ENVIRONMENTAL STUDIES

HEALTH

Teacher's Book Year 4

A RIGHT FOR ALL

DEVELOPED JOINTLY BY :
THE MINISTRIES OF EDUCATION,
HEALTH,
AGRICULTURE
AND UNICEF

CURRICULUM DEVELOPMENT CENTRE OF VANUATU

HEALTH – A RIGHT FOR ALL

TEACHER'S BOOK YEAR 4

Developed jointly by the Ministries of Education, Health and Agriculture, with the assistance of UNICEF

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Port Vila, Vanuatu

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The Environmental Studies Curriculum

GENERAL AIMS

To help each child to develop all his or her skills (physical, intellectual, emotional and social) so that, as an adult, he or she can:

- Participate in society
- Take part in the economy
- Take part in politics
- Communicate with others
- Adapt to different or changing living conditions.

These aims go beyond the school context and are the outcome of the following general objectives:

1 Knowledge (knowledge-related objectives)
2 Skills (methodological objectives)
3 Constructive behaviour (behavioural objectives)

Knowledge + Skills + Constructive Behaviour = Good Development

WHY TEACH HEALTH, NUTRITION AND AGRICULTURE IN PRIMARY SCHOOLS?

Health is a fundamental right of all people. Vanuatu is officially committed to the world-wide goal of achieving "Health for All" by the year 2000, through participation in the policy of Primary Health Care (PHC).

The objective of this policy is to enable all people in Vanuatu to be involved in decisions and actions which will improve the health of each individual, each family, and each community.

Children, who are the citizens of tomorrow, must be educated to be responsible for their own health, as well as the health of those around them.

The best place to receive such education is at school. It must be carried out by teachers in co-operation with parents, together with specialists from the Departments of Health and Agriculture.

In Vanuatu, the health of school-age children is threatened by diseases that can be avoided with proper education. These diseases, in order of importance, are: scabies and other skin infections, malaria, respiratory infections, diarrhoea associated with insufficient weight, eye infections (conjunctivitis), and ear infections (otitis).

This explains why Health and the two related subjects of Nutrition and Agriculture are now taught as part of the school curriculum.

The general objectives of this course are:

1 To encourage children to adopt healthy practices.

2 To develop in children the desire to stay healthy and to eat the correct foods; to develop respect for all kinds of plant and animal life.

3 To develop a knowledge of the human being, and an understanding of the different factors that lead to health and sickness; to develop a knowledge of local foods that lead to good nutrition; and to develop a knowledge of traditional methods of gardening and animal-rearing.

4 To enable children to develop the necessary skills for improving health, nutrition, gardening and animal-rearing at home and village levels.

THE REQUIREMENTS FOR A SUCCESSFUL SCHOOL HEALTH PROGRAMME

The teaching of Health, Nutrition and Agriculture is only one part of a complete school health programme.

A good school health programme includes regular medical services for school-age children, and it takes place within a healthy environment. Here are the main points:

School health services

1 The medical evaluation of each child through:
   (a) regular medical examinations and the keeping of health records
   (b) the checking of eyesight, hearing, teeth, weight and height
   (c) the teacher's continuous observation
2 Health counselling and guidance (informal education)
3 The prevention of communicable diseases
4 Emergency care and First Aid

Healthy environment

1 Clean and safe school buildings
2 A healthy timetable of school activities
3 The provision of toilet facilities
4 A clean water supply for drinking and washing
5 The safe disposal of rubbish
6 Good personal relationships, good communications, warmth and friendliness
7 Enough space for recreational activities

Health education

1 Health education included in the school timetable
2 The integration of health education with other subjects
3 Motivating children to attain good health
4 The development of analytical thinking skills and healthy habits
5 The in-service health education of teachers
6 Health education of parents and community groups in order to get their effective participation in the school health programme

CONTENTS

INTRODUCTION: SUMMARY OF THE YEAR 4 HEALTH COURSE

The Year 4 syllabus revises some of the main topics taught in Year 3, and extends them further. It make use of children's natural curiosity and encourages their participation. It develops their capacity for abstraction and reasoning.

The topics revised from Year 3 are:

1. The importance of the skin; the treatment and prevention of skin problems; the protective role of clothes.

2. The study of microbes and the transmission of diseases, studied more theoretically.

The new topics introduced in Year 4 are:

1. Disease transmission. Worm diseases and malaria are very common among ni-Vanuatu children, and they can be deadly; they can be prevented with very simples measures that a child can understand.

2. The importance of preventive measures is more fully explained, to allow children to act more thoughtfully.

3. In the lessons on 'How to prepare and to give a rehydration drink', 'Mosquito control' and 'How to deal with poisoning', children are required to participate actively.

4. The new lessons follow on from study of the digestive system (first lesson of the second term).

5. In Year 4, the activities move from the directly observable to the abstract; they require a less passive attitude and a more active approach to learning.

6. In the syllabus, a start is make on more abstract topics such as internal anatomy; the relationship between cause and effect; different stages in the life-cycles of certain dangerous animals, and how to interrupt them; and, following this, how to prevent certain diseases.

Please note that this book is longer than most others in the Health series. This is not because the lessons are longer or more complicated to carry out, but rather because the book contains a lot of extra information for the teacher that will enable him/her to teach more effectively.

Note on the layout of this book

You should note that in those lessons where there is a story (for example Lesson 6), the whole story is told first, and you are told which illustration the sentences refer to. The story is then repeated, with the relevant caption below each illustration.

TIMETABLE OF THE YEAR 4 HEALTH COURSE

Week/Term	1st Term	2nd Term	3rd Term
1	The Importance of Our Skin	The Human Digestive System	Understanding How Diseases Are Spread
2	How to Treat Common Skin Problems	Where and How Worms Live and Grow in the Human Body	Understanding How Diseases Are Spread (cont.)
3	The Treatment and Prevention of Scabies	How Worms Get into the Human Body	Understanding the Transmission of Malaria
4	The Treatment and Prevention of Scabies (cont.)	How Round-worms Get into the Human Body	The Life-cycle of the Mosquito
5	Our Ancestors' Clothes and Today's Clothes	How Hookworms Get into the Human Body	Mosquito Control – Theoretical Approach
6	The Transmission of Diseases from Person to Person	How Flies Spread Diseases	Mosquito Control – Practical Approach
7	The Existence of Microbes	How Flies Grow and Reproduce	Mosquito Control – Practical Approach (cont.)
8	Looking at Microbes	How to Get Rid of Flies	What Are Poisons?
9	The Growth of Microbes	How to Prevent Diseases Caused by Intestinal Worms	Poisoning: First Aid
10	Learning More about the Transmission of Diseases	The Dangers of Diarrhoea in Young Children	Poisoning: Prevention
11	Some Ways of Preventing the Transmission of Diseases	How to Prepare a Rehydration Drink	Revision
12	Some Ways of Preventing the Transmission of Diseases (cont.)	How to Prepare a Rehydration Drink (cont.)	Revision

Term 1

LESSON 1: THE IMPORTANCE OF OUR SKIN

Objectives

- To help children find out the reasons why the skin is important for the body.
- To prepare children for the following lessons on the care of their skin.

Time: 20 minutes

Method

1. Gain the children's interest in the subject by asking them to guess how much skin they have on their bodies, if the skin could be stretched out in one piece.

- On the blackboard, draw a rectangle about 1.5 metres wide and 60 centimetres high.
- Tell the children that an average-sized eleven year-old has almost 2 square metres of skin on his/her body: this is approximately twice the size of the rectangle you have drawn on the board.
- Tell the children that our skin completely replaces itself about once every month. This explains why new skin grows under a blister, and why scars from scratches and cuts disappear.

2. Ask the children to try to think of all the things our skin does for us. As they give their answers, write them on the board.
A complete list should include:

- The skin protects the body. The skin covers the body and protects everything that is inside.
- The skin keeps out germs (microbes). When the skin is cut or burned, harmful germs (microbes) enter the body.
- The skin helps us to know when something is cold, hot, sharp, rough or smooth. When we touch something the nerves in our skin send a message to our brain: It's hot! It's cold! It's painful! It's nice to touch, etc.
- The skin helps to control our body's temperature: when we feel cold, the blood vessels just under the skin contract to help keep us warm; when we feel hot, we perspire (sweat) and this helps our body to stay cool.

Summary

Our skin is very important to us. It protects our bodies: it tells us when something is cold, hot, sharp or smooth; it keeps the inside of our body at the same temperature, regardless of whether the air is hot or cold.

LESSON 2: HOW TO TREAT COMMON SKIN PROBLEMS

Objective

• To make children aware that 'white spot', pimples and infected sores are not 'normal things of life'. They are skin problems that can be treated and also prevented.

Time: 20 minutes

Teacher's notes

In Vanuatu, the majority of the outpatients going to dispensaries are seeking treatment for infected skin problems. These problems are generally small to begin with and can be cured at home.

In the classroom, skin problems are one of the main causes of children's lack of concentration. *The best teacher and the best teaching methods are ineffective with children who want to scratch themselves!*

You are probably aware that leprosy still exists in Vanuatu. One of the first signs of leprosy is the presence of white spots. The white spots caused by leprosy lose their sensitivity. Pain and burns cannot be felt. Therefore you should look carefully for children who don't seem to suffer from infected burns. They should be seen by a doctor. Leprosy can be cured: with proper treatment, patients are no longer contagious and can live normally.

Method

1. Talk about white spots on the skin. Explain that white spots are skin problems. They are caused by two different germs:

a) Ordinary 'white spot' can be treated with medicine from the clinic.

b) White spots may also be caused by a disease called *leprosy*. White spots caused by leprosy lose their feeling, and people can no longer feel pain.

When a burn is not painful on a white spot, this is not normal; the person should see the nurse immediately.

2. Introduce the common skin problem, boils. Explain what a boil is:

• At first, a boil forms a lump on the skin that is red, hard and painful. It may feel hot. Never try to open a boil that is red and hard. There will just be blood inside.

• Later, the lump becomes soft and fills with a thick yellow liquid called pus. This pus is full of germs and can cause more boils *(see the illustration)*.

• Explain to the class how a boil should be treated:

– when a boil is soft and the yellow pus start to come out, wash it with soap and water; cover it with a clean cloth or bandage.

– wash the boil twice a day.

– keep the pus away from other parts of your skin, to avoid getting more boils on your body.

• Wash your hands *before* and *after* the treatment of a boil.

• Burn the dirty clothes and bandages.

• If there is a boil on your face you should see the nurse.

3. Finish the lesson by looking at the prevention of skin problems. Skin problems can be prevented by:

a) washing your face and body every day with soap and water;

b) having your own personal towel;

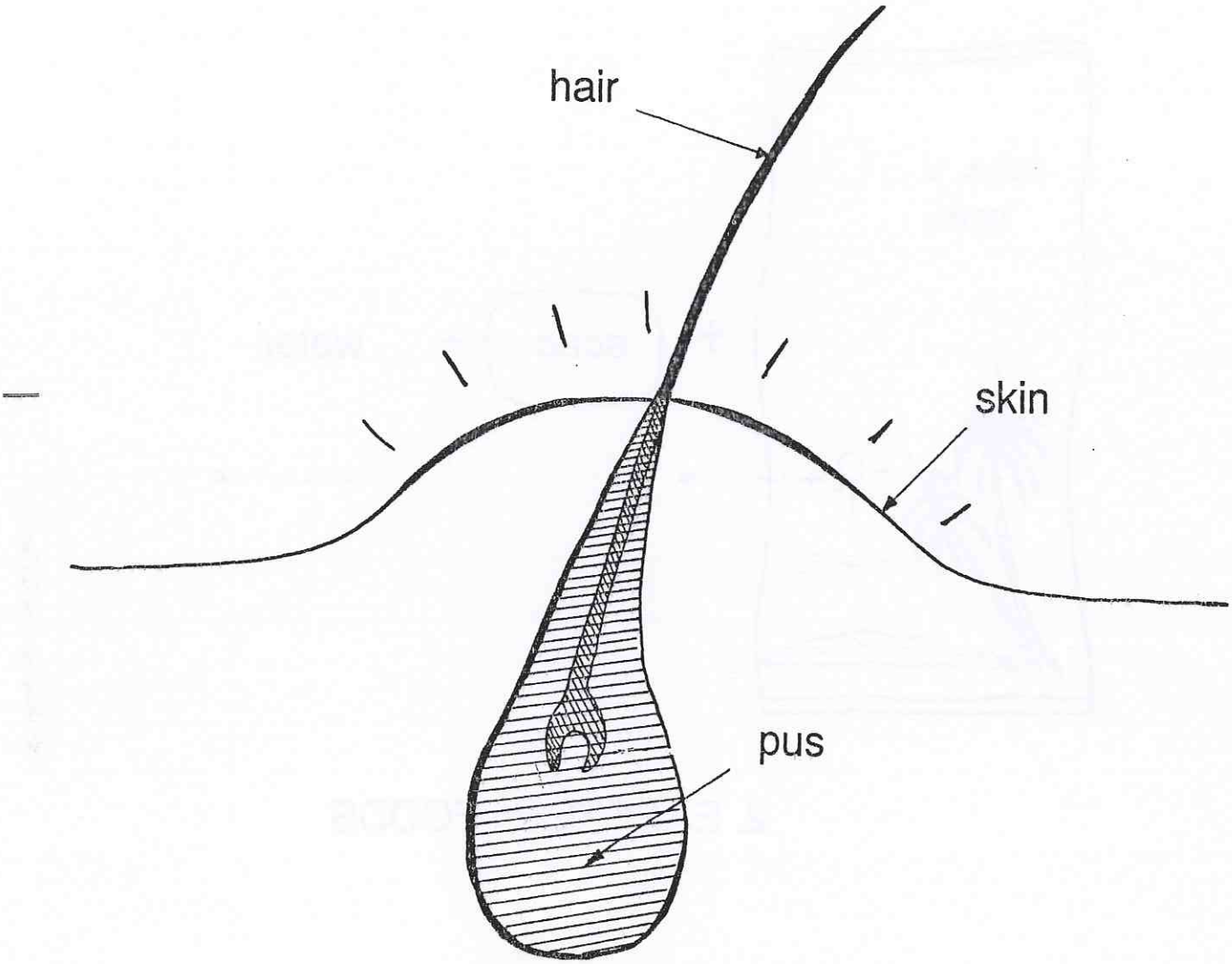
c) eating fresh and nutritious food every day.

4. Practical work: during the next art lesson pupils should copy the illustration entitled 'Prevention of skin problems'. They should put their names on their towels. The children should take their drawings home and explain them to their parents.

Summary

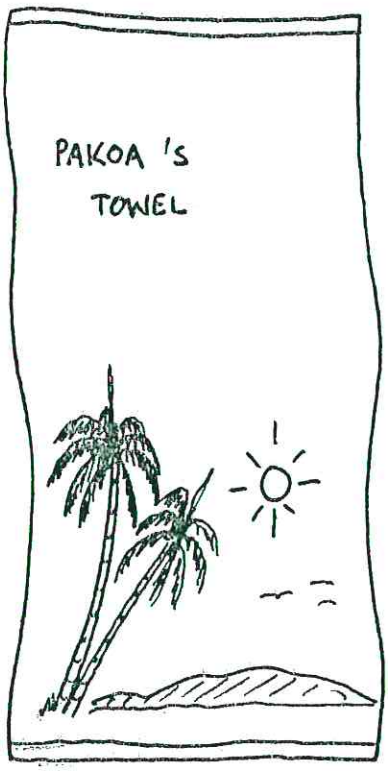
- **White spots are skin problems and should be treated**
- **If somebody does not feel pain on white spots, he or she should see the doctor immediately**
- **Never try to cut open a boil that is red and hard**
- **Skin problems can be avoided by cleanliness and by eating good fresh foods**
- **Prevention is better than cure**

A BOIL



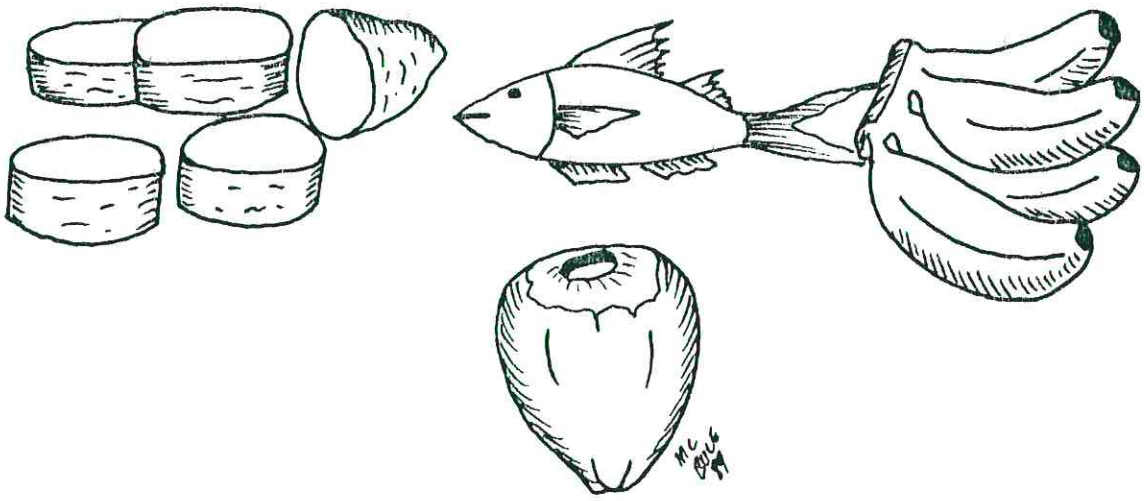
PREVENTION OF SKIN PROBLEMS

1. WASH EVERY DAY



+ soap + water

2. EAT FRESH FOODS



LESSONS 3 AND 4: THE TREATMENT AND PREVENTION OF SCABIES

Objectives

By the end of these lessons, pupils should be able to:

- Answer questions about scabies (causes, development, treatment).
- Describe the basic rules of body and home cleanliness that will prevent scabies.

Time: 20 minutes

Teacher's notes

This topic has already been studied in Year 3 (Lessons 8 and 9). It is taught again in Year 4 because scabies is one of the most common skin diseases in Vanuatu, affecting whole families and, in some places, whole villages.

1. Scabies is an important child health problem because:

- a child who frequently itches and scratches him- or herself is inattentive to even the best teacher and the best teaching methods
- children often get infected with scabies through scratching. Infected scabies can lead to a general infection of the body and to hospitalisation.

2. Scabies is a difficult problem to solve for several reasons:

- Treating scabies requires the co-operation of parents, health services and the school.
- Very often people hold local beliefs that provide false explanations for the cause of scabies; you must know these beliefs and take them into account.
- Some people will say that they have lived quite happily with scabies until now and that it is not a problem.

In the last two cases it is important to know and talk to the most influential person in the village. Another way of getting people to reconsider their beliefs is to allow them to look through a microscope at an enlarged picture of real mites. Even a simple magnifying glass that enlarges ten times is suitable.

3. Further information on scabies mites: scabies mites are tiny animals that cannot be seen with the naked eye – a microscope must be used *(see the enlarged picture)*. They like to live under and on the skin. Scabies mites live in places where the skin is soft or folded. The mites dig under the skin and lay eggs. They make the skin itch. Scratching the skin then causes sores. Scabies mites may crawl from person to person while we sleep. Mites also crawl on to the body from another person's clothes.

Scabies live best in dirty clothes and on dirty people. Keeping the body clean and keeping clothes clean upsets the mites. Sleeping mats, pillows and blankets should be clean; they should be placed in the sun regularly (at least once a week).

Method

Because the pupils have already covered this topic, it is suggested that you start the lesson with questions. You can then develop the lesson according to their knowledge.

1. What causes scabies?
(Answer: A very small animal which digs into the skin; this small animal is called a 'mite')

2. Where does the scabies mite live?
(Answer: It lives on dirty bodies, in dirty mats, in dirty bedding, and in dirty clothes)

3. Where do you find scabies on the body?
(Answer: Between the fingers and toes, in your armpits, under and around the buttocks. It can be all over the body in very bad cases - show the illustrations)

4. What happens to your hands if you catch scabies?
(Answer: They are itchy and red; they will have sores and infections wherever you have scratched the scabies)

5. What can you do to get rid of scabies?
(Answer (show the illustration on p.12):
a) go to the dispensary – you will need scabies lotion (liquid) to stop it;
b) take a bath with soap every day;
c) air all bedding, mats, etc. in the sunshine every day;
d) wash your clothes and keep them clean;
e) everybody in the house must be clean and have clean clothes to prevent scabies)

6. Is there a medicine to cure scabies?
(Answer: Yes, the nurse gives a special medicine called 'scabies lotion')

7. What do you do with the scabies lotion?
(Answer: Put this medicine all over the body. Do not let the medicine get near your eyes or mouth. Follow exactly the nurse's instructions)

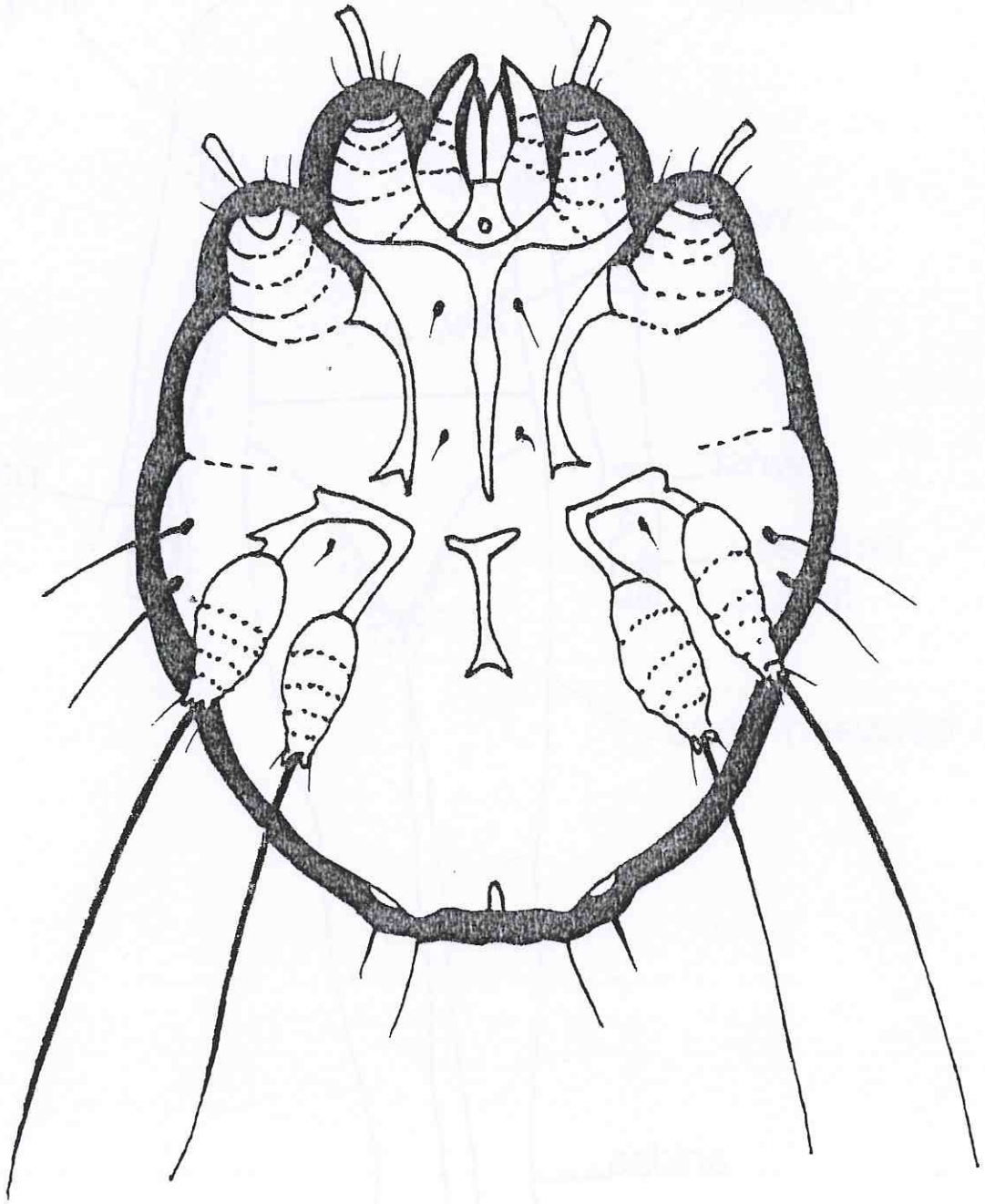
Follow-up activity

Pupils could draw some posters on cleanliness to display in their class or in their own home. This could be done during the next art lesson.

