologist	Female reproductive system
8.	Neurologist	Brain and nervous system
9.	Obstetrician	Childbirth
10.	Ophthalmologist	Eye problems
11.	Orthodontist	Irregularities in denture
12.	Orthopaedic surgeon	Bones and joints
13.	Paediatrician	Ailments of children
14.	Pathologist	Blood, sputum, urine, semen and ovum, as well as stool
15.	Psychiatrist	Mental disorders
16.	Radiologist	X-rays for diagnosis
17.	Urologist	Urinary system

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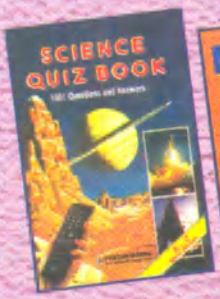

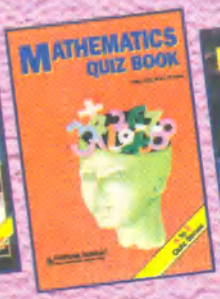

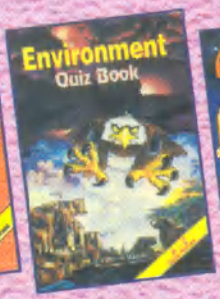

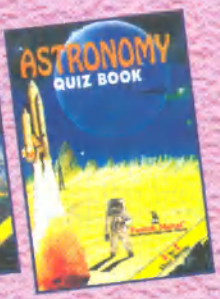

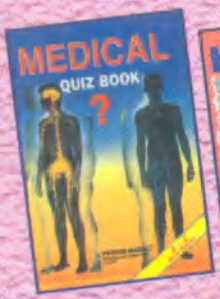

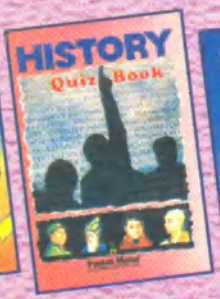

ISBN 81-223-0362-5

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