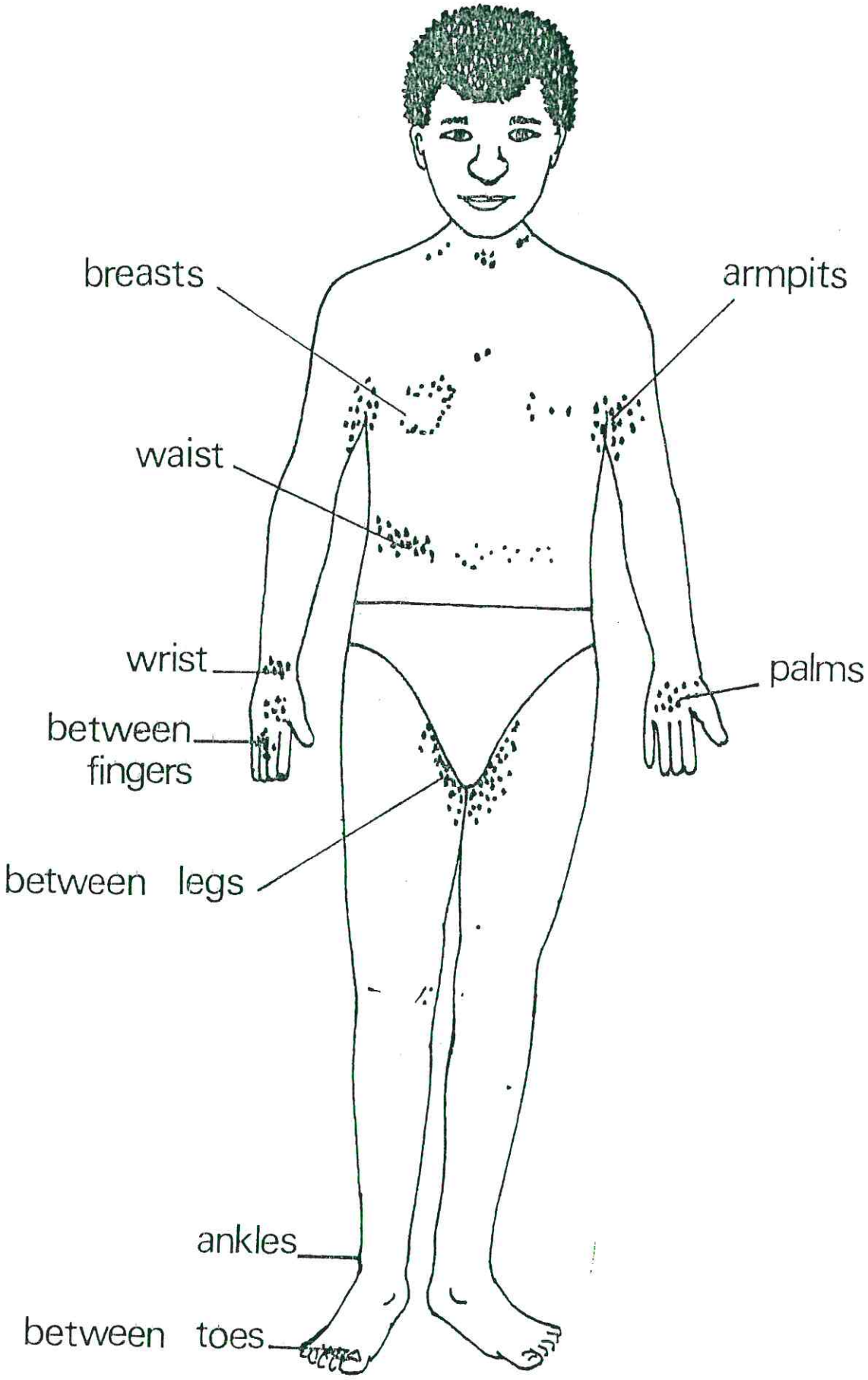
Summary

- **Scabies is a skin disease caused by a tiny animal called a mite**
- **The mite makes the skin itch and have sores on it**
- **Scabies mites crawl on to our skin when we are sleeping; they come from other people**
- **To stop scabies, use scabies medicine from the dispensary**
- **To stop and prevent scabies have a clean body with clean clothes and sleep in a clean place**
- **Prevention is better than cure**

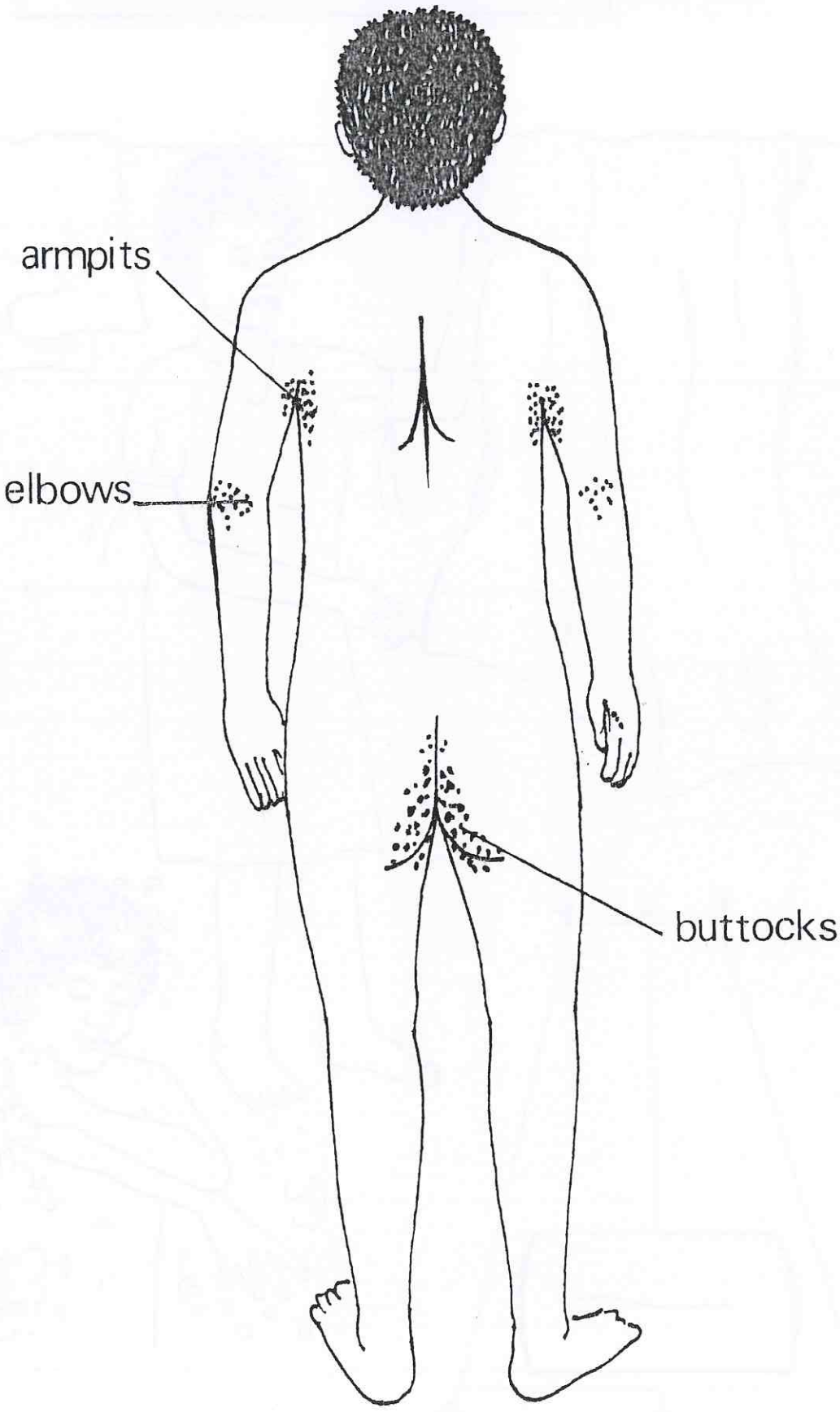
ENLARGED DIAGRAM OF A SCABIES MITE



WHERE TO LOOK FOR SCABIES(1)



WHERE TO LOOK FOR SCABIES(2)



PREVENTION OF SCABIES

LESSON 5: OUR ANCESTORS' CLOTHES AND TODAY'S CLOTHES

Objective

• By the end of this lesson, pupils should understand the protective role of clothes.

Time: 20 minutes

Preparation

• *In rural areas:* seek the help of the old persons of your village in order to find out about the traditional clothes of the past, their meaning and their protective purpose.

• *In urban areas:* look up information in books, or go to the University of the South Pacific (USP) or the Cultural Centre in Port Vila in order to find out about clothing from the olden days.

• Bring along some of today's clothes – light nylon clothes, cotton T-shirts, and a heavy article of clothing, if possible made of wool.

Method

Explain that clothes protect us from too much sun and heat. The nylon clothes are easy to clean and dry, but they stick on warm skin and prevent the skin from breathing. Nylon can cause itching and rashes. Also, nylon catches fire very easily. Cotton is both absorbent and protective and is preferable to nylon.

• Warm or woollen clothing should be worn whenever it is cold or windy, and especially at night.

• To prevent colds and coughs, it is important to wear dry clothes after long hours of swimming and playing in the water.

• A child with high fever should never wear thick and warm clothes, because they increase the fever.

• Clothes absorb all the dirt from both outside and inside our bodies.

• When clothes are worn for a long time without being washed, the dirt and the microbes stick on to the skin and can enter the body.

• Wearing damp clothing may cause white spot and other skin diseases to develop.

• It is therefore very important to clean and dry our clothes in the sun as often as possible, because the sun kills the microbes.

• Underclothing should be washed with soap every day, rinsed well, and put out to dry – outside in the sun whenever possible.

• T-shirts, shorts and dresses should be worn for no more than two days without washing.

Summary

- Clothes protect us from too much warmth and cold; they protect us against dust, dirt and microbes
- After swimming and playing in water, it is wise to change into dry clothing immediately
- A child with high fever should never wear warm or thick clothing
- Clothes should be washed with soap and dried in the sun
- Underwear should be washed every day

LESSON 6: THE TRANSMISSION OF DISEASES FROM PERSON TO PERSON

Objectives

By the end of this lesson, pupils should be able to:

- Explain the meaning of the phrase 'contagious diseases'.
- Describe how contagious diseases travel through the air from one person to another.

Time: 20 minutes

Teacher's notes

Lesson 6 deals with the common cold, which has only one way of spreading – through the air. This will be sufficient for the children to start with. For teachers, however, it is important from now on to be aware of all the different ways in which contagious diseases can be spread.

Vocabulary

Transmission: the passage of an infectious disease from a sick person to a healthy person.

Infectious disease: a disease which results from, or is accompanied by, an infection.

Infection: a disease created by the invasion and the development of germs in the body.

Contagious disease: an infectious disease transmitted by contact from one person to another; such a disease might also be called 'communicable'. Many infectious (or contagious) diseases are caused by *bacteria* (e.g. tuberculosis), by *viruses* (e.g. 'flu and colds) and by *parasites* (e.g. scabies, worm diseases, malaria); bacteria, viruses and parasites are generally called 'germs' or 'microbes'.

Contagious diseases are transmitted from person to person in many ways:

- *By contact,* either

a) direct: through actual physical contact with a sick person or a sick animal; or
b) indirect: through contact with contaminated objects such as cups, toys, handkerchiefs, bedding, pencils, etc.

- *Through the air,* in

a) droplets of saliva: germs are suspended in the small droplets of saliva that are discharged from the mouth or nose of a sick person when he/she speaks, coughs, or sneezes;
b) dried-up droplets: some microbes contained in saliva droplets can live for a long time, even when these droplets have evaporated and dried up. This is particularly true indoors, in poorly ventilated places where the sun never shines.
c) dust particles: these contain germs from dried-up discharges or droplets; they may be inhaled (breathed in).

• *Through food*

Food may be infected at several stages on its journey from its source to being eaten by people, as follows:

a) at source: the source may be infected, e.g. a tubercular cow giving milk.

b) in transport: food may be contaminated along the journey from its source, e.g. milk transported in contaminated containers or at high temperatures.

c) in storage: food may be contaminated by flies, for example, while it is left on plates or in saucepans.

d) in preparation: food may be infected if it is touched during preparation – for example, someone cooking a meal with dirty hands.

• *Through water*

Many diseases are caught through contaminated water (water full of harmful germs). For example, drinking water may be contaminated by sewage containing worm parasites, hepatitis, viruses, diarrhoea bacteria, etc.

• *Through animals*

Flies and cockroaches carry many diseases. Mosquitoes carry malaria, dengue fever, etc. Rats also carry many diseases: one of them, called 'Leptosprosis', exists in Vanuatu and can cause death.

Method

1. Read the story of Albert and his cold. Show the pictures as you tell the story.

2. After the story, review the meaning of the word 'contagious'. Explain it again with the help of the illustrations.

3. Explain how a cold can pass from person to person through the air. Coughing and sneezing will send many tiny droplets of saliva into the air, each of which is full of germs. Another person can breathe in these tiny droplets and later on catch the same cold. The air, through which the germs travel from one person to another, is the way in which certain diseases are passed from a sick person to a healthy person.

Follow-up

During the next writing lesson, ask the children to copy and complete these sentences:

– 'A disease that can be passed from one person to another is called _____ *(contagious)*'

– 'A cold is _____ *(contagious)*'

– 'A cold can reach me though the _____ *(air)*

Summary

• A disease that can be passed from one person to another is called a contagious disease

• Some microbes travel in the small droplets that come from the mouth of a sick person whenever he sneezes or coughs

• When another person is close by, she may breathe in these droplets and, in her turn, get sick

ALBERT CATCHES A COLD

Illustration 1
Albert is sick. It is not fun to be sick. Albert is unhappy. Albert's friends are playing. Albert is too sick to play.

Illustration 2
Albert has a bad cold. Albert feels terrible. Why did Albert get sick?

Illustration 3
Albert went to see his auntie. She was sick with a cold. The cold can travel from one person to another. Albert caught his cold from his auntie.

Illustration 4
Albert has a *contagious* sickness. 'Contagious' mean the sickness can pass from one person to another. A sick person can make a healthy person sick. Many sicknesses are contagious.

Illustration 5
Albert is sick with a cold. He has a lot of bad microbes in his nose and in his mouth. When he coughs or sneezes, little drops spray into the air. The microbes ride on these drops. They float through the air.
Suppose someone breathes the air. Where will the microbes go ?

Illustration 6
Albert is sick with a cold. The cold is a contagious sickness. Albert coughs next to his sister. Will Albert's sister get sick?

Illustration 7
Yes. A day later Albert's sister Mary is sick. Why?
Mary breathes in Albert's microbes floating through the air. The microbes went into Mary's body and made her sick. Mary is unhappy.

Bacteria

What are they?

They are one type of microbe. A line of 1000 bacteria would fit inside this arrow → . Each bacteria is a living cell. Bacteria reproduce rapidly by cell division. Most bacteria die when the temperature rises above 50°C, but they can live at very low temperatures.

Their role in nature

Most bacteria are helpful. Bacteria break down dead plants and animals into simple parts. This is called *decay*. These simple parts can be used again by green plants. In this respect they are very beneficial, because without bacteria life on earth would be impossible.

Harmful bacteria

The human body is a suitable place for bacteria to grow, because it provides everything that they need: warmth, food and water. Harmful bacteria living in our bodies do a great deal of damage on account of the highly poisonous proteins, called *toxins*, that they produce. These toxins make us sick. We are said to have an *infection.*

Viruses

What are they?

Viruses are another type of microbe. Viruses are much smaller than bacteria. Bacteria can move, eat and divide on their own. Viruses cannot. Viruses can only live when they are inside a living cell. Viruses only grow and reproduce inside cells, meaning that they are *parasites.*

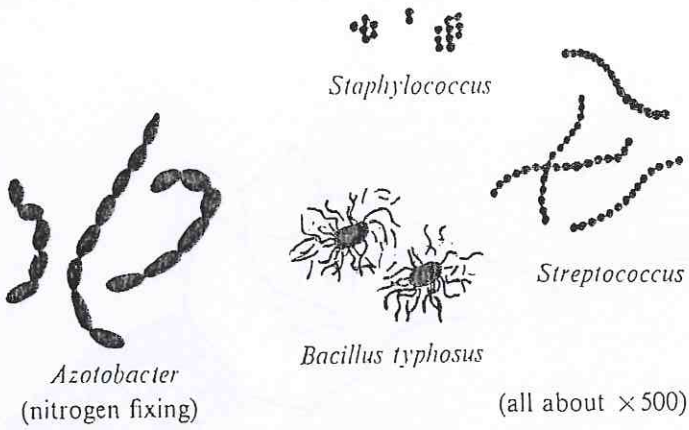
Harmful viruses

When a harmful virus gets inside our body, it enters a cell. The virus takes over the cell's nucleus. The virus tells the cell what to do. The cell stops doing its usual work. Instead, the cell produces new viruses. Soon the cell is full of new viruses. Then it bursts. The new viruses come out, and invade lots of new cells in turn. The burst cell dies. A cell containing viruses is *infected.* When many cells are infected, the person gets sick.

Parasites

An animal or organism is called a parasite when it lives upon, or within, another animal or organism – called the *'host'*. The parasite obtains its food from its host by absorbing the blood, sap, or digested food of the living plant or animal. The parasite benefits from this close association but the host does not. Indeed, the host may suffer from a disease or even be killed by the activities of the parasite. For example, intestinal worms can be the parasites on a human body, and in the case of round-worms, they can kill. Another example is provided by the malarial parasites (plasmodium) that live in a mosquito's stomach. When infected mosquitoes bite people, they inject plasmodium into human blood. The parasites live in the red blood cells and destroy them. This destruction causes chills and high fever, which are characteristic of malaria.

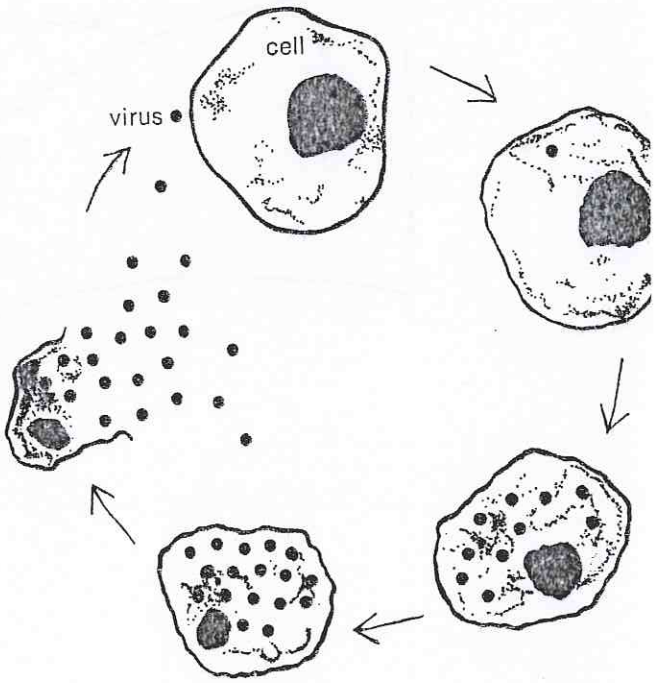
BACTERIA



(all about × 500)

different kinds of bacteria

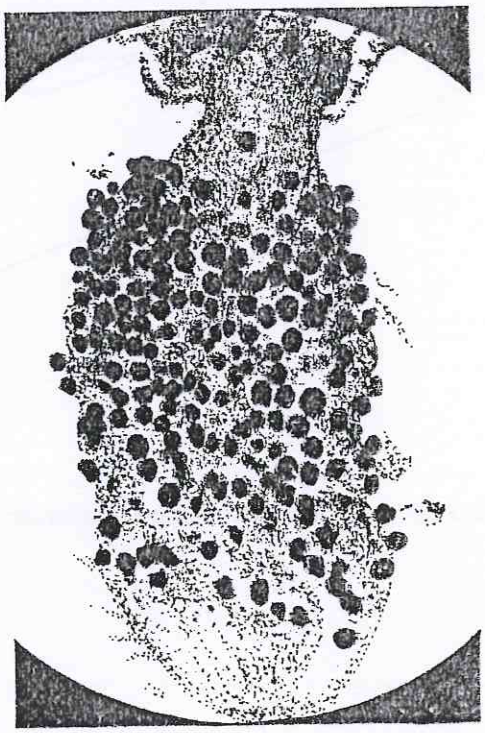
VIRUSES



viruses infecting a cell

PARASITES

The Malaria Parasites



gut of a mosquito that is infected with malaria parasites

Illustration 1
Albert is sick. It is not fun to be sick. Albert is unhappy. Albert's friends are playing. Albert is too sick to play.

Illustration 2
Albert has a bad cold. Albert feels terrible. Why did Albert get sick?

Illustration 3
Albert went to see his auntie. She was sick with a cold. The cold can travel from one person to another. Albert caught his cold from his auntie.

Illustration 4
Albert has a *contagious* sickness. 'Contagious' mean the sickness can pass from one person to another. A sick person can make a healthy person sick. Many sicknesses are contagious.

Illustration 5
Albert is sick with a cold. He has a lot of bad microbes in his nose and in his mouth. When he coughs or sneezes, little drops spray into the air. The microbes ride on these drops. They float through the air.
Suppose someone breathes the air. Where will the microbes go ?

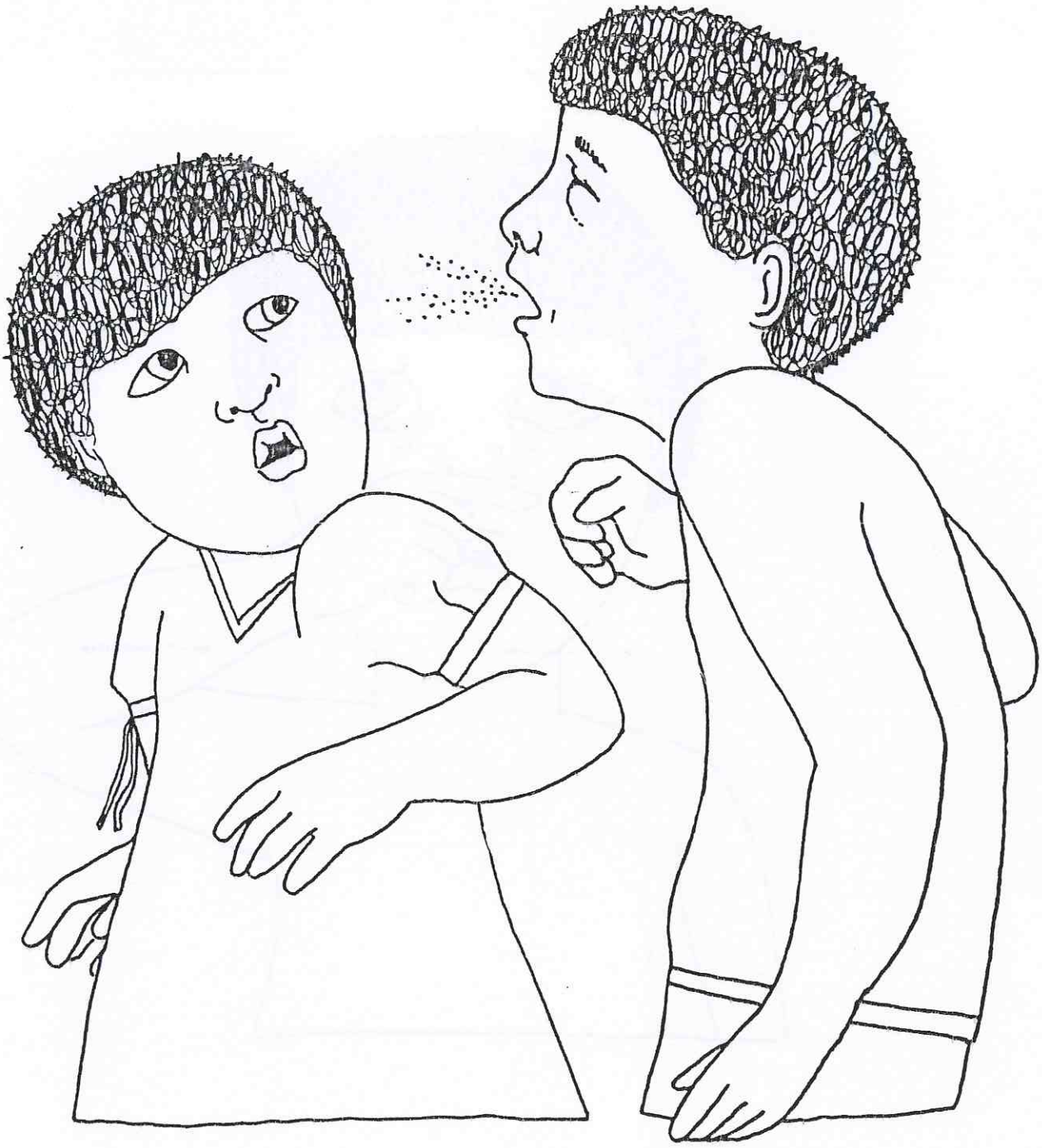


Illustration 6
Albert is sick with a cold. The cold is a contagious sickness. Albert coughs next to his sister. Will Albert's sister get sick?

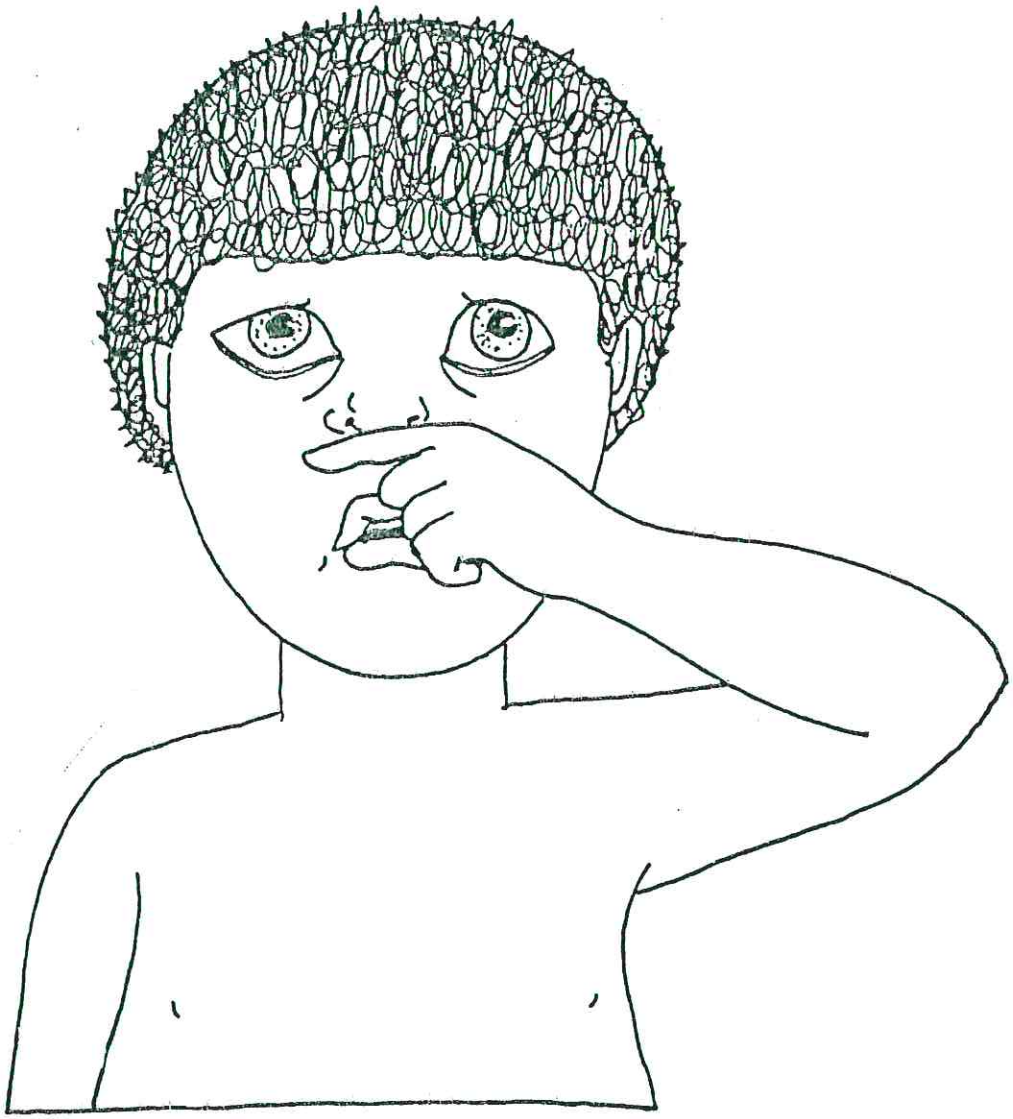


Illustration 7
Yes. A day later Albert's sister Mary is sick. Why?
Mary breathes in Albert's microbes floating through the air. The microbes went into Mary's body and made her sick. Mary is unhappy.

LESSON 7: THE EXISTENCE OF MICROBES

Objective

• To give pupils the chance of discovering for themselves that there are some very tiny things around us that can only be seen when magnified.

Time: 30 to 45 minutes.

Plan to combine this lesson with the next 'free activity' lesson in the timetable.

Materials needed

Hand lenses or a microscope.

Teacher's notes

You must have at least a hand lens or magnifying glass for this lesson. If such equipment is not available at your school, omit this activity and go on to the next lesson.

Vocabulary

Micro: prefix meaning small.

Macro: prefix meaning big.

Microbes: micro=small, bios = life; viruses and bacteria are two kinds of microbes.

Micro-organism: plant or animal so small that a microscope is needed in order to see it.

Microscope: instrument that makes tiny things look bigger; with microscopes we can see things that are too small to see with the naked eye.

Organisms: living animals or living plants.

Cell: smallest living part of a plant or animal.

Bacteria: one-celled animal that is so small that you need a microscope to see it. Some bacteria cause decay and are necessary to maintain life on earth. Some bacteria are harmful because they cause diseases.

Viruses: tiny microbes, smaller than bacteria, that can grow and multiply only inside a living cell. Some viruses are harmful because they cause diseases.

Method

1. Tell the pupils that there are many things in this world that are very small. Among these small things there are many that cannot be seen with the naked eye. Try to get the children to think about the meaning of the word 'small'.

Talk about the small things in the classroom. Ask the children 'What is the smallest thing you can see?'

2. Tell the class that long ago, people wanted to be able to see small things better. They made magnifiers to help them.

Divide the class into groups and give each group magnifiers and objects to observe. Suitable objects could be: salt, torn paper, sugar, cloth, soil, hair.

Give the children plenty of time to observe things with the magnifiers. Some groups could be allowed to go and work outside.

Talk about what the children observe, and the way in which they are able to see things better.

Make sure that the children understand that the magnifiers (or microscope) just *make things look bigger.*

Summary

- **Many things are too small for us to see unless they are magnified**
- **A microscope is an instrument that makes very tiny things look bigger**
- **Microbes are plants or animals that are so small that we need a microscope to see them**
- **Some harmful microbes make us sick because they give us diseases**

LESSON 8: LOOKING AT MICROBES

Objectives
By the end of this lesson, pupils should:
• Understand that the small things they see are living, even when they are too small to be seen with the naked eye.
• Know all the new words relating to microbes.

Time: 30 to 45 minutes
Plan to combine this lesson with the next 'free activity' lesson in the timetable.

Materials needed and preparation
This lesson needs to be prepared one week in advance.

You will need a jar of water containing many small organisms. To enable the small organisms to grow:
• Fill a jar half full of water from a puddle, lake or river. Do not use tap water.
• Put some grass and soil into the water.
• Let the jar stand for one week before using it.

If you plan to use a microscope in class, practise with it before the lesson. Place water from the jar on a slide. Practise focusing and moving the slide. Can you see the organisms clearly?

If you do not have a magnifier or a microscope, you can get the children to look at the water and see if they can see some very tiny organisms moving in it. If your water was not clean at the start, there will be a lot to see!

Teacher's notes
1. Be sure the water contains micro-organisms. Check it before you use it for your lesson.

2. This lesson has to be done even if you have no magnifiers or microscope because it is very important to the understanding of the following topics.

Method
1. Explain these words: organisms, micro-organisms, microbes (see Lesson 7).

2. Divide the class into small groups of 2 or 3. Give each group some of the water from the jar of micro-organisms you have been growing. Let the groups observe the water.

3. Ask the children to find the smallest things that live in the water. Discuss what they observe:
– 'How many organisms can you see?'
– 'Is anything moving? How does it move?'

4. If you have a microscope, let each group place a drop of water from their jar on a slide.

Discuss what is on each slide. It is important for the children to observe the organisms they could not see by just using their hand-lenses.
– 'What new organisms can you see?'

– 'Why didn't you see them before?'
– 'Are they living? How do you know?' *(They move)*

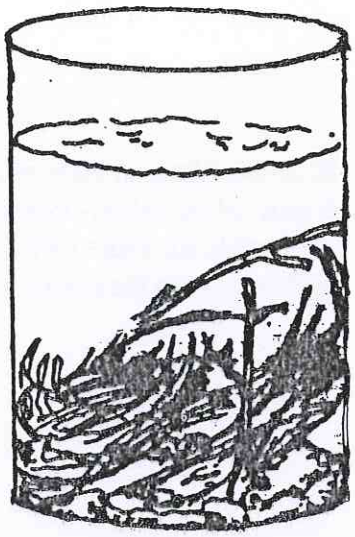
Now take the slide out from the microscope, and ask the children:
– 'Can you see the organisms on it?' *(No)*

The important thing is for the children to understand that there are many things which cannot be seen with the naked eye, and that these things (organisms) are living.

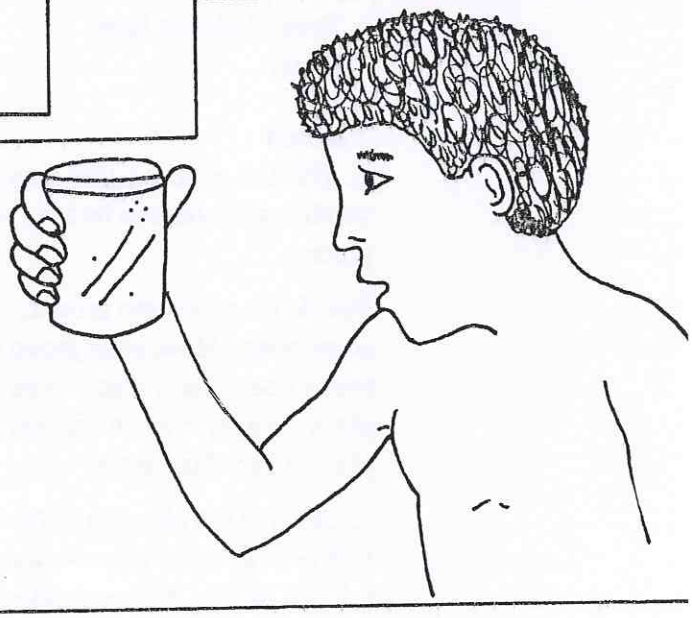
Summary

- **All organisms that are too small to be seen with the naked eye are called micro-organisms (or microbes)**
- **Micro-organisms are *living* plants or animals (microbes)**

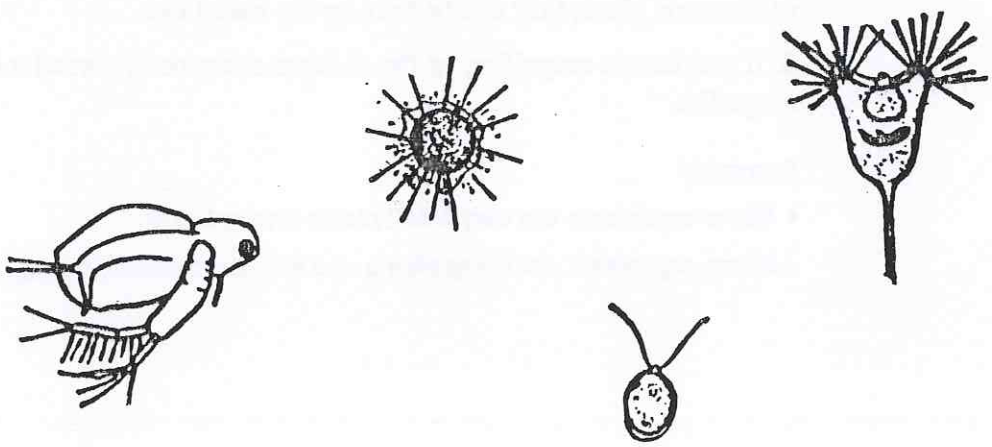
LOOKING AT MICROBES



1. preparation



2. observing with the naked eye



3. micro-organisms seen under a microscope

LESSON 9: THE GROWTH OF MICROBES

Objective

- To reinforce pupils' knowledge of the existence of living micro-organisms.

Time: 30 minutes

Teacher's notes

Micro-organisms will grow well on moist bread. Many of them will be moulds. Some of them will be bacteria. Although most of the micro-organisms that will grow on the bread are not dangerous, it is possible for some harmful bacteria to grow. For this reason, do not allow the children to open the plastic bags. Dispose of the bags of bread by burning them.

Materials needed

- Several pieces of bread
- Several plastic bags
- Water

Method

1. Tell the children that they are going to grow some micro-organisms. These small organisms can be seen when there are many thousands of them in the same place.

Divide the class into groups. Give each group a piece of bread, a plastic bag and some water. Have each group put a little water on a piece of bread. Let one pupil touch one corner, place some dirt on another corner, spit on another corner and place a paper clip on another corner. Put the bread into a clear plastic bag and place it in a dark place.

2. Observe the changes in the bread each day. Look for things such as:

- Where do most micro-organisms grow?
- What are the micro-organisms using for their food?

Explain to the children that the places where the bread changes colour correspond to groups of many thousands of micro-organisms. When thousands of them grow in the same place, they can be seen by the naked eye.

3. If you have a magnifier, let the children examine the bread moulds under the magnifier.

Summary

- **Micro-organisms are very small plants and animals**
- **Micro-organisms are *living* plants and animals because they *grow***

LESSON 10: LEARNING MORE ABOUT THE TRANSMISSION OF DISEASES FROM PERSON TO PERSON

Objectives
By the end of this lesson, pupils should be able to:
- Describe the ways that diseases travel by *direct contact.*
- Describe the ways that diseases travel by *indirect contact.*

Time: 30 minutes

Teacher's notes
This lesson is a revision of Lesson 6. It also gives the children the information contained in the Teacher's notes for Lesson 6.

Illustrations have been made to help you explain things to your class in the most visual manner possible. On the page next to each illustration, you will find detailed information provided for the teacher.

The content of what children should know is set out under 'Method' and 'Summary'.

Method
1. Remind the pupils of the content of Lesson 6 – that microbes can travel *directly* from one person to another. We say that microbes travel by *direct contact.* Some examples of direct contact are as follows:
- Touching or kissing someone who is sick.
- Sleeping close to someone who is sick.
- Coughing or sneeezing in front of someone without covering the mouth or nose.

(Show pupils the corresponding illustration on page 35)

2. Explain that microbes can go from one person to *something else,* and then to another person. We say that microbes travel by *indirect contact.* Some examples of indirect contact are as follows:
- Using dishes, cups or spoons that have been used by someone who is sick.

(Show the illustration of the sick girl drinking from the cup - page 37)
- Eating or drinking food and water that has microbes in it.

(Show the illustration of the boy with worms - page 41)
- Using things after a sick person uses them, without washing them. Examples are towels, combs and clothes.

(Show the illustration of the child with infected eyes - page 39)
- Microbes that are carried from place to place by flies, mosquitoes, rats and cockroaches.

(Show the illustration of malaria, describing the role of mosquitoes - page 43)

3. Let the pupils play a game about how microbes travel.
To illustrate transmission by direct contact:
- Place chalk dust on a pupil's hands. Pretend that he is sick with the 'flu (full name = 'influenza').

- Tell the pupils that the chalk dust represents 'flu microbes.
- Tell the class that microbes travel in the same way as chalk dust.
- Let the pupil face another child and then cough on the dust on his hands.
- Then ask:'What happened to the dust? Where is it now?'

(The sick pupil has given some of his microbes to the other one)

To illustrate transmission by indirect contact:

- Place chalk dust on another pupil's hands. Pretend that she has sore eyes, and that the chalk dust represents microbes from an infected eye. Ask the pupil to take an object like a book, pencil or other object on which her finger marks will be seen, and ask her to give it to somebody else.
- Ask: 'What has happened?'

(The microbes on the object have passed on to somebody else's hands. If this person does not wash her hands, the microbes will reach her face and eyes)

- Ask the children to think of other ways in which the microbes can be passed to other people.

Summary

- **Microbes travel from someone who is sick to somebody else who is not sick**
- **Microbes travel by direct contact when they go from the sick person directly to another person**
- **Microbes travel by indirect contact when they go from the sick person to something else and then to another person**
- **The 'something else' can be an object (cup, towel, pencil, etc.) or an animal like a mosquito**

TEACHER'S INFORMATION: TRANSMISSION BY DIRECT CONTACT – 'FLU AND TUBERCULOSIS

The illustration shows how 'flu can travel directly from one person to another.

1. Tuberculosis is spread in the same way as the 'flu

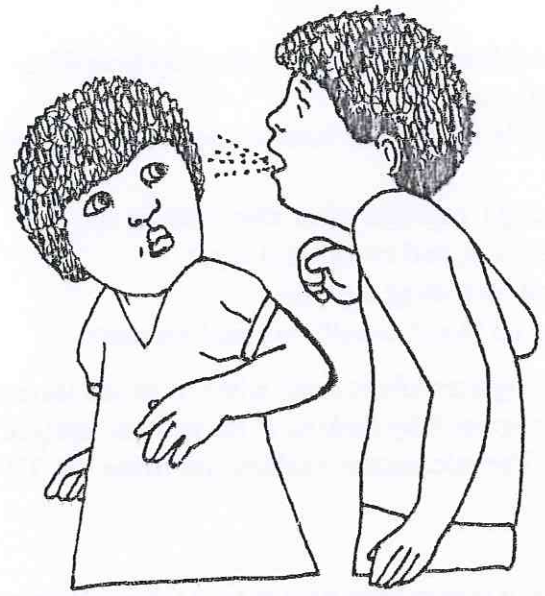
Tuberculosis (TB) is a common disease in Vanuatu. It can cause death, and children run a great risk of catching it. Everybody recovers from 'flu (full name = influenza), but tuberculosis is almost impossible to cure without medical help. Home remedies will not cure tuberculosis. For these reasons, information is given on tuberculosis instead of 'flu. If you wish, you may make the same choice for your lesson.

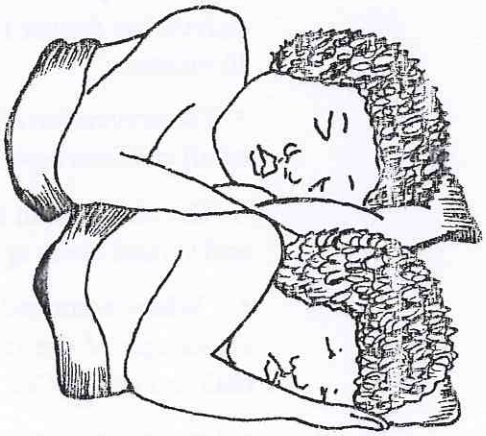
The microbes that cause tuberculosis are bacteria called 'Koch bacteria' (after the German doctor who discovered them in 1882). Tuberculosis usually only attacks the lungs, but it can affect any part of the body. In young children, it may cause meningitis (a very serious infection of the brain). When the bacteria live in the lungs, they wound them and make holes. This explains why the sick person coughs and spits and, when very sick, coughs up blood.

2. Tuberculosis is very contagious

Persons who live in the same house or in the same room as someone who has TB, especially children, run a great risk of catching the disease. Why? Because

TRANSMISSION BY DIRECT CONTACT - 'FLU AND TB





the tuberculosis microbes are contained in the droplets coming out of the mouth when a person coughs. They float through the air and stay alive for a long time. Anybody living near the sick person breathes in the air containing the TB microbes.

3. Tuberculosis is mainy caught through direct contact, by breathing contaminated air (air full of microbes) .

The main sign of tuberculosis is a cough that lasts for more than one month. Other signs are:

- A chronic (continuous) cough, especially just after waking up.
- Mild fever in the late afternoon, and sweating at night.
- Chronic loss of weight and increasing weakness.
- In serious cases, coughing up blood, usually in small amounts.

At the hospital the doctor recognises tuberculosis when he or she takes an X-ray of the lungs. He can also recognise it by looking at the sputum (spit) of the sick person under a microscope. The microscope enables him to see the TB bacteria in the spit.

4. Tuberculosis is curable

For both prevention and cure, it is very important to treat tuberculosis *early*. It is very important to take the medicines as directed by the nurse. To cure tuberculosis completely usually takes one year. The sick person should *never* stop taking the medicines just because he/she feels better. Recovery is quickest when the sick person has proper rest and eats food rich in proteins (body building foods) and in vitamins.

- The prevention of tuberculosis is mainly achieved through BCG immunisation of all children between birth and 10 years old.

- The sick person should be careful to cover his or her mouth when coughing and should never spit on the floor around him/her.

- When somebody is sick, prevention is achieved by arranging medical check-ups of the members of his/her family and by the immunisation of all children with BCG.

- Prevention comes by eating nutritious food every day.

- A clean home with open windows, plenty of sunlight and good ventilation is another good means of prevention..

- Prevention is also achieved by taking a person, especially a child, to the clinic if he or she has had a cough for more than two weeks.

TEACHER'S INFORMATION: TRANSMISSION BY INDIRECT CONTACT – 'FLU

The illustrations show how microbes responsible for 'flu can also travel from one person to something else (cup, glasses, etc.) and then to another person. 'Flu is a disease that is caught by direct and indirect contact. Many very contagious

TRANSMISSION BY INDIRECT CONTACT - 'FLU

diseases travelling in the air are caught in these two ways. The 'flu (influenza) and colds are very common sicknesses, and everybody has experienced them.

1. *Viruses* are the cause of 'flu, and sometimes also of colds. When somebody has the 'flu, the cells in her nose, mouth and lungs are full of viruses. When this person sneezes and coughs, the tiny droplets containing viruses may land on somebody else's food, glass of water, spoons, books, etc. Since the viruses live on and in these things, they will contaminate (infect) anybody who eats, drinks or touches them.

2. Treatment: It is *useless*, even harmful, to try and cure the 'flu with antibiotic medicines, since antibiotics have no action on viruses. Good rest and good food will help recovery.

3. Prevention: As 'flu can be passed from one person to another through direct and indirect contact, the sick person should be kept isolated and forced to rest. Another aspect of prevention is to follow the simple rules of personal cleanliness.

TEACHER'S INFORMATION: TRANSMISSION BY INDIRECT CONTACT – SORE EYES

The illustrations show how microbes responsible for sore eyes can travel from one person to something else (books, pencil, scissors or other school materials) and then to another person.

1. Sore eyes ('red eye') are caused by a sickness called 'conjunctivitis'. This means infection of the conjunctiva. The conjunctiva is the mucous membrane (the red skin) under the eyelid. The microbes responsible are usually bacteria. If not treated, red eye (conjunctivitis) can harm the inner parts of the eyes and make a person blind.

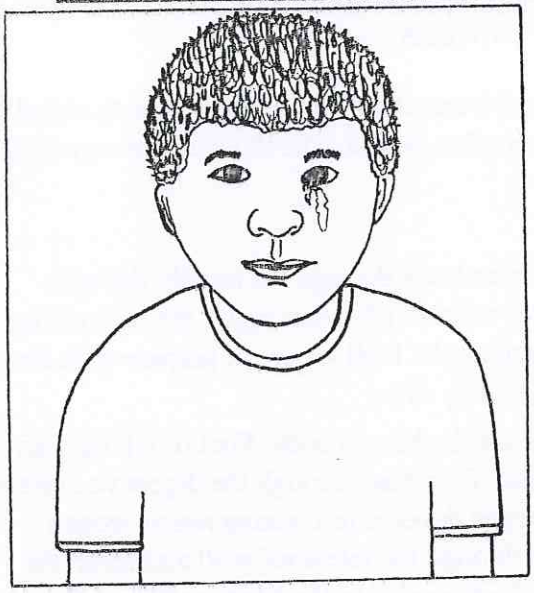
2. Red eye is very contagious (meaning that it spreads very rapidly since people catch it easily).

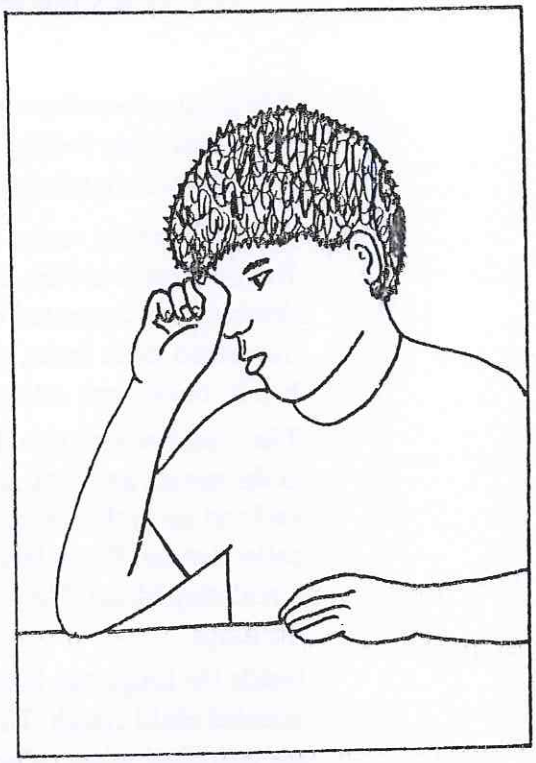
3. Red eye is transmitted through:
- *Contaminated hands* (hands covered in microbes). The sick person rubs his itchy eyes with his hands and fingers. The thick discharge from the sore eyes is full of germs, and sticks to the hands and fingers. The sick person will now leave microbes on everything that he touches.
- *The towels, handkerchiefs or clothes* used by the sick person to wipe his eyes. They are full of microbes. Anybody else who touches or uses them will catch the sickness.
- *Flies.* When a fly is in contact with sore eyes, it collects the sticky liquid on its head and legs. When the fly lands on another person's eyes, it drops this liquid. This type of infection is more common among children, who play close to the ground, and among babies when they sleep.

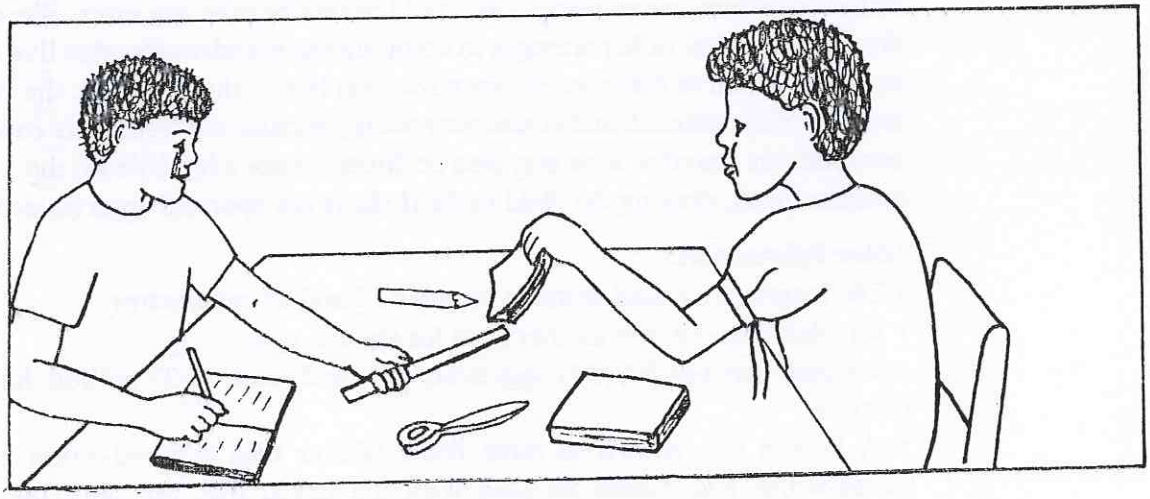
4. Treatment lies in the application of antibiotics (liquid or cream) to the eyes.

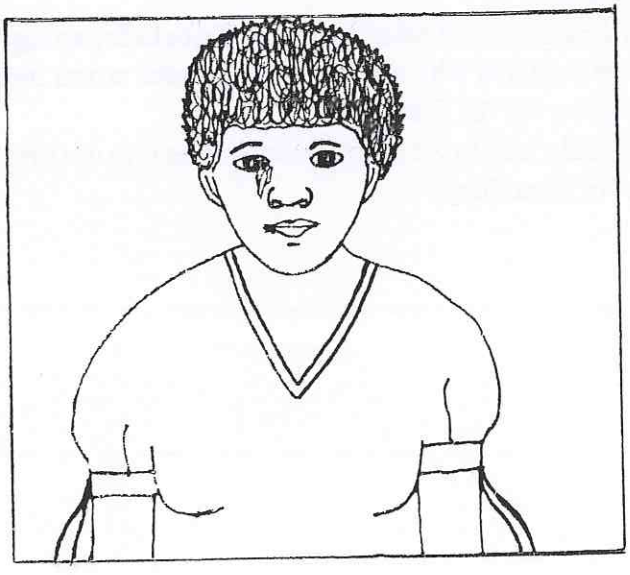
5. Prevention consists in covering the sore eyes with a dressing, and in following basic rules of cleanliness (clean hands and clean clothes).

TRANSMISSION BY INDIRECT CONTACT - SORE EYES









TEACHER'S INFORMATION: TRANSMISSION BY INDIRECT CONTACT – WORMS

The illustrations show how intestinal worms travel from one person to something else (flies, dirty food) and then to another person. The illustrations represent the life-cycle of round-worms.

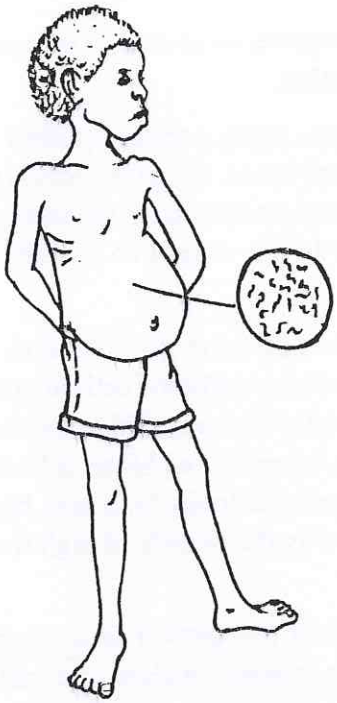
Life-cycle of the round-worm:
Round-worms always enter the human body through the mouth, through drinking contaminated water (water with round-worm eggs), through eating unwashed fresh fruits, through touching the food we eat or prepare with dirty hands, or through eating food infected by flies.

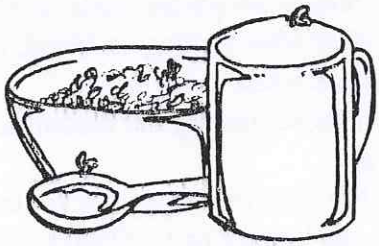
The round-worms travel around inside the human body. First of all, they arrive at the mouth and they are swallowed. They pass through the digestive system and end up in the intestines. Their eggs develop into young round-worms called larvae. These larvae burrow through the intestinal wall and reach the circulating blood. They are carried by the veins to the heart, and from there to the lungs.

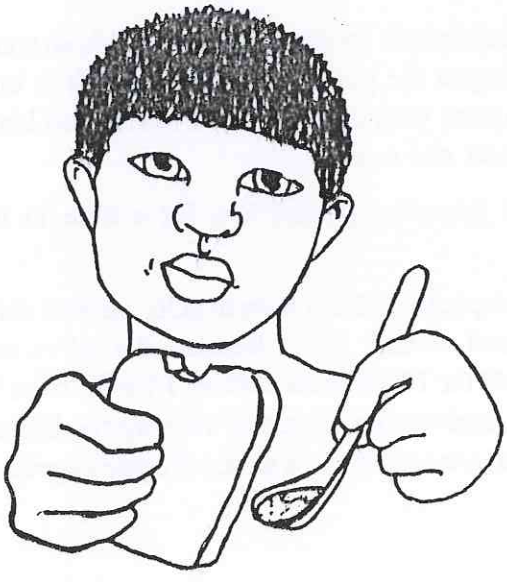
Inside the lungs, the larvae continue to travel, and this is what makes an infected child cough. The larvae make wounds in the lungs and they travel up the bronchial tubes. When the person coughs, the larvae go up to the mouth, where they are again swallowed, return to the intestines, and so on.
Sometimes there are so many that a child cannot breathe any more. She may die of suffocation in her attempts to vomit up the round-worms that live in her stomach. When as many as 500 round-worms live in the intestines, the child has a swollen stomach and is also very weak, because the worms are eating her food; the round-worms may also perforate (make a big hole in) the intestinal wall, causing the child to die if she is not operated upon immediately.

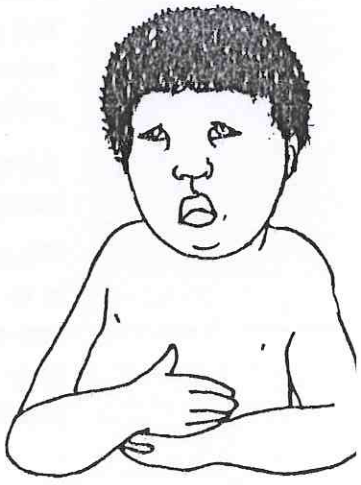
Other information:
- The length of a round-worm is between 15 and 35 centimetres.
- An adult round-worm usually lives for about a year.
- A female hatches 200,000 eggs every day, and some 25-27 million during its lifetime.
- A human hair is two to three times thicker than a round-worm egg. A round-worm egg cannot be seen with the naked eye, but only through a microscope.
- In the intestine, it takes about 6 to 8 weeks for an egg to become an adult worm.
- This explains why it is important to take worm medicine two months after it was taken for the first time.
- The only way to get rid of round-worms is to use proper toilets and follow basic rules of cleanliness.

TRANSMISSION BY INDIRECT CONTACT - WORMS









TEACHER'S INFORMATION: TRANSMISSION BY INDIRECT CONTACT – MALARIA

The illustrations show how malaria requires an animal (a mosquito) in order to be transmitted from one person to another.

1. A person is sick with malaria because many parasites (called 'plasmodium') live in his body, especially in his liver and blood. The plasmodium parasites living in the blood enter the red blood cells and eat them from the inside. The parasites grow and multiply inside the red blood cells. After two or three days, the cells become too small and break up.

2. During their life-time, the plasmodium parasites get rid of their wastes. These wastes are poisonous to humans. When many red blood cells break up at the same time, all the poison is released and invades the body. This explains why the sick person develops a very high fever. But when the red blood cells break up, more new parasites are also released. Each parasite looks for a new blood cell where it can live and multiply. This explains why the periods of high fever come back again after two or three days.

3. The plasmodium parasites travel from one person to another one through mosquitoes. In Vanuatu, the ones that transmit malaria are called *anopheles* mosquitoes.

4. Further information about the mosquito:
- The mouth has severals parts. The longest part, known as the 'proboscis', fulfils the double function of piercing and sucking.
- The male anopheles feeds on nectar and plant juices.
- The female anopheles feeds on blood which it needs in order to lay its eggs. Three days after feeding on blood, a female lays about 100 eggs on the surface of stagnant water.
- Every mosquito egg has a small air float on each side of it, to prevent it from sinking.
- The life span of a mosquito varies according to temperature and humidity. A female can live for up to 30 days, whilst a male dies after mating (1-10 days).
- It takes about one week for an egg to become an adult mosquito capable of flight.

5. How malaria is spread: When female anopheles suck blood from someone who has malaria, they may also ingest the plasmodium parasites. It is important to remember that the mosquito bites with the long part of its mouth known as the proboscis which can both pierce and suck.

After ingestion, the malaria parasites go and live for a time in the female mosquito's stomach.

When, later on, the female anopheles pierces human skin, the first thing it does is to inject saliva into the small wound. Why? Because the saliva contains an anti-coagulant, which prevents the blood from clotting (that is, from becoming very thick or solid), and this enables the female to suck up the blood. But the plasmodium parasites that live in the mosquito's stomach come up with her saliva

TRANSMISSION BY INDIRECT CONTACT - MALARIA

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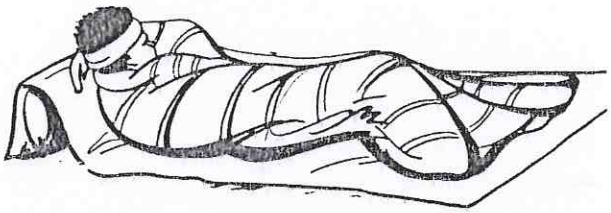

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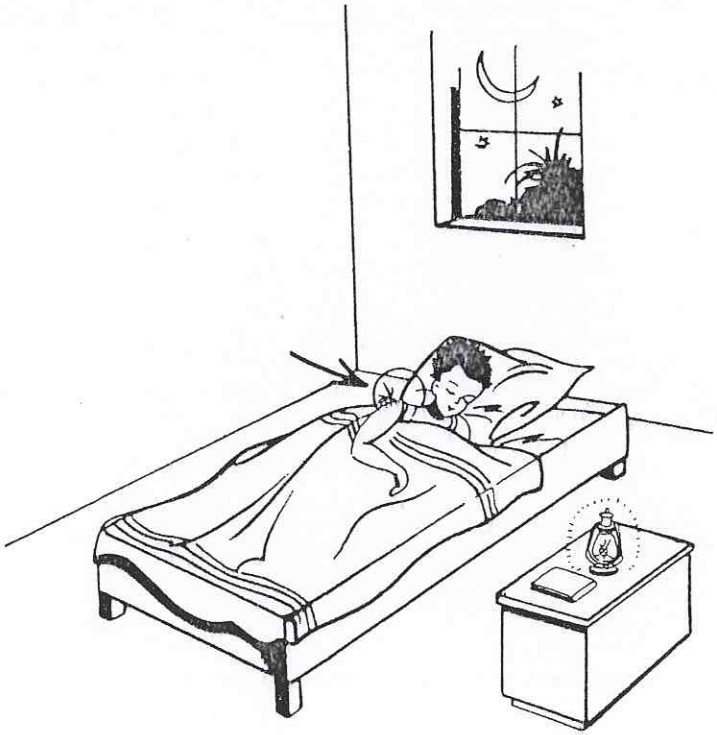

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④

and are then injected into the person's blood. This is the *only way* in which malaria can pass from one person to another.

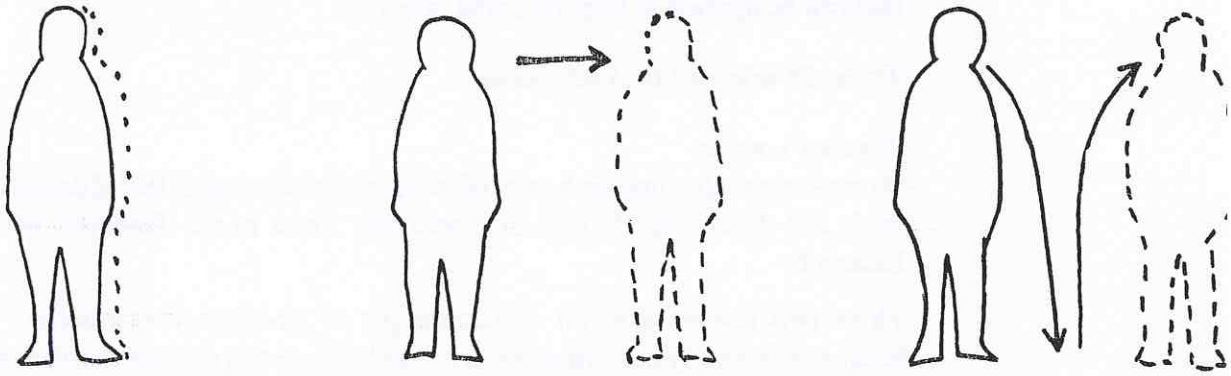
There are medicines to cure malaria, but the sick person needs to have a blood test at the dispensary in order to receive the correct type of medicine.

Malaria is prevented by getting rid of mosquitoes:

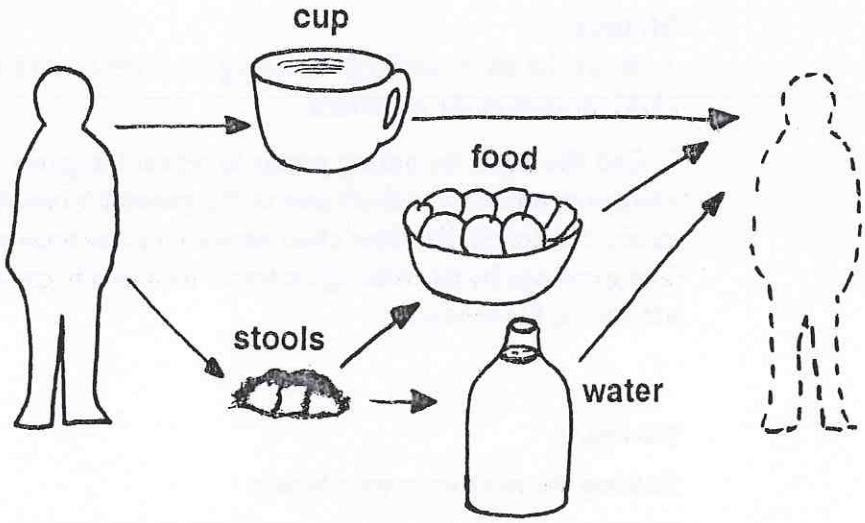
- **The preventive measures consist of getting rid of mosquito breeding sites at least once a week.**
- **When there is no water, there are no mosquitoes.**
- **When there are no mosquitoes, there is no malaria.**

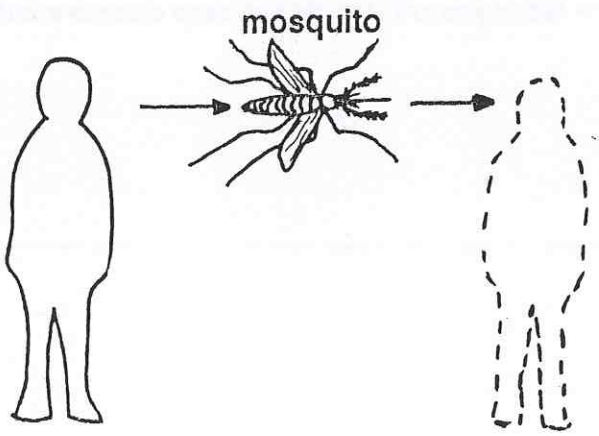
HOW DISEASES ARE SPREAD

DIRECT CONTACT



INDIRECT CONTACT





LESSONS 11 AND 12: SOME WAYS OF PREVENTING THE TRANSMISSION OF DISEASES

Objective

• By the end of the lessons, pupils should be aware of the preventive measures that can be applied to stop air-borne infection.

Time: 20 minutes for each lesson

Teacher's notes

We must remenber that air-borne infection occurs through infected droplets, both fresh and dried, and through dust particles. Refer to the Teacher's notes for Lesson 6.

These two lessons use 'flu as an example of air-borne transmission. This is because everybody has experienced it, and because this disease was the example used in Lesson 6.

The different methods of preventing food- and water-borne diseases will be studied during the second term, using the example of intestinal worms. In the third term, the different methods of preventing insect-borne diseases will be studied, using the example of malaria.

Method

1. Read the story entitled 'Keeping our family and friends healthy'. Let the children answer the questions.

2. End this topic by asking pupils to repeat the game with the chalk dust. One child pretends that the chalk dust is 'flu germs, and shows one way in which these germs can travel. Another child shows how the transmission can be prevented. The game can be repeated again for all the other ways in which germs travel that are shown in the story.

Summary

To keep 'flu away from your family:

- **Always cover your mouth when you sneeze or cough**
- **When you are sick with the 'flu, use your own plate, cup, glass and spoon for eating and drinking**
- **When you are sick, do not sleep close to another person**

Illustration 1
We do not have to be sick. We can prevent most sicknesses.

Illustration 2
Do you remember Albert? Albert made Mary sick. Albert was not careful. When Albert coughed, drops full of microbes went into the air. Mary breathed in these drops. Albert should have covered his mouth.

Illustration 3
If Albert had covered his mouth, the drops full of microbes would not have gone into the air. Mary would not have breathed in the microbes.
Would Mary have become sick?

Illustration 4
No! Mary would not have become sick. If Mary does not breathe in the microbes of Albert's 'flu, she will not get sick. Drops in the air that come from coughs and sneezes can make people sick.
Are there any other ways that people can catch 'flu?

Illustration 5
Yes! 'Flu microbes are in the mouths and noses of sick people. When sick people eat or drink, the germs get on the food, the spoon, the glass and the cup.
Should Mary use Albert's cup?

Illustration 6
No! Albert's cup has 'flu microbes on it. Albert's spoon has 'flu microbes on it. Albert's food has 'flu microbes on it.
No one else should eat the food that Albert has touched or use his eating things. Why? *(Because this person will swallow Albert's 'flu microbes, and will then get sick)*

Illustration 7
Albert's brother sleeps close to Albert at night. When Albert is sick with the 'flu, is this good? *(No)*
Could Albert's brother get sick?

Illustration 8
Yes! Albert's brother could breathe in the drops full of germs that Albert might put into the air. Albert might sneeze or cough while he is sleeping.
Albert's brother should move away from Albert while he is sick with the 'flu.

Illustration 9
Albert's little cousin is very cute and Albert loves him. When Albert meets him he always shakes hands. When Albert has 'flu, should Albert shake hands with his little cousin?

Illustration 10
No! Albert could make his little cousin sick, because Albert's hands are covered in 'flu germs. The germs go on to Albert's hands when he touches his nose, his mouth or his face.
Albert loves his little cousin. Albert wants his little cousin to be healthy. So Albert stays away from his cousin when he is sick with 'flu.

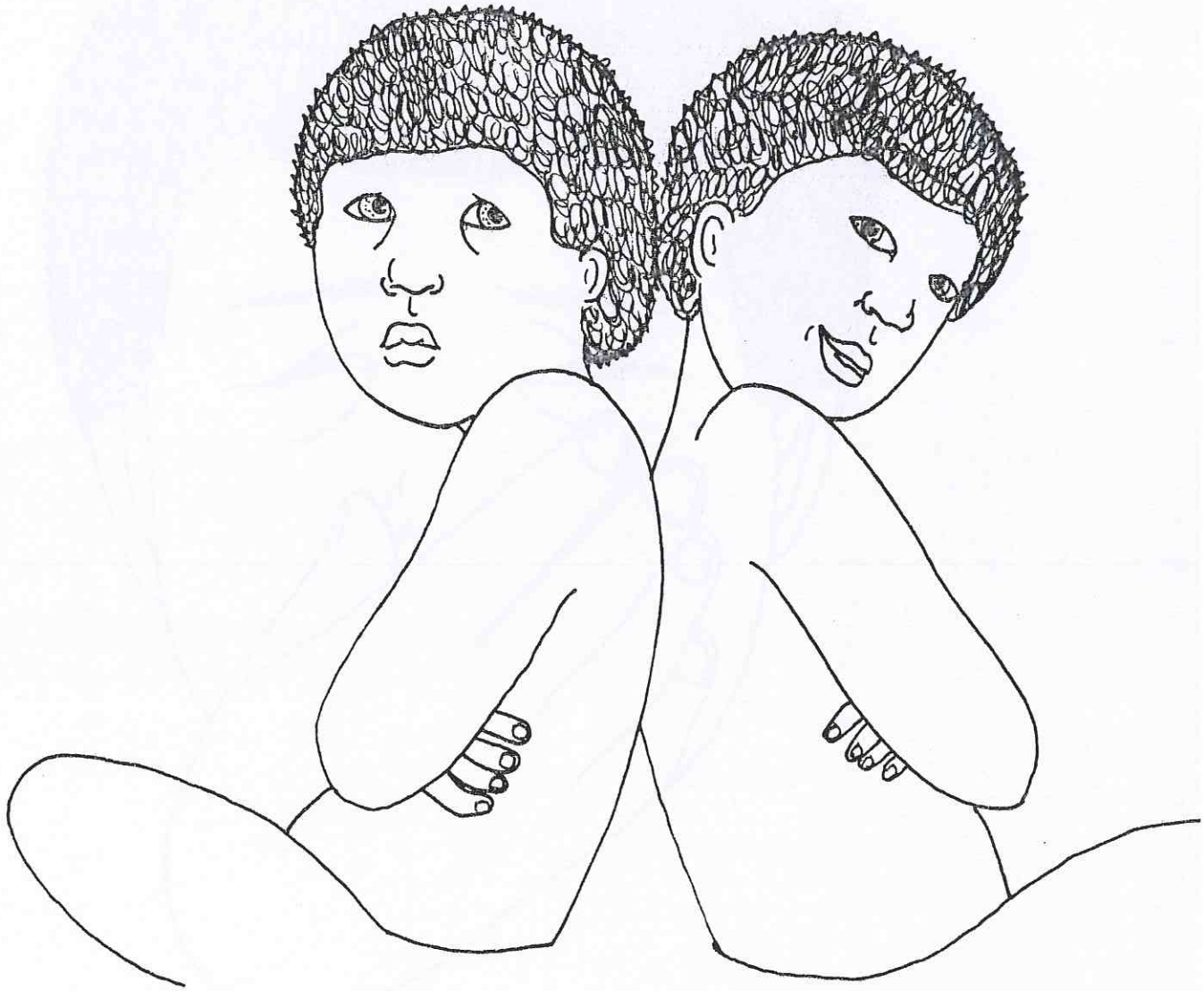
Illustration 11
Could Albert make everyone in the whole family sick?
Yes! Albert could make his mother sick.
Albert could make his father sick.
Albert could make everyone sick.
How?

Illustration 12
Albert could drink from the jug of water.
Albert could leave his 'flu microbes on the jug and in the water.
The family could use the water from the jug.

You must never do this!
Albert needs to be very careful.
Albert must not drink from the jug.
Albert could make everyone sick.

Illustration 13
Albert loves his family. He wants to keep his family healthy.
Albert pours his water into *his own cup.* Albert does not drink from the jug.
After use, Albert *washes* and cleans his own cup, and he puts it far away from the others.
Albert is good. He cares about his family.

Illustration 14
Here are some things to do if you want to keep 'flu germs away from your family:
• Always cover your mouth when you sneeze or cough – even when you are not sick.
• When you have 'flu, do not let other people eat from your plate or use your cup, spoon, or other eating things.
• As soon as you have finished eating and drinking, wash your cup, plate and spoon and put them apart from the other ones.
• When you are sick, do not eat from someone else's food or use their eating things.
• Do not sleep close to someone else if you are sick.
• Don't ever drink from a jug, even if you are not sick. You may still make someone sick. Always pour your drink into a cup or hold the jug up high, and drink without touching the jug.



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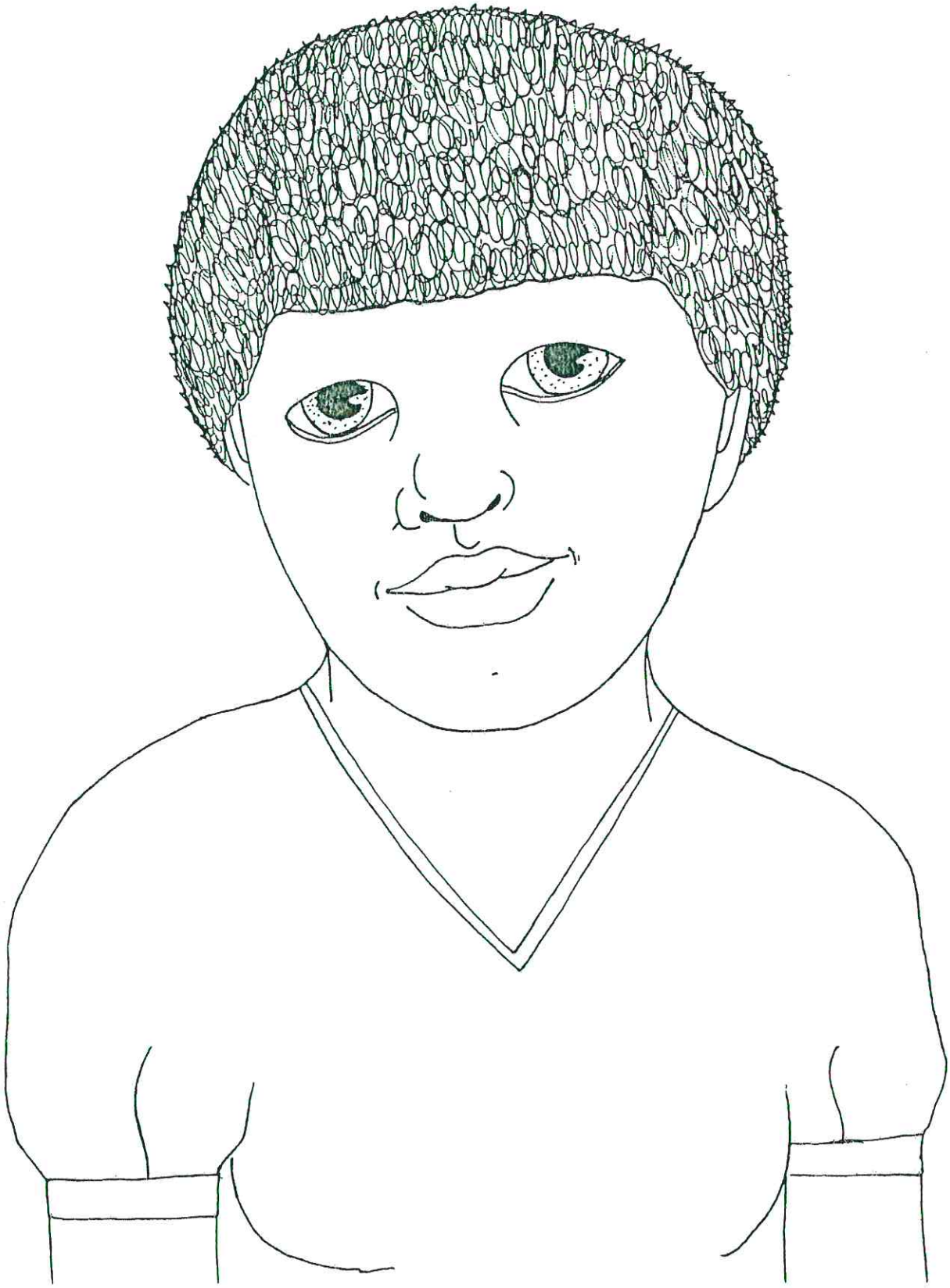

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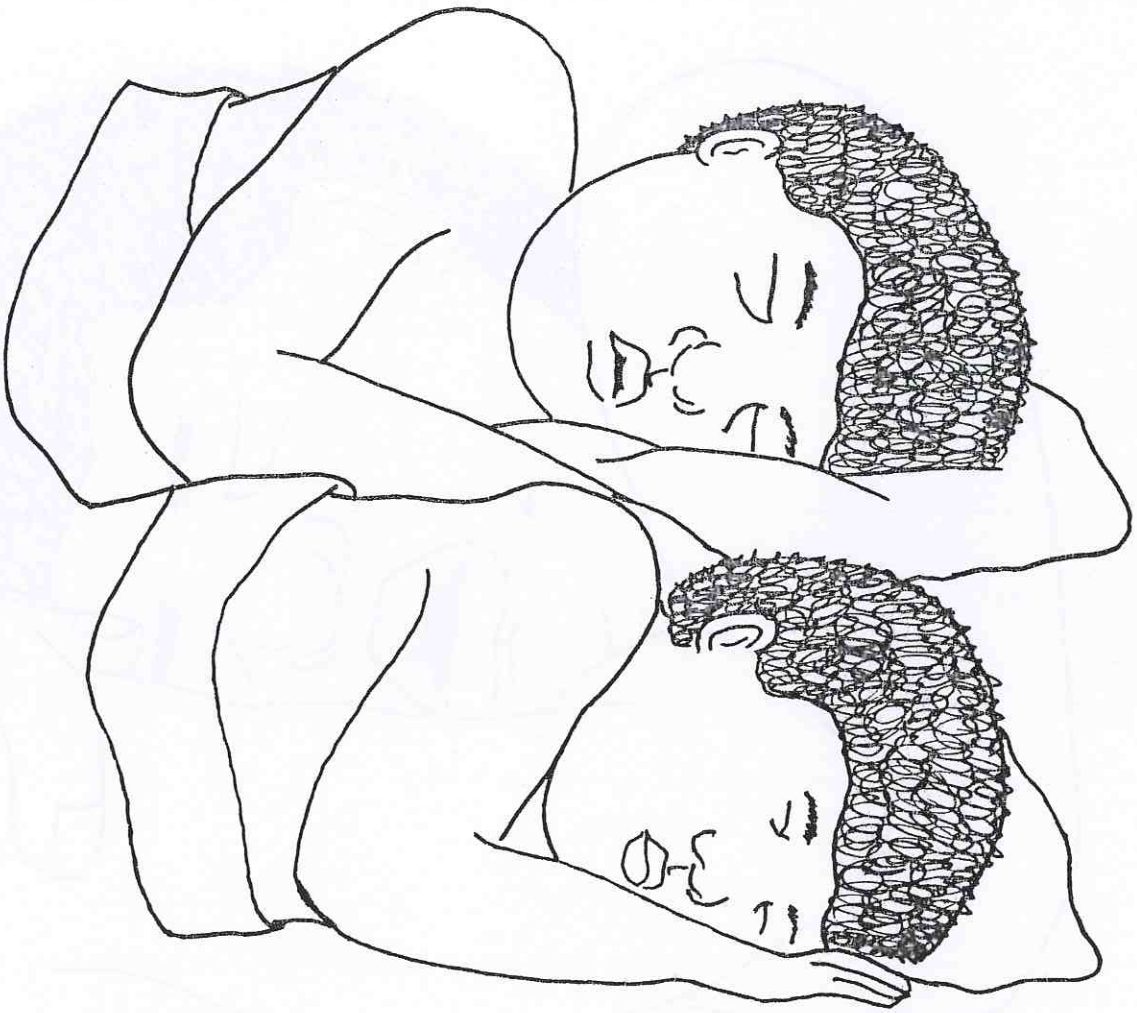

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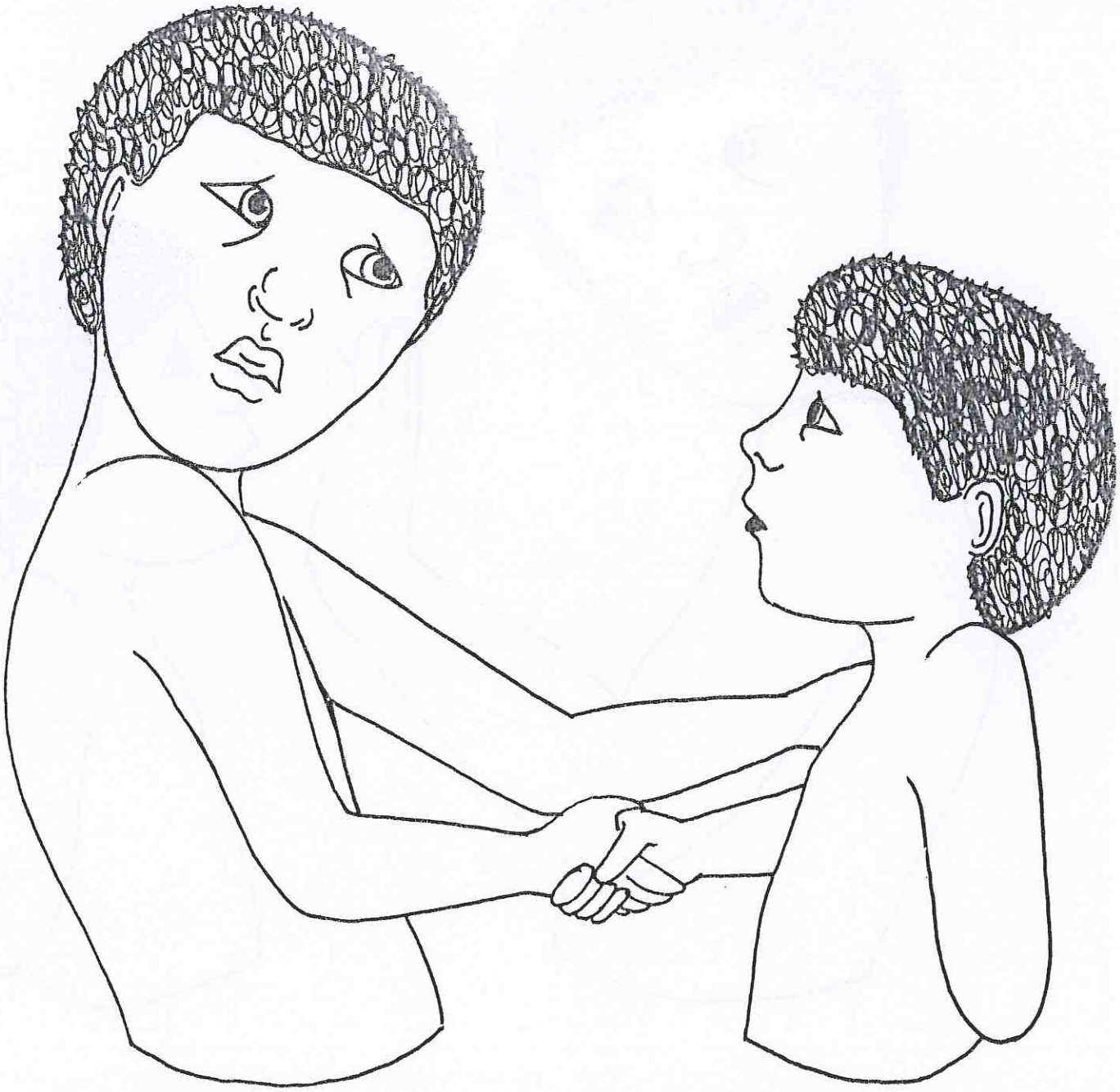

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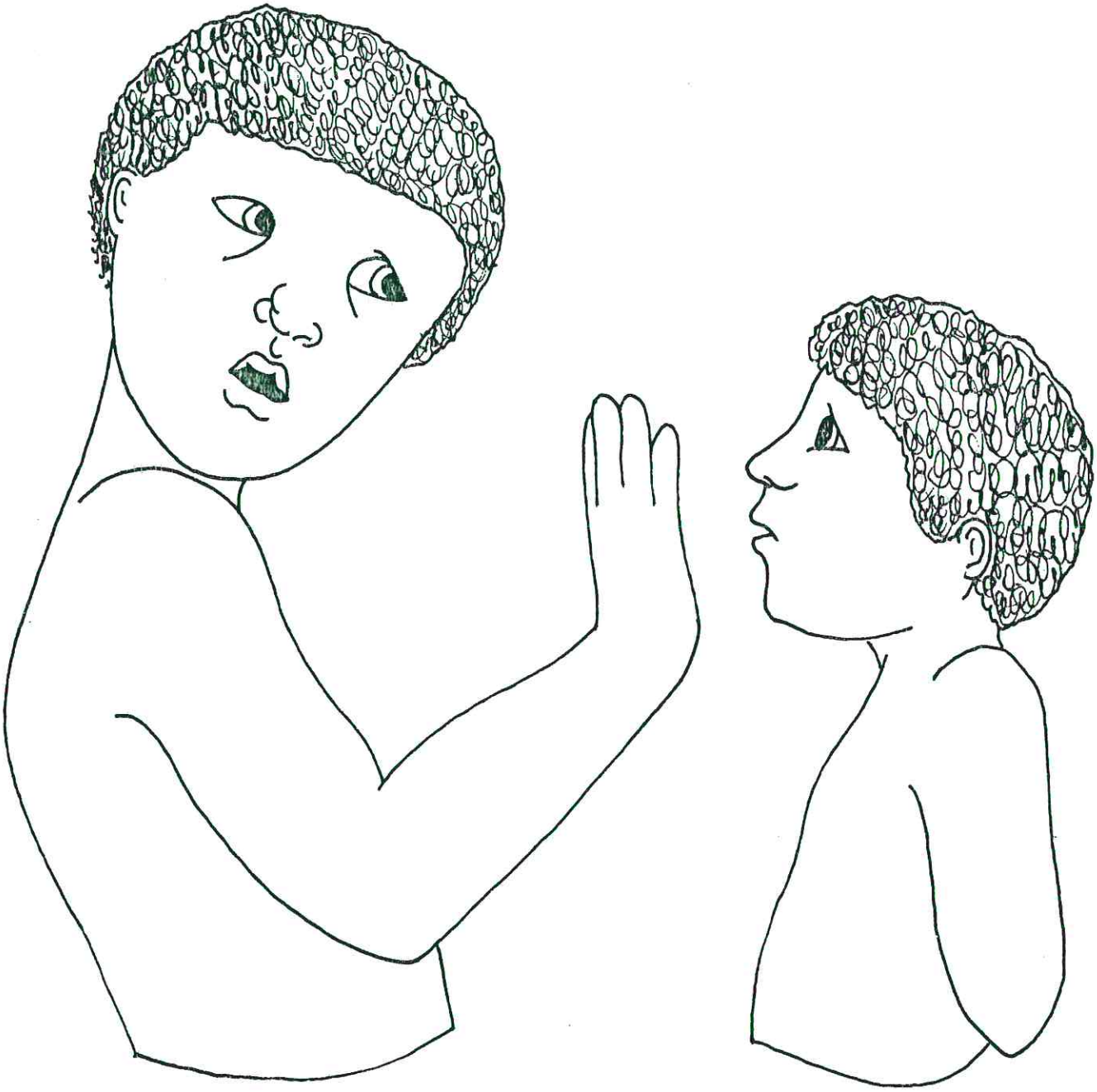

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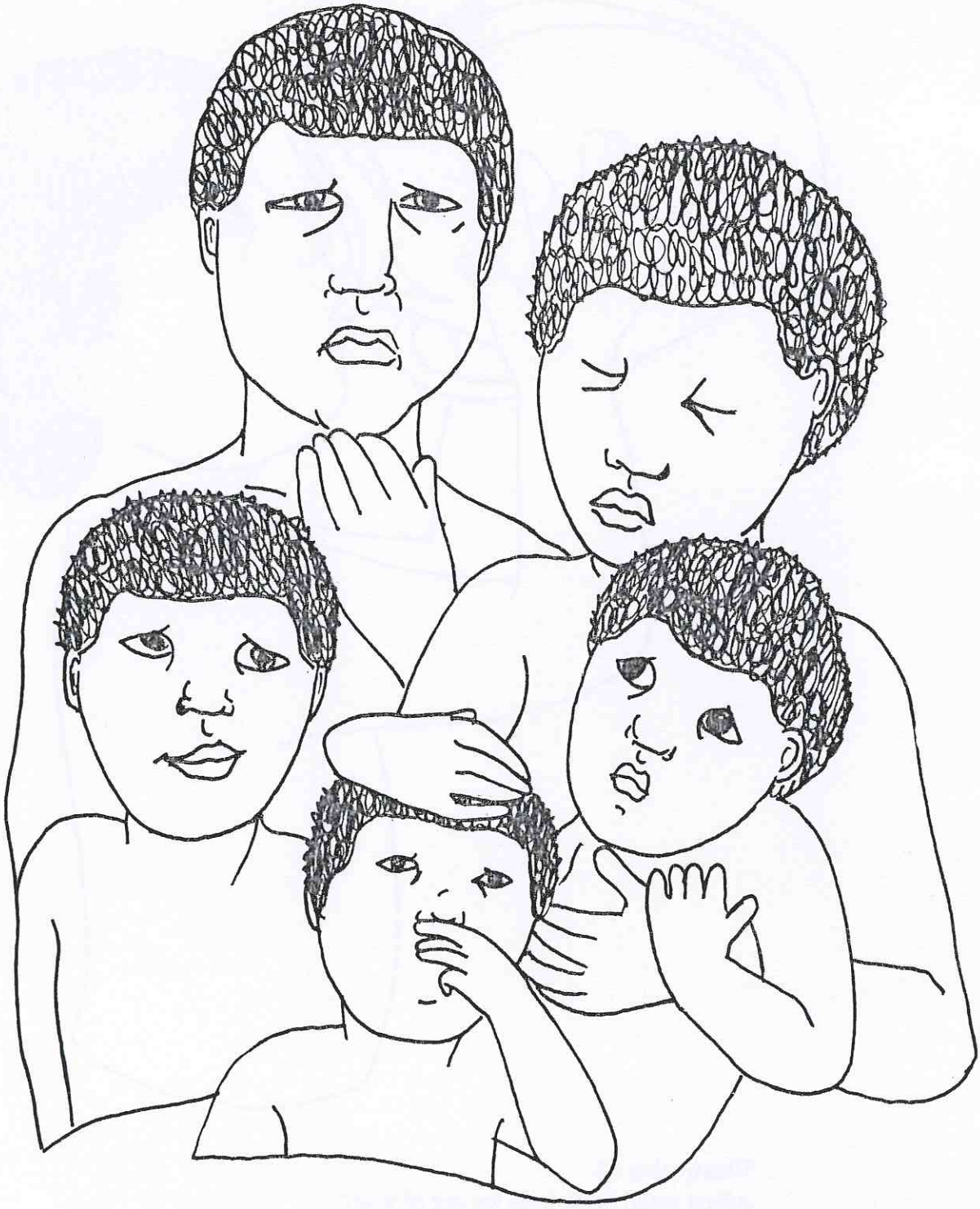

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- As soon as you have finished eating and drinking, wash your cup, plate and spoon and put them apart from the other ones.
- When you are sick, do not eat from someone else's food or use their eating things.
- Do not sleep close to someone else if you are sick.
- Don't ever drink from a jug, even if you are not sick. You may still make someone sick. Always pour your drink into a cup or hold the jug up high, and drink without touching the jug.

Term 2

LESSON 13: THE HUMAN DIGESTIVE SYSTEM

Objectives

By the end of this lesson, the children should:

- Know the main parts of the digestive system.
- Be able to point to each part of the digestive system in their body.
- Know how to play a matching game about the digestive system.

Time: 30 minutes

Materials needed

- A copy of the three drawings showing the food canal (mouth – stomach – intestines) of the digestive system *(see pages 68, 69 and 70)*. On the blackboard or a big piece of paper, draw the outline of a body, on which you can stick the different parts of the digestive system, including the liver.

- One set of matching cards large enough to be seen by the class and displayed on the blackboard.

- *(optional)* If you can get hold of a fresh fish, open it carefully to show the children its digestive system. This is very helpful for your lesson because once children understand what happens to food inside a fish, they can understand what happens to food inside people.

Method

1. Tell the children that in this lesson they are going to find out what happens to the food they eat, and what happens inside the human body.

2. Introduce and explain the new words below:

The *digestive system* is the food canal by means of which food enters, passes through, and leaves the body. The digestive system *transforms* the foods we eat, in order to make us strong and healthy.

Digest means to break down the food into liquid.

System means several parts of our body working together to do one special kind of work.

Transform means to change shape, form or substance, as from solid to liquid. For example, a hard piece of cooked yam, crushed up with coconut milk, becomes liquid; when water boils it becomes steam, etc.

3. Show the children the picture of the digestive system you have prepared *(see page 66)*. Ask one child to act as a model and fix the drawing to the front of his/her body. Ask the other children to imagine where all the parts are actually found inside the child.

Let the children feel their own bodies and try to imagine where each part of the digestive system is found. Where is their stomach? Where is their intestine?

4. Fix the drawing of the digestive system on to the blackboard or the large piece of paper. With the matching cards you have prepared, say the name of each part, and explain how it works.

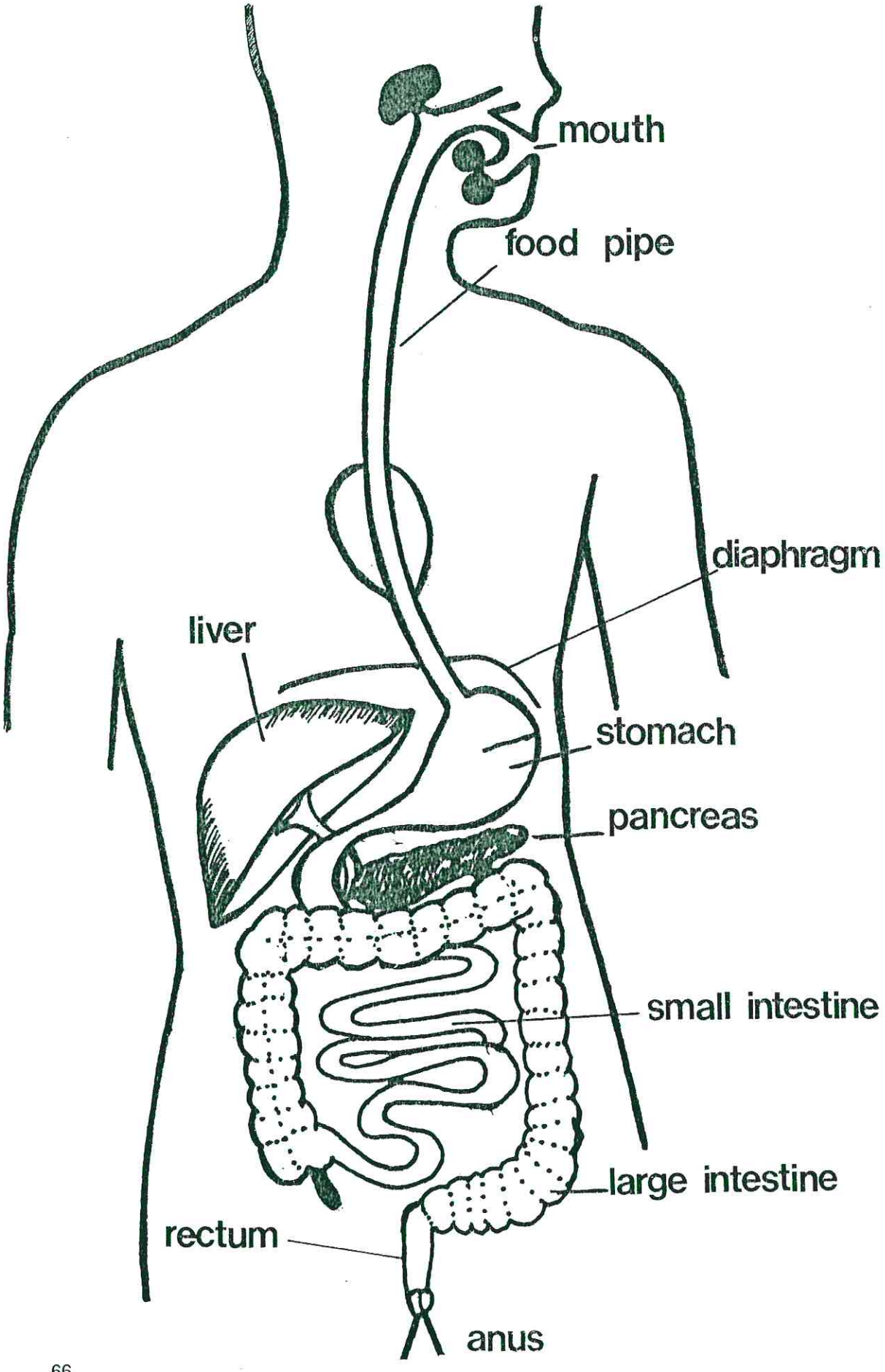
5. Play the matching game. This game asks the children to match each part of the digestive system with the job that it does.

First, ask the children to find all the body parts and to place them in the correct order. Then ask them to match each part with its correct job.

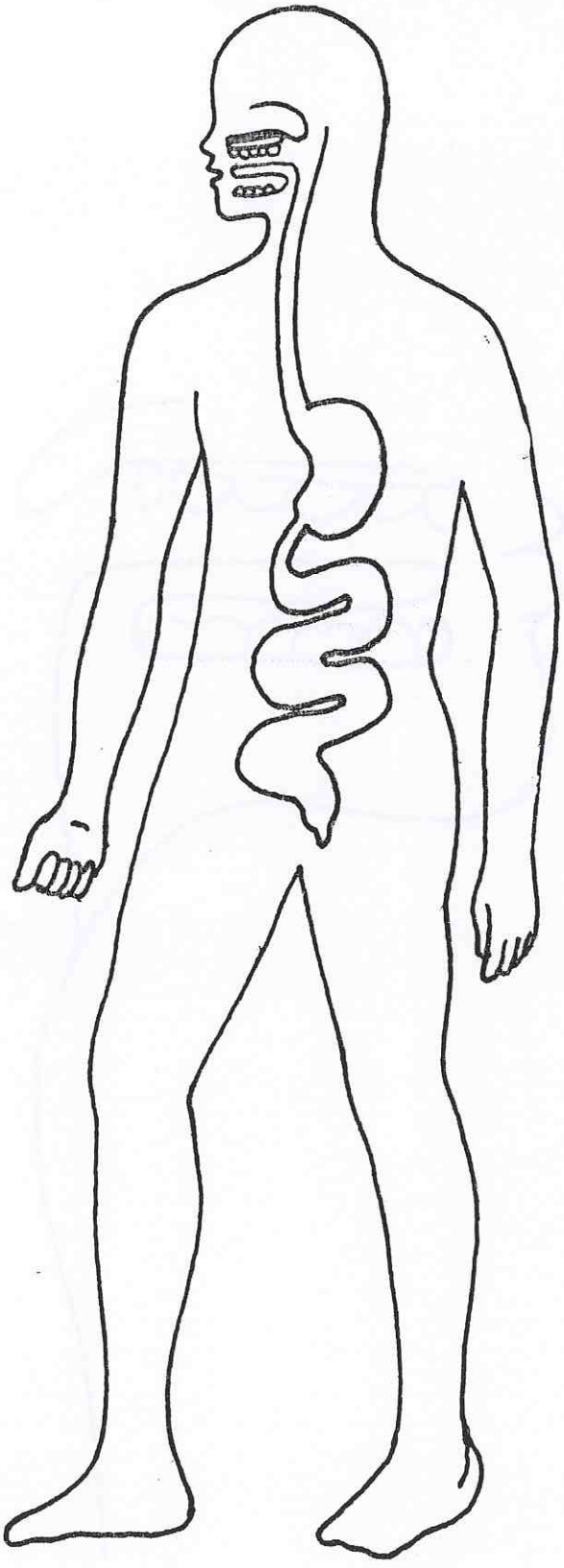
The set of matching cards should be prepared as follows:

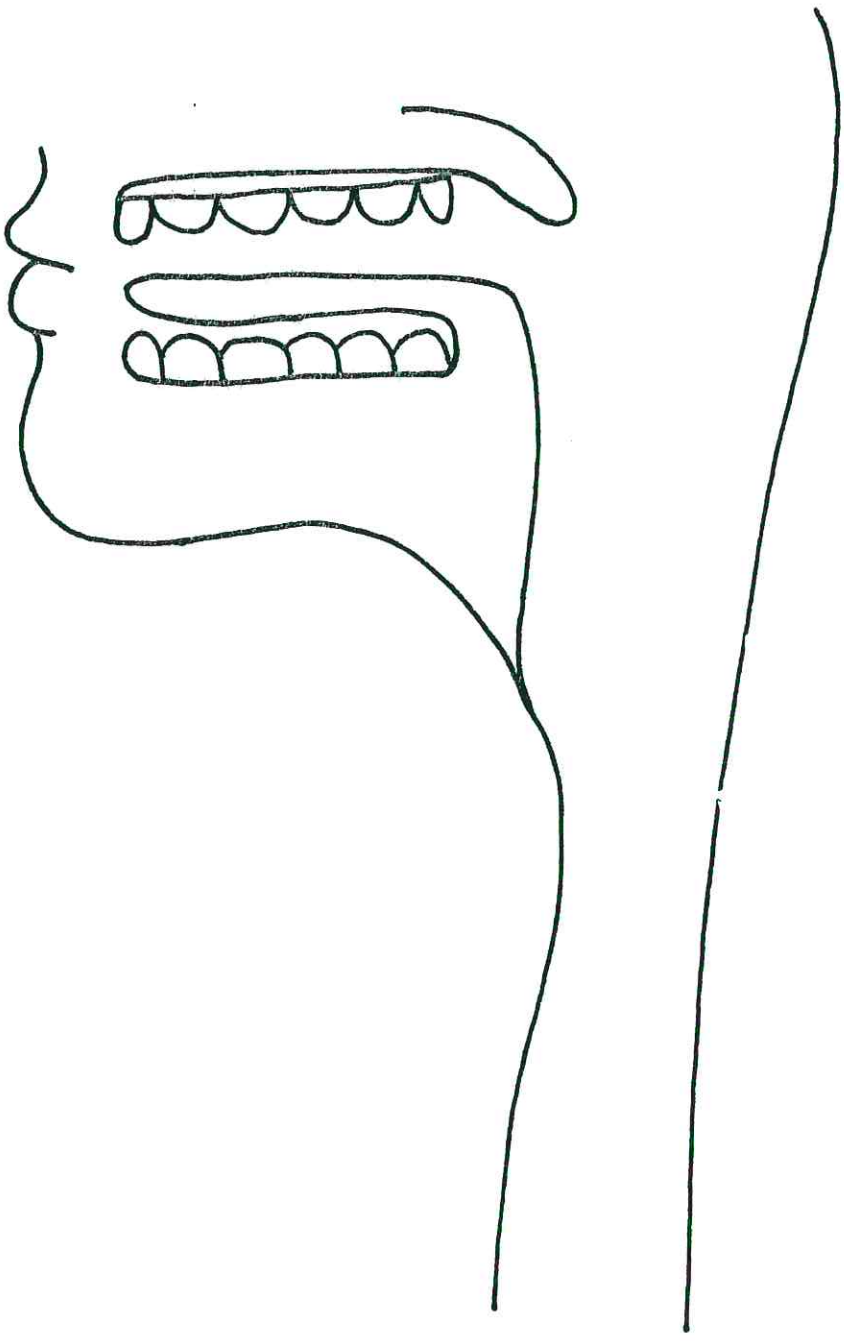
Parts	**Their job**
MOUTH/TEETH	CUTS, CRUSHES AND SOFTENS FOOD
FOOD TUBE *(oesophagus)*	MOVES FOOD TO THE STOMACH
STOMACH	MIXES AND MAKES LIQUID FOOD
LIVER	HELPS DIGEST (BREAK DOWN) FOODS
SMALL INTESTINE	DIGESTS (BREAKS DOWN) FOOD UNTIL IT BECOMES LIQUID. FROM HERE, LIQUID FOOD IS TAKEN UP BY THE BLOOD AND CARRIED TO ALL PARTS OF THE BODY
LARGE INTESTINE	STORES WASTE FOOD. WATER IS REMOVED AND IS PASSED INTO THE BODY
ANUS	EXCRETES (GETS RID OF) WASTE FOOD

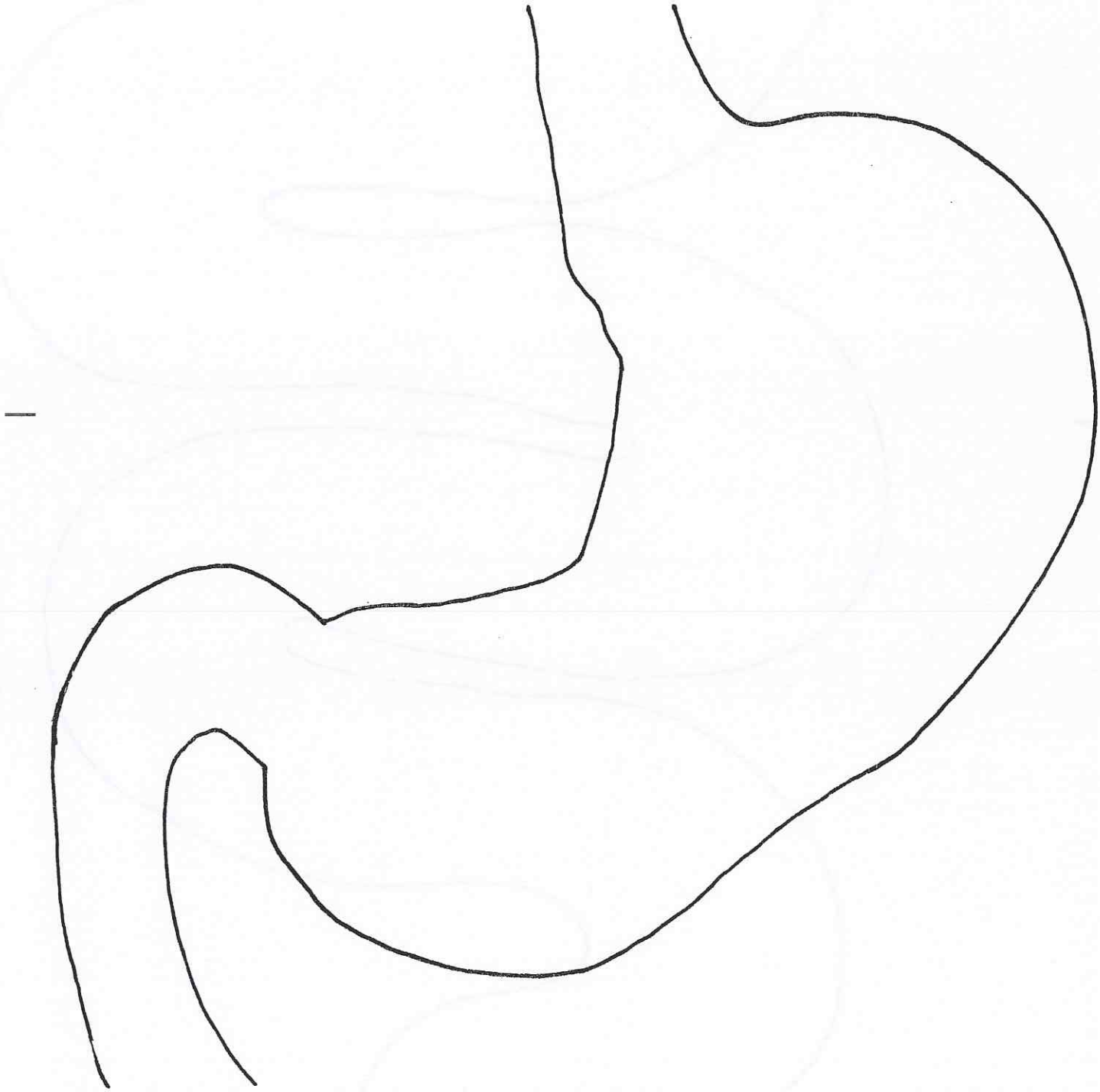
THE HUMAN DIGESTIVE SYSTEM

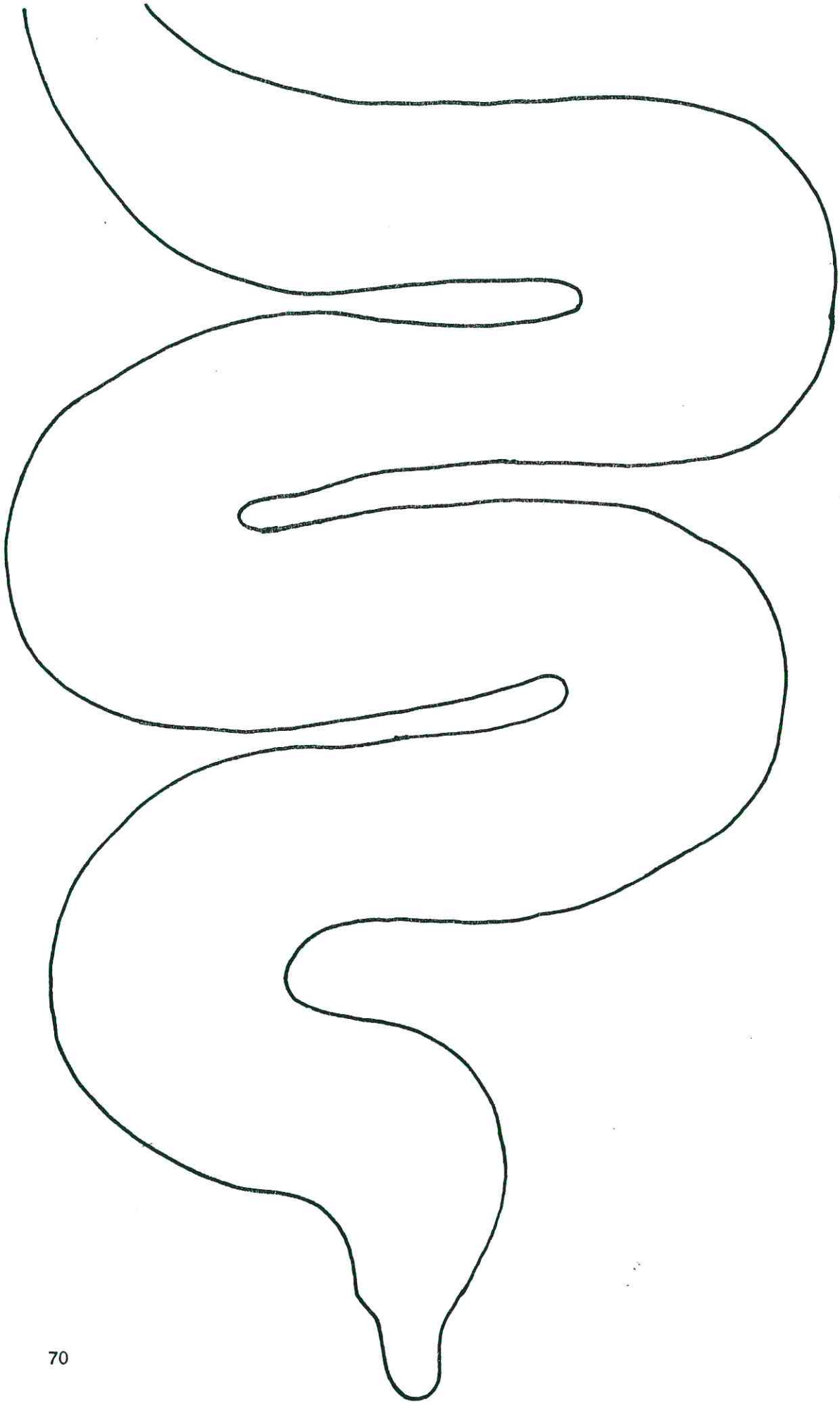


DIGESTIVE SYSTEM









LESSON 14: WHERE AND HOW WORMS LIVE AND GROW IN THE HUMAN BODY

Objectives

By the end of the lesson, pupils should:

- Understand why worms live in the intestines.
- Know that worms lay eggs.

Time: 30 minutes

Method

1. Ask the children to think back to the digestive system and to where its different parts can be found inside their own bodies.

2. Discuss intestinal worms with the children. Ask questions such as:

- 'Have you ever seen worms in the stools of small children?'
- 'Have any children in your family coughed up worms?'
- 'Do you know anyone who has been sick because of worms?'
- 'Is there anyone in your family who has ever taken worm medicine?'
- 'What happens when someone takes worm medicine'? *(Worms can be seen in their stools)*
- 'Where do you think that worms live inside our bodies?' *(Free answers)*

These questions help the teacher find out how much the children already know and remember about worms; they help the teacher to be aware of any mistaken ideas the children may have which will need to be corrected as the lessons proceed.

3. Ask the children to look again at the picture showing the different parts of the digestive system. Ask them once again where they think the worms might live.

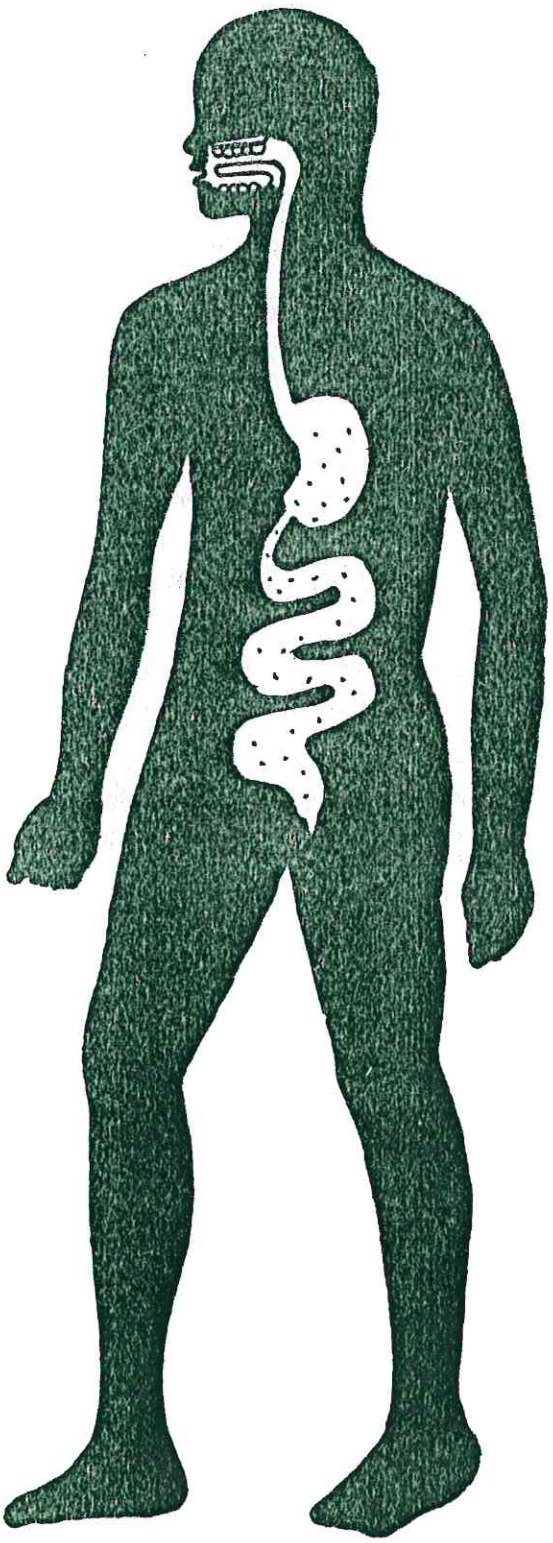
Help the children to understand that worms live in our digestive system because:

- Worms need food in order to live and grow.
- There is food in our digestive system, which we have already eaten.
- The worms want food.
- If they live in our digestive system they can get plenty of food (especially in the intestines).

4. When the worms live in our intestines, they grow and, just like fish and other animals, they lay eggs.

Ask the children whether they have ever seen eggs inside a fish that has been cut open. The same thing can happen to us because the worms lay their eggs inside people's intestines, and these eggs grow into new worms. When a person who has worms in his body goes to the toilet, some of the worm eggs come out of his body inside his stools.

WORMS LIVING INSIDE THE HUMAN DIGESTIVE SYSTEM



Summary

- **Worms live inside the digestive system (in the intestines) because they need food to live and grow. There is plenty of food in our intestines – the food that we have already eaten**
- **When worms grow, they lay eggs inside the intestines**
- **Some of the worms' eggs come out of our body inside our stools**

TEACHER'S INFORMATION: WORMS AND OTHER INTESTINAL PARASITES

The following information is background reference material for the teacher. It is *not* to be taught directly to pupils.

General information

Intestinal worms are a serious health problem in areas where there are no proper toilets and where people usually go to the bush and pass their stools on to the ground.

They are responsible for a lot of the illnesses suffered by ni-Vanuatu children. Children can even *die* from bad worm infections.

Worm infections can be treated and, more importantly, can be prevented.

The purpose of the series of lessons on intestinal worms is to help children understand how worms live and grow in our bodies, the harm that they can do to our health, and how the spread of worm infections can be prevented.

There are many types of worms and other tiny animals that live in people's intestines and cause sickness. Those which are larger are sometimes seen in people's stools (faeces). On the next page, you will find pictures of the types of intestinal parasites which are common in Vanuatu.

The only intestinal parasites which are commonly seen in stools are round-worms and pinworms. Hookworms, whipworms and amoeba may be present in large numbers in the body without ever being seen in the stools.

The list which follows gives a summary of information on some common types of intestinal parasites. *Do not give this list to the children.* Use it yourself as reference material before going through the activities on intestinal parasites with the children.

Name and description

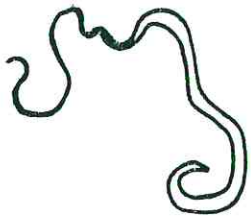
Round-worm *(Ascaris)*

These worms are big (about 22 cm long). They look like small snakes. They can sometimes be seen in the stools of an infected person.

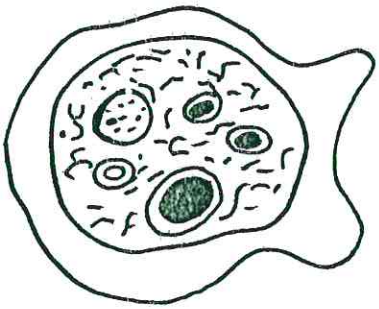
How they are spread. These worms live in the intestines. Eggs pass out of the body inside stools. Through lack of cleanliness, or because flies spread the eggs to human food, people may swallow the eggs. The eggs hatch into larvae. The

WORMS AND OTHER INTERNAL PARASITES

pinworm

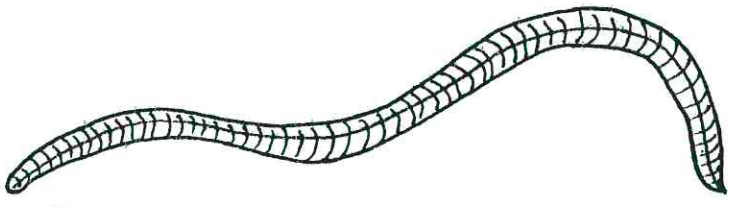


whipworm



amoeba

hookworm



roundworm

larvae go around the body, pass through the lungs, and finally reach the intestines where they remain and grow into adult worms.

Effects on health. Once the eggs are swallowed, they hatch into larvae and enter the bloodstream. This can cause general itching of the skin. The larvae then travel to the lungs, sometimes causing a cough or other symptoms like a cold. The small young worms are coughed up into the throat and swallowed into the stomach. Then they move to the intestines and grow to full size. Many round-worms in the intestines may result in pain, indigestion and weakness. Children with many round-worms may have round, swollen bellies. They may vomit.

Rarely, round-worms may cause asthma and fits. When the child has a fever, the worms may come out in the stools or crawl out of the mouth or nose. At this stage, the child can die of perforations of the intestinal wall or can die of suffocation.

Treatment. Worm medicine from the health department.

Prevention. Use good toilets and bathrooms. Do not pass stools on the ground. Wash hands after passing stools and before eating or handling food. Get rid of flies, and protect food from flies. Treat infected persons with medicine so the infection is not passed on to others.

Pinworm (Threadworm, *Enterobius*)

These worms are about 1 cm long. They are white and very thin. They look like white threads. They can sometimes be seen in the stools of an infected person.

How they are spread. These worms lay thousands of eggs just around the anus. This causes itching of the anus, especially at night. When a child scratches, the eggs get caught under her fingernails. When she puts her fingers in her mouth or touches food, the eggs reach her mouth or the mouths of others, causing a new cycle of infection by pinworms.

Effects on health. These worms are not dangerous. Itching may disturb sleep.

Treatment. Worm medicine should be obtained from the dispensary. The child's hands and buttocks should be washed when she wakes up and each time she passes stools. Clothes should be washed regularly. The child should bathe frequently. Coconut oil can be put around the anus at night to help stop itching. By carefully following the guidelines on cleanliness, most of the worms will be gone in a few weeks, even without using medicine.

Prevention. Wash the hands often, and keep fingernails cut very short and clean. Treat infected persons with medicine so that their infection is not passed on to others.

Hookworm

These worms are about 1–2 cm long. They are red. They cannot usually be seen in the stools of an infected person. The stools must be examined in a laboratory to prove that they are there.

How they are spread. These worms live in the intestines. After the female worms lay their eggs, the eggs leave the body in a person's stools. The eggs hatch on moist ground. The baby hookworms are able to pass through human skin. *Usually they enter a person's body through his bare feet.* They pass through the

bloodstream and reach the lungs. The person coughs up the young worms and swallows them. The hookworms pass through the stomach to the intestines. They attach themselves to the walls of the intestine and live by sucking blood and protein.

Effects on health. When the worms enter the skin of the feet, they may cause itching. In a few days time when they have reached the lungs, they may cause a dry cough. Later on, the infected child may have stomach ache and diarrhoea. *Hookworm infection can be one of the most damaging diseases of childhood.* Children with hookworm become pale and anaemic from the loss of blood and protein. They may not grow properly. They may become weak and their ankles can swell up. Hookworms can even cause heart failure.

Treatment. Worm medicine should be obtained from the dispensary. The child should be fed nutritious food that is high in protein. Protein is found in foods like fish and other seafoods, meat, milk and eggs.

Prevention. Use proper toilets and bathrooms. Do not excrete in the bush. Wash hands after passing stools, and before eating or handling food. *Wear thongs or shoes when outside.* Treat the infected person with medicine so his/her infection is not passed on to others.

Whipworm ***(Trichuris)***

These worms are about 3–5 cm long. They cannot usually be seen in the stools of an infected person. The stools must be examined in a laboratory to prove that they are there.

How they are spread. These worms live in the intestine. Their eggs are passed out in a person's stools. If sanitation is poor, the eggs can get into a person's mouth through dirty hands, infected food or flies. They are swallowed, and grow into adult worms in the intestines.

Effects on health. Usually these worms are not particularly harmful, but they may cause diarrhoea or vomiting. A child with many of these worms can have anaemia (weak blood) and may not grow properly. Very occasionally, they can cause part of the intestines to come out of the anus.

Treatment. Worm medicine should be obtained from the dispensary.

Prevention. Use proper toilets and bathrooms. Do not excrete in the bush. Wash hands after passing stools, and before eating or handling food. Get rid of flies and protect food from flies. Treat infected persons so that the infection is not passed on to others.

Amoeba

These are not worms. They are tiny animals that can only be seen with a microscope.

How they are spread. The stools of infected people contain millions of these tiny animals. When sanitation is poor, amoeba pass into drinking water or food, and other people may become infected.

Effects on health. Amoeba are a common cause of severe diarrhoea or dysentery (diarrhoea with blood), especially in people already weakened by other sickness or poor nutrition. Occasionally, amoeba can cause liver damage.

A person with amoeba may have diarrhoea that comes and goes, sometimes with constipation in between. They may feel pain and the need to pass stools, even through little or nothing comes out. In severe cases the person becomes very weak and ill.

Treatment. Medicine should be obtained from the dispensary.

Prevention. Use proper toilets and bathrooms. Wash hands after passing stools, and before eating or handling food. Protect sources of drinking water from contamination by people's and animals' stools. If you not certain about the purity of your drinking water, boil it for 5 minutes. Treat infected persons so that the infection is not passed on to others.

LESSON 15: HOW WORMS GET INTO THE HUMAN BODY

Objectives

• By the end of this lesson, the pupils should be able to describe how worms get into the human body.

Materials needed

• 1 piece of white paper
• Chalk

Time: 30 minutes

Method

1. Tell the children that worms have several ways of hiding themselves before they enter our bodies.

2. Ask them to think back to what they learned about microbes. Microbes are very small animals – so small that we cannot see them with the naked eye.

3. Carry out a practical demonstration of how microbes work. Pretend that microbes are like tiny pieces of chalk dust. Rub a piece of chalk on a piece of white paper. Show it to the children. They cannot see any chalk. Now rub your fingers across the chalk marks on the paper. Show your fingers to the class. The children were not able to see chalk on the paper, although it was there, but they can see it on your fingers. Microbes are like the chalk. They can hide from us. Microbes can be present on something and when we touch this thing they can get on to our fingers. But still we cannot see them! Then if we put our fingers in our mouths, or touch food, the microbes enter our mouths, pass through our digestive system and reach our stomach and intestines.

Discuss this with the children for a while.

4. Now ask the children to think about worms. They should remember that worms lay eggs. Remind the children that worms' eggs are so small that they cannot be seen with the naked eye.

Worms' eggs are therefore just like microbes. They hide themselves like microbes. They live in the ground and in water. They can get into our food. They can enter our digestive system when we put our fingers in our mouths or when we eat food or drink water contaminated with the eggs.

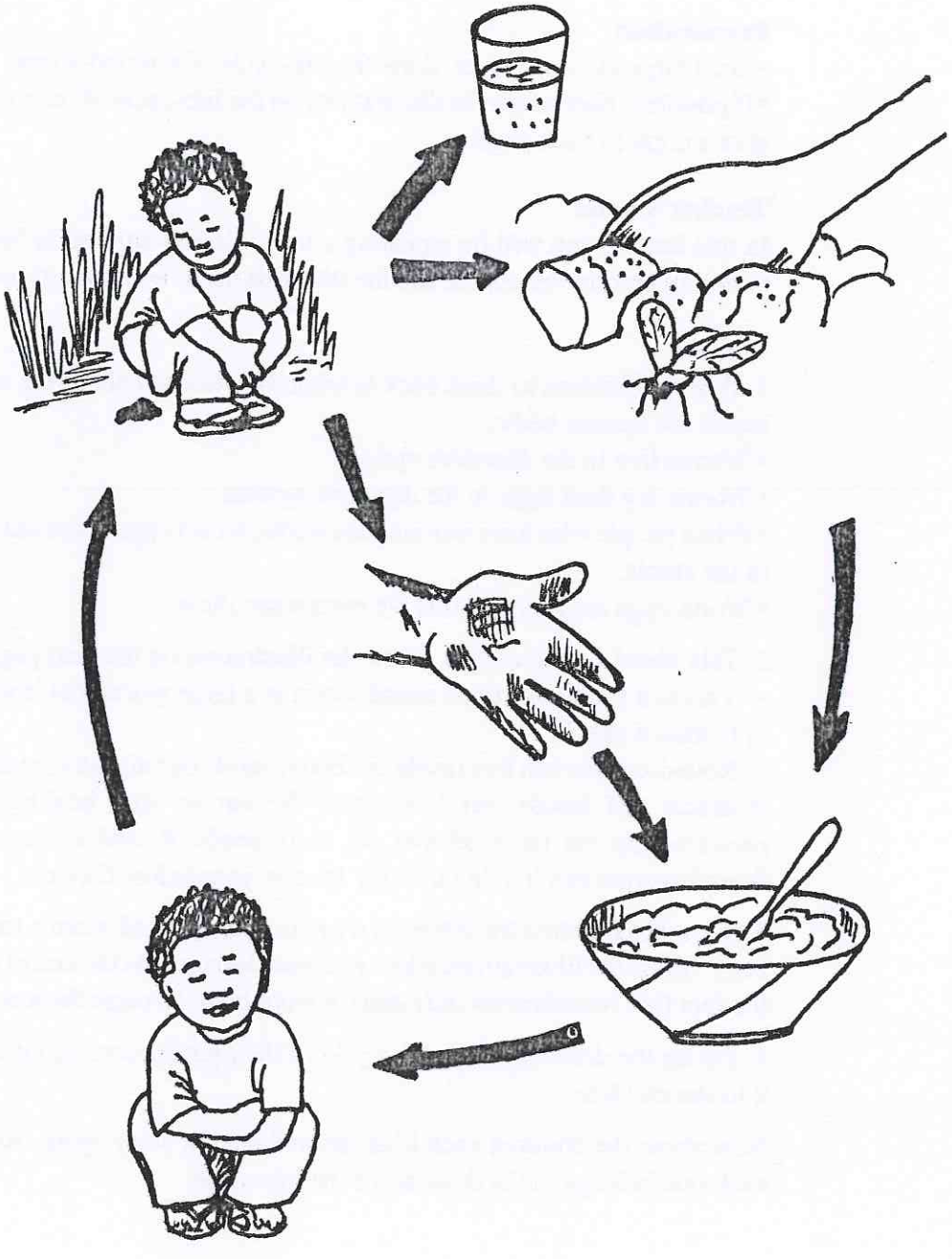
Summary

• Worms lay eggs; these eggs are so small that they cannot be seen with the naked eye

• Worm eggs can hide themselves in the ground, in water, on our fingers and in our food

• When we put our fingers in our mouth, when we eat food, or when we drink water, the worm eggs can get into our mouth, our stomach and our intestines

HOW WORMS GET INTO THE HUMAN BODY



LESSON 16: HOW ROUND-WORMS GET INTO THE HUMAN BODY

Objectives
By the end of this lesson the pupils should:
- Know the different ways in which round-worms reach the human body.
- Know that round-worms only enter the human body through the mouth.
- Be able to explain the life-cycle of a round-worm.

Time: 30 minutes

Preparation
- On a large piece of paper, draw the life-cycle of a round-worm.
- If possible, photocopy the illustrations on the life-cycle of the round-worm, and give a copy to each pupil.

Teacher's notes
In this lesson, you will be repeating a topic already studied in Year 3. To avoid boredom among the pupils, use the illustrations to revise the topic.

Method
1. Ask the children to think back to what they learned about the worms that live inside the human body:
- Worms live in the digestive system.
- Worms lay their eggs in the digestive system.
- When people who have worms pass stools, worm eggs come out of their bodies in the stools.
- Worm eggs are so small that we cannot see them.

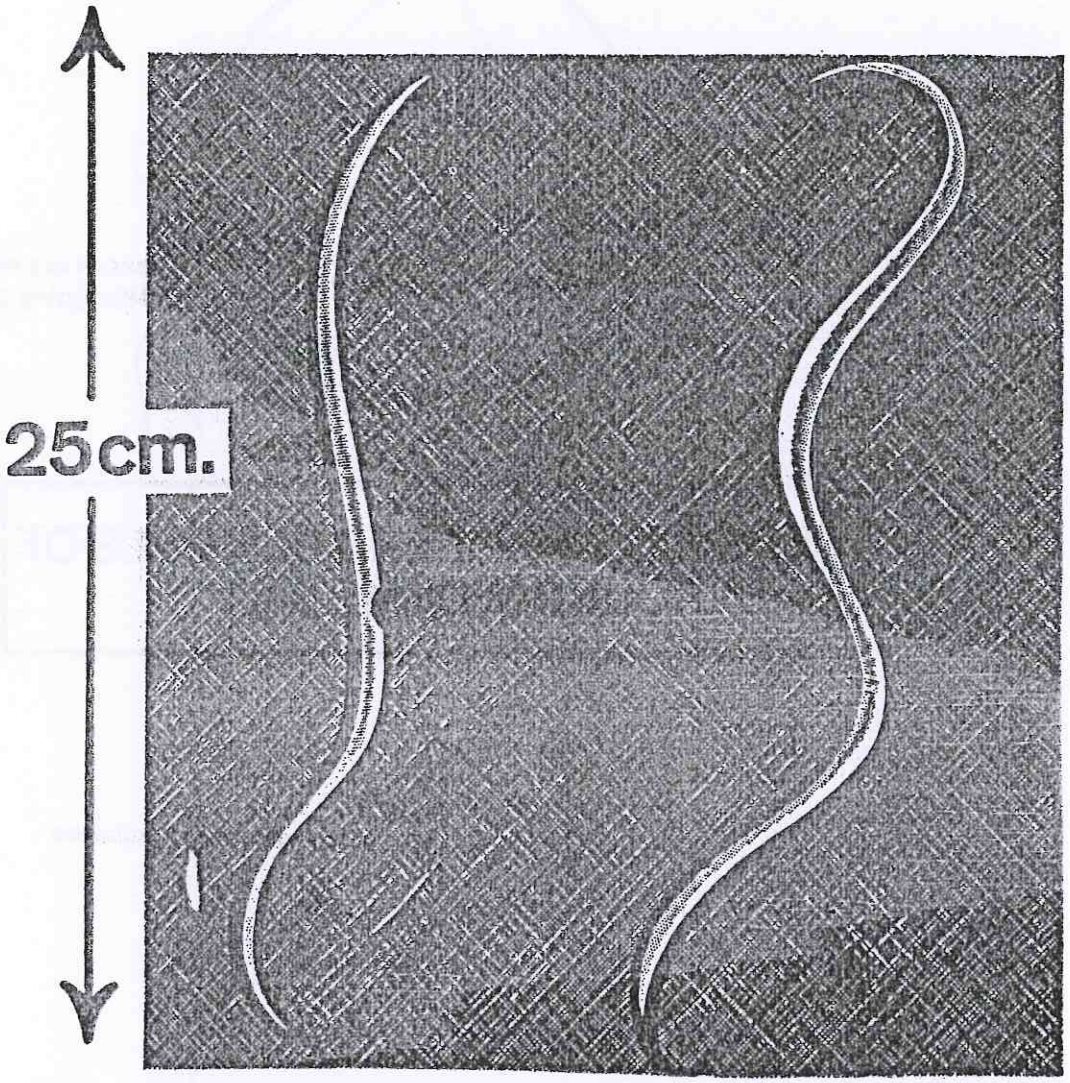
2. Talk about round-worms. Show the illustration on the next page as you say:
– 'This is a round-worm. A round-worm is a large worm that is sometimes seen in human waste.'
– 'Round-worms can live inside our body, inside our digestive system, inside our stomach and inside our intestines. We eat to stay healthy. But the bad round-worms eat the food that our body needs. Round-worms make us sick. Round-worms can live in our body for one year before they die.'

3. Show the children the different ways in which round-worms reach the human body. Show the illustrations while you read the story. At the end of the story stress the fact that *roundworms only enter human body through the mouth.*

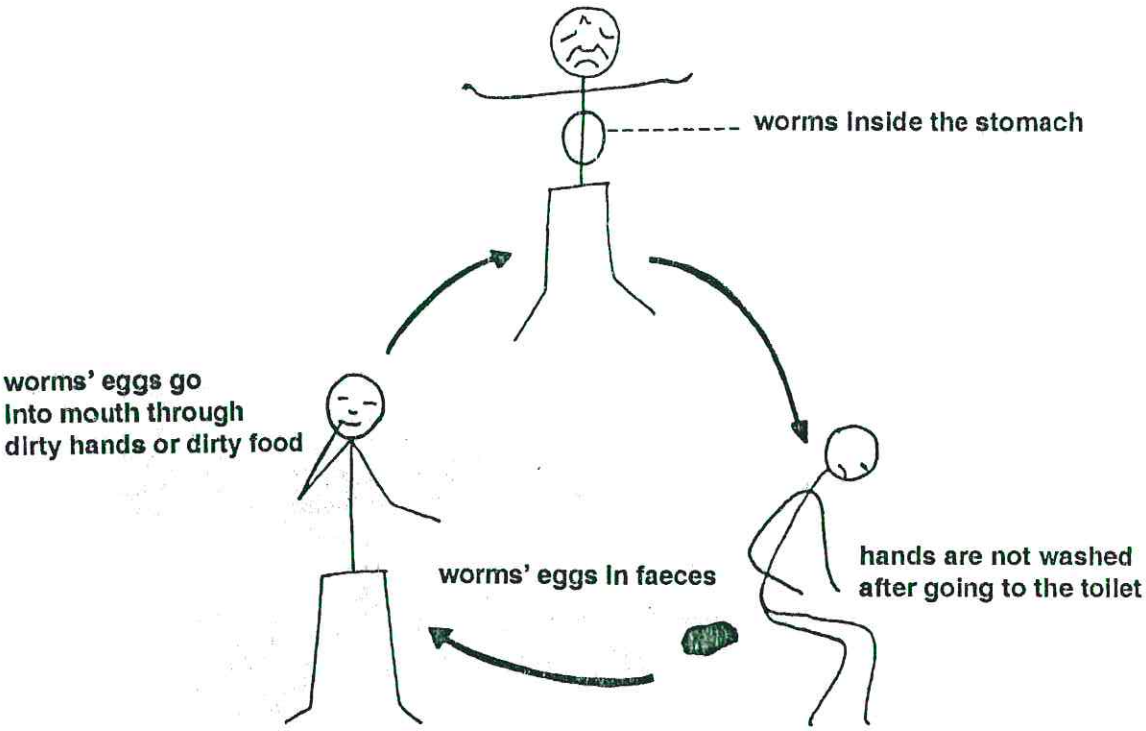
4. Put up the drawing of the life-cycle of the round-worm on the board. Explain it to the children.

Now show the children each illustration from the story again. Ask them where each one belongs in the drawing of the life-cycle.

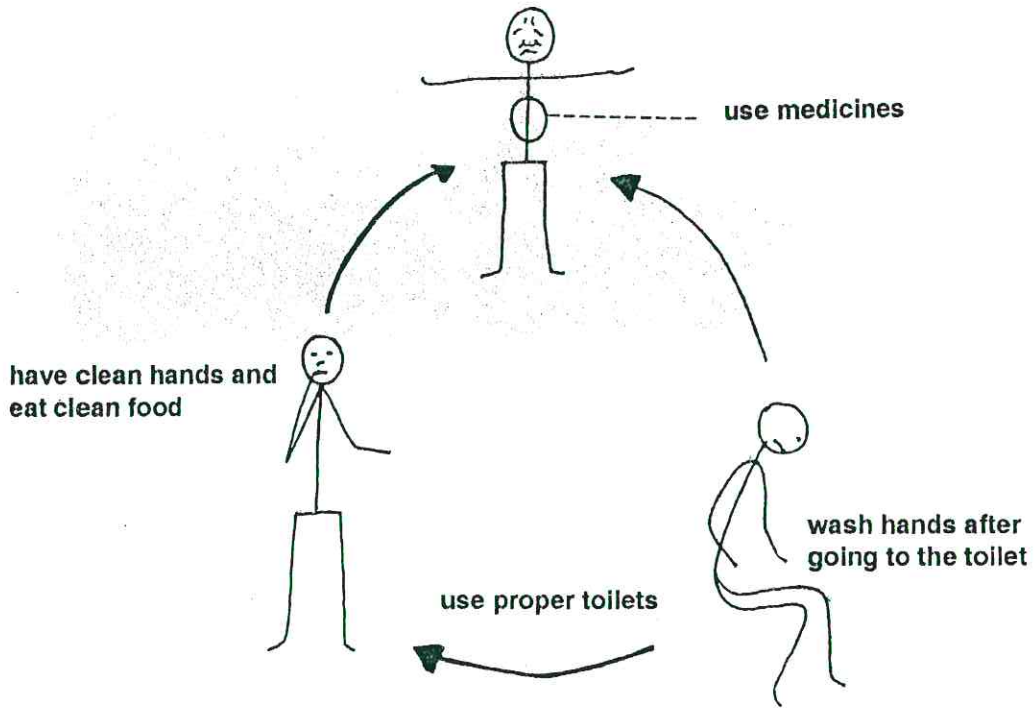
ROUND-WORMS



LIFE-CYCLE OF THE ROUND-WORM



HOW TO STOP THE LIFE-CYCLE OF A ROUND-WORM



Summary

- **Round-worms only enter the human body through the mouth**
- **The different ways that round-worms reach the human body are:**
  - **a) When we drink water containing round-worm eggs**
  - **b) When flies carry round-worm eggs from a stool and land on the food we eat**
  - **c) When we eat food containing round-worm eggs**
  - **d) When we put dirty fingers into our mouth**

A FAMILY CATCHES ROUND-WORMS

Illustration 1
This is Mark. He is sick. He feels a lot of pain in his stomach because he has round-worms.

Illustration 2
Mark goes to the toilet in the bush behind his home. Many worm eggs come out of his body in his stools. The place he has chosen is near the side of a river.

Illustration 3
The worm eggs cannot be seen. They remain in the ground and live there for a long time. When it rains, the small worm eggs are spread everywhere on the ground and many eggs are washed into the river.

Illustration 4
Mark's mother uses the river water as drinking water for her family. She gives some to Mark's little sister. There are round-worm eggs in the water but Mark's mother cannot see them. Mark's sister drinks the river water and the round-worm eggs.

Illustration 5
A few days later, the worm eggs inside Mark's sister become young worms. The baby is sick and feels pain in her stomach.

Illustration 6
Mark's sister goes to the toilet at the side of the house. Very soon, the flies arrive and walk on the baby's stools. Then they come inside the kitchen and land on the food on the table.

Illustration 7
This is an enlarged picture of a fly. Its legs are full of hair. When the fly walks on the stools, small pieces of stool stick to the fly's legs. They stick to the legs because of the hair. The pieces of stool are full of worm eggs.

Illustration 8
When flies walk on food they leave pieces of dirt that are full of worm eggs.

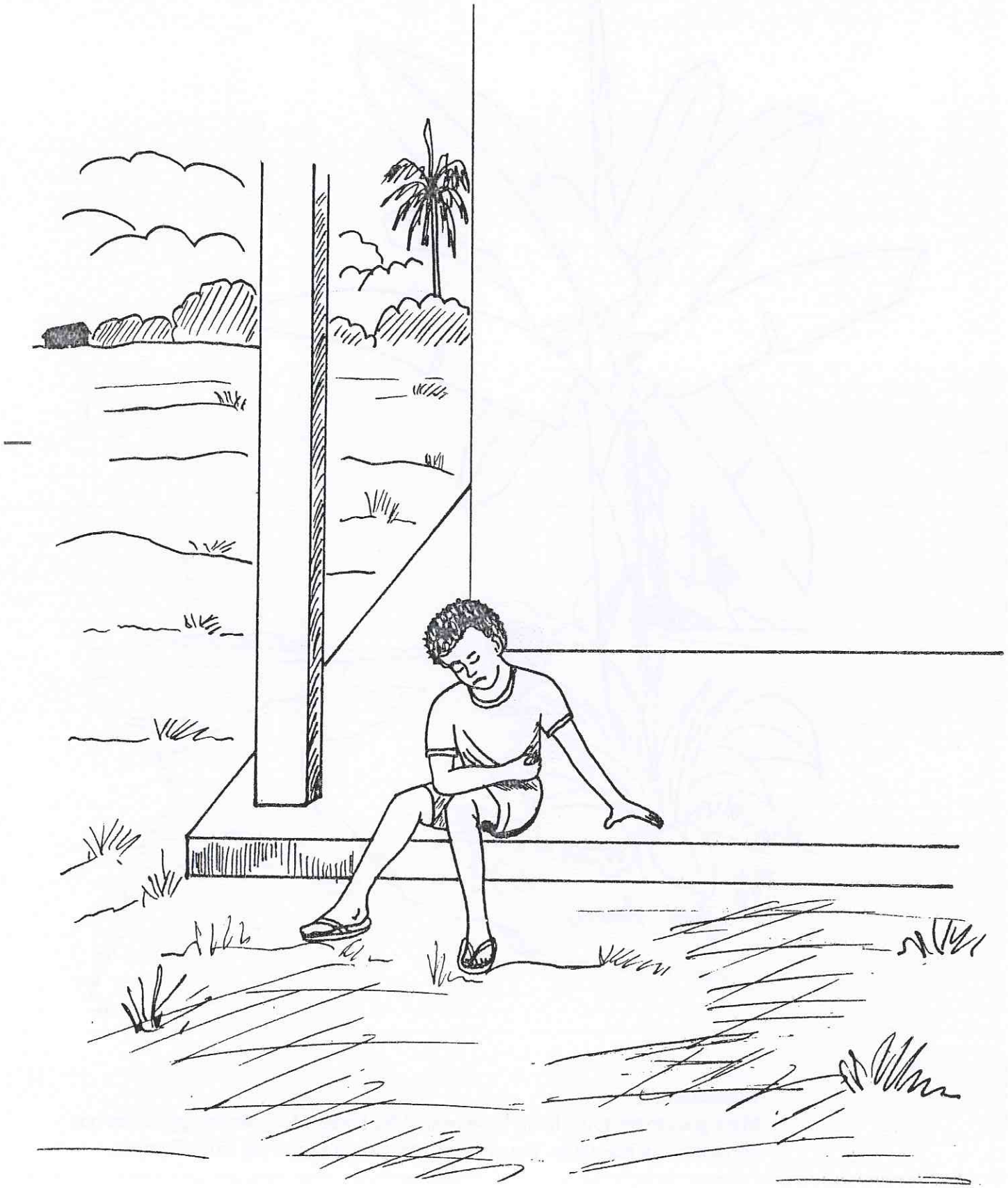
Illustration 9
Mark's father comes home from work. He is tired and he eats some food to feel strong again. He does not know that he is swallowing worm eggs with his food. He cannot see the worm eggs.

Illustration 10
A few days later Mark's father feels pain in his stomach. He works all day in the garden. He goes to the toilet in the bush. Now that he is sick with round-worms, he leaves many round-worm eggs on the ground.

Illustration 11
Nobody can see the worm eggs on the ground. When it rains they are spread everywhere. They can live for a long time. The soil in the garden is now full of roundworm eggs.

Illustration 12
Mark's big brother helps his father in the garden. When he works, his hands and fingers become covered in soil. He is hungry and eats a sandwich. He did not wash his fingers, but he puts them into his mouth while he is eating. At the same time he swallows the worm eggs that are in the soil.

Very soon the worm eggs will become young worms and Mark's big brother will be sick.



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Mark's mother uses the river water as drinking water for her family. She gives some to Mark's little sister. There are round-worm eggs in the water but Mark's mother cannot see them. Mark's sister drinks the river water and the round-worm eggs.

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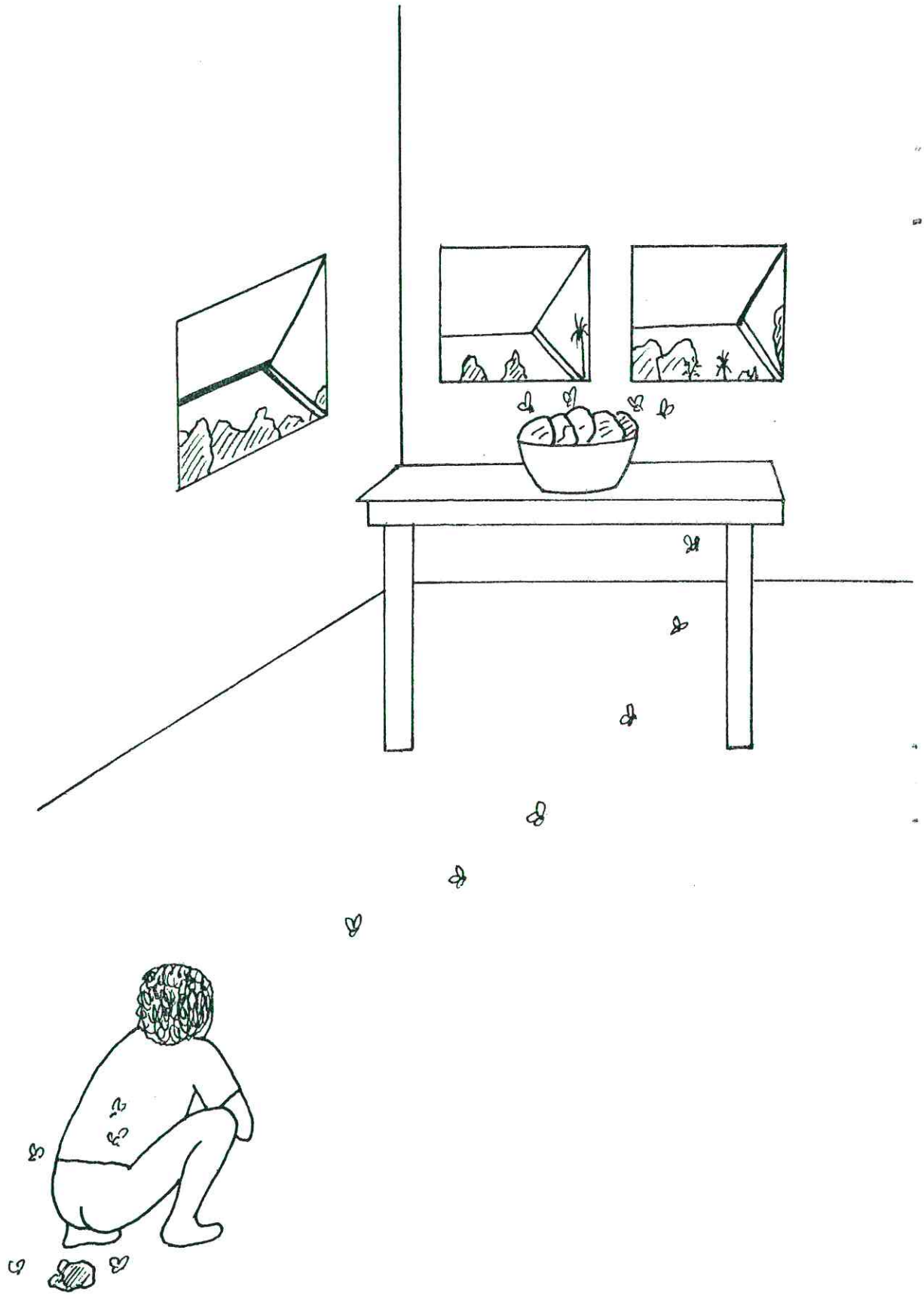
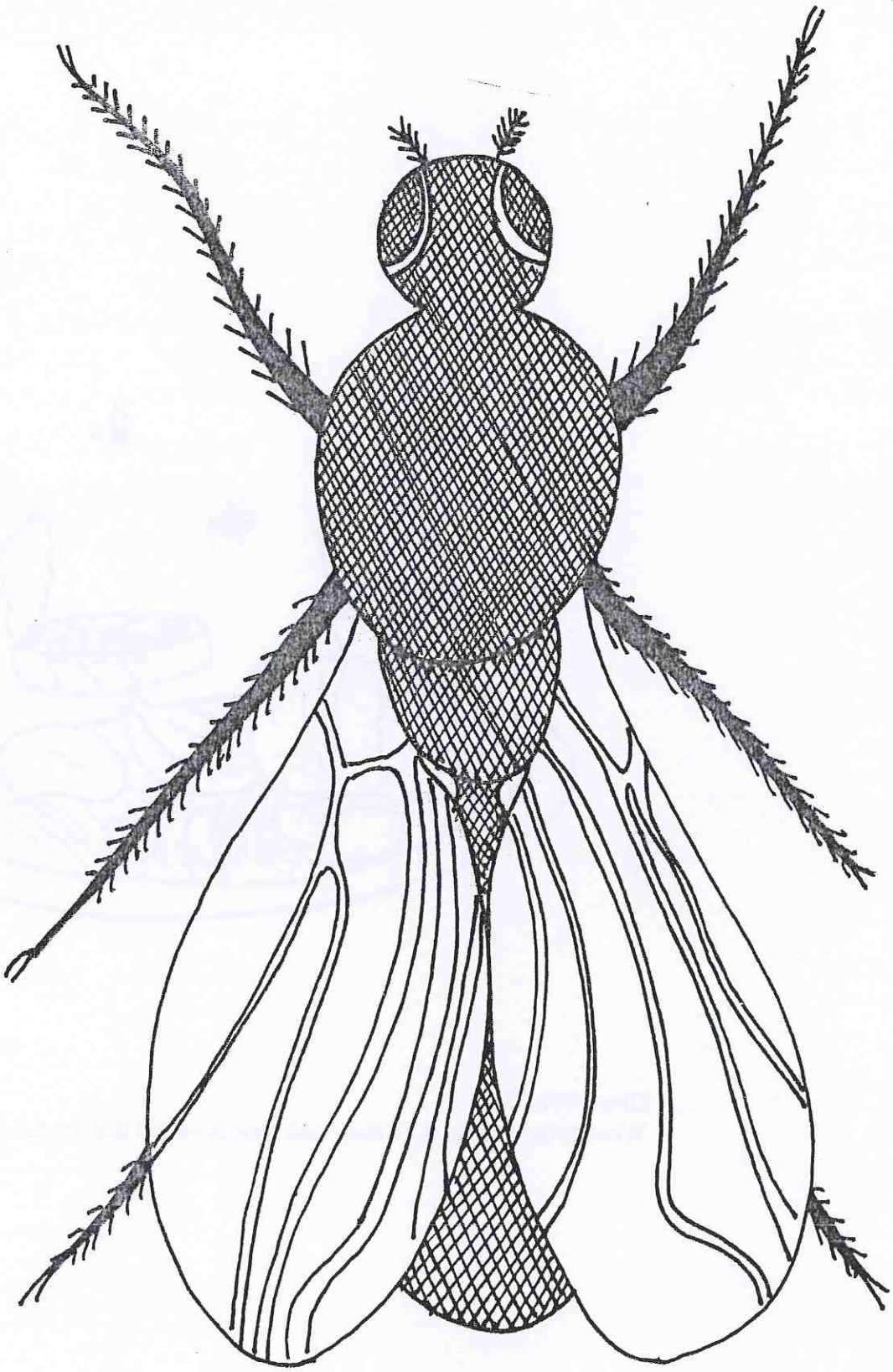


Illustration 6
Mark's sister goes to the toilet at the side of the house. Very soon, the flies arrive and walk on the baby's stools. Then they come inside the kitchen and land on the food on the table.



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This is an enlarged picture of a fly. Its legs are full of hair. When the fly walks on the stools, small pieces of stool stick to the fly's legs. They stick to the legs because of the hair. The pieces of stool are full of worm eggs.

Illustration 8
When flies walk on food they leave pieces of dirt that are full of worm eggs.

Illustration 9
Mark's father comes home from work. He is tired and he eats some food to feel strong again. He does not know that he is swallowing worm eggs with his food. He cannot see the worm eggs.

Illustration 10
A few days later Mark's father feels pain in his stomach. He works all day in the garden. He goes to the toilet in the bush. Now that he is sick with round-worms, he leaves many round-worm eggs on the ground.

Illustration 11
Nobody can see the worm eggs on the ground. When it rains they are spread everywhere. They can live for a long time. The soil in the garden is now full of roundworm eggs.

Illustration 12
Mark's big brother helps his father in the garden. When he works, his hands and fingers become covered in soil. He is hungry and eats a sandwich. He did not wash his fingers, but he puts them into his mouth while he is eating. At the same time he swallows the worm eggs that are in the soil.

Very soon the worm eggs will become young worms and Mark's big brother will be sick.

LESSON 17: HOW HOOKWORMS GET INTO THE HUMAN BODY

Objectives
By the end of this lesson, the pupils should:
- Know how hookworms get into the human body.
- Be able to explain the life-cycle of a hookworm.

Time: 30 minutes

Teacher's notes
Why has this topic been chosen? Because hookworms are *very common* in Vanuatu, and because hookworm infection can be one of the *most damaging diseases of childhood.* Children with hookworm become anaemic from the loss of blood and protein. An infection of 200 to 500 worms will consume over one cup of blood each day. Often, the worms will move through the intestinal wall, leaving bleeding wounds from which more blood is lost. One worm will feed on blood in this way for between several months and six years. Female hookworms lay 15,000 eggs a day.

Materials needed
- One large piece of paper to display on the blackboard.

Preparation
On the large piece of paper, draw the life-cycle of the hookworm *(see page 98)*.

Method
1. Explain to the class that there is another kind of worm that can live in our bodies. It is known as hookworm. Write the name on the blackboard and explain it.

A hook is piece of metal or other material bent back or having a sharp angle, for catching hold of or for hanging things on. Fish can be caught with hooks. Hookworms are so called because their mouth has strong, sharp teeth. When they live in a person's digestive system, hookworms take a bite in the intestinal wall and attach themselves there for many years.

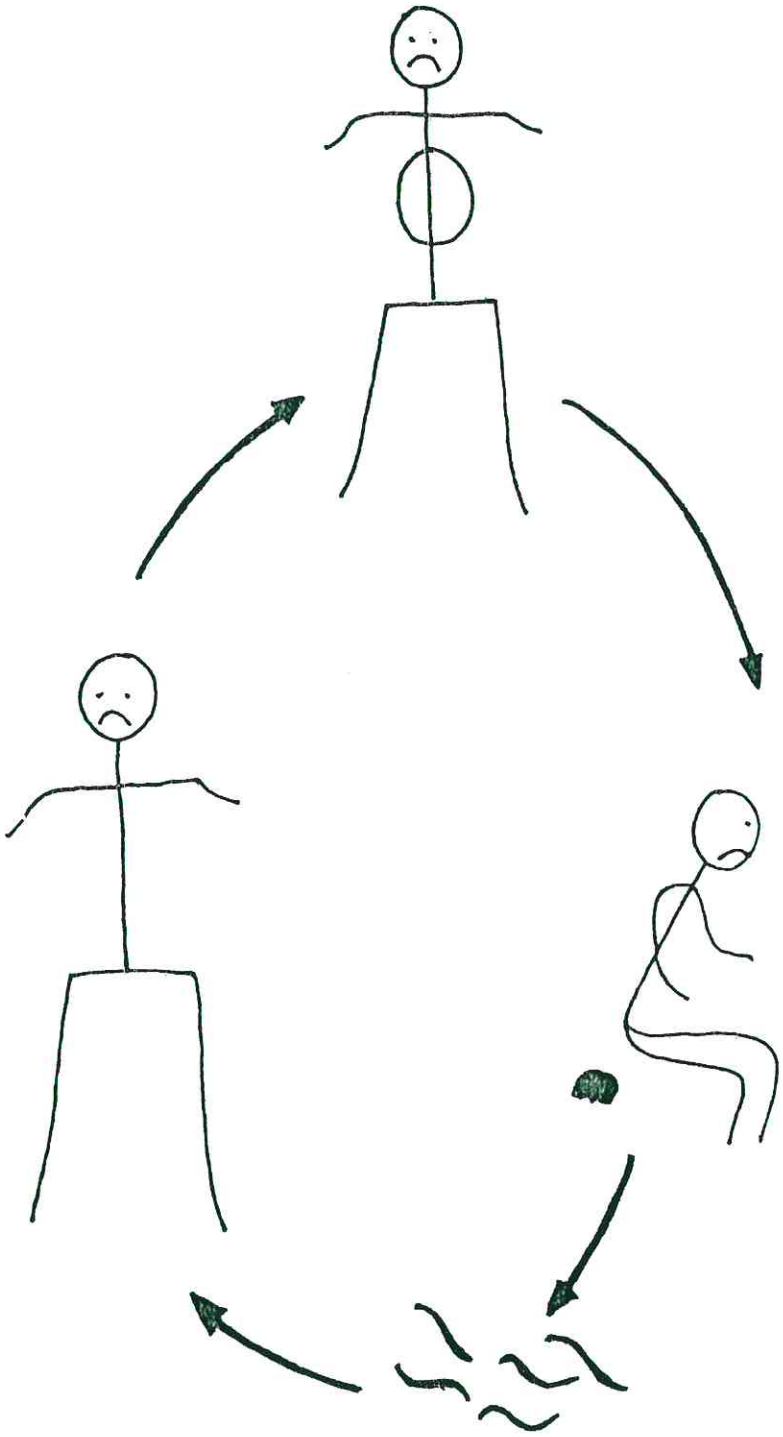
Hookworms feed on people's blood. They make people very weak, tired and sick. Hookworms do not enter the body through a person's mouth. They enter by digging through the skin of the feet.

2. Read the story on pages 100–104 below and show the pictures.

3. Explain the life-cycle of the hookworm.

Summary
- **Hookworms, with their sharp teeth, attach themselves to a person's intestines**
- **Hookworms feed on a person's blood and make them very weak and sick**
- **Hookworms get into the body by digging through the skin of the feet**

LIFE-CYCLE OF THE HOOKWORM



JAMES CATCHES HOOKWORM

Illustration 1

James lives in the same village as Mark. In this village people don't use toilets, but go to the bush. James usually walks with bare feet. He does not know that there are many hookworm eggs in the ground. After rain, the eggs become very young hookworms.

Illustration 2

The young hookworms are so small that James cannot see them while he is walking. But the young hookworms enter the skin of his feet in places where the skin is soft.

Illustration 3

Once inside the body, the small hookworms go first to James' lungs. This explains why James starts coughing. Then the hookworms travel to his intestines.

Illustration 4

Hookworms attach themselves with their sharp teeth to the intestinal wall. They can live there for years. Only worm medicines can kill them.
Hookworms live on a person's blood. They can suck one cup of blood each day.

Illustration 5

This explain why James feels very sick and tired, he feels a lot of pain in his stomach, and has diarrhoea. There are many hookworm eggs in his stools.

Illustration 1
James lives in the same village as Mark. In this village people don't use toilets, but go to the bush. James usually walks with bare feet. He does not know that there are many hookworm eggs in the ground. After rain, the eggs become very young hookworms.

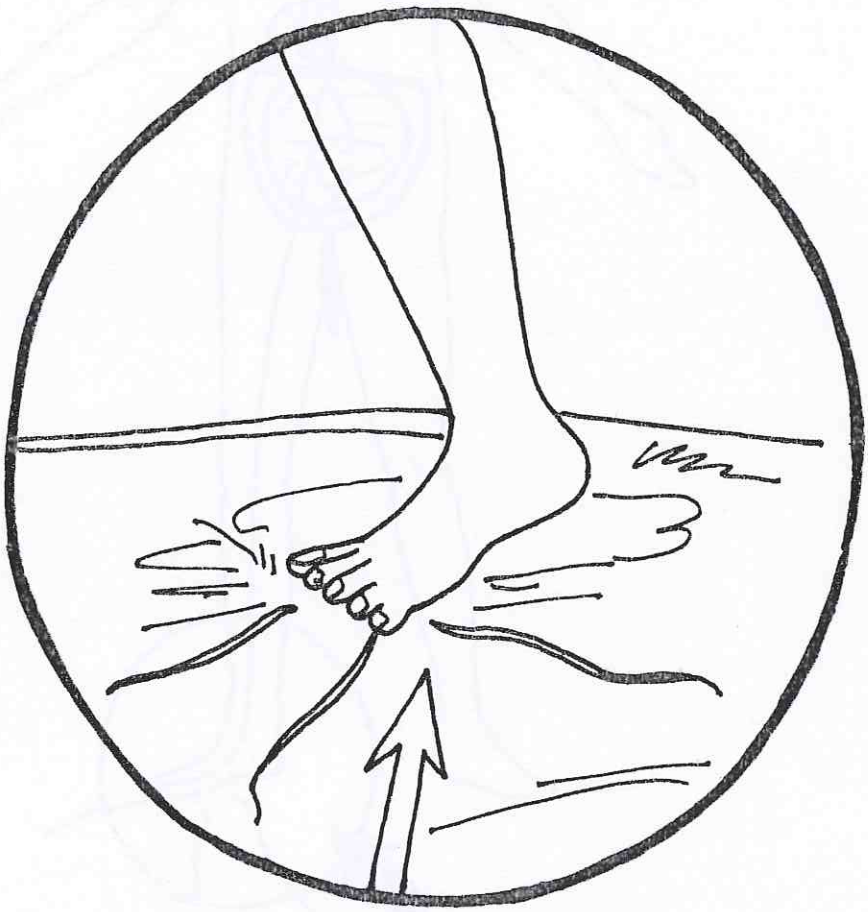


Illustration 2
The young hookworms are so small that James cannot see them while he is walking. But the young hookworms enter the skin of his feet in places where the skin is soft.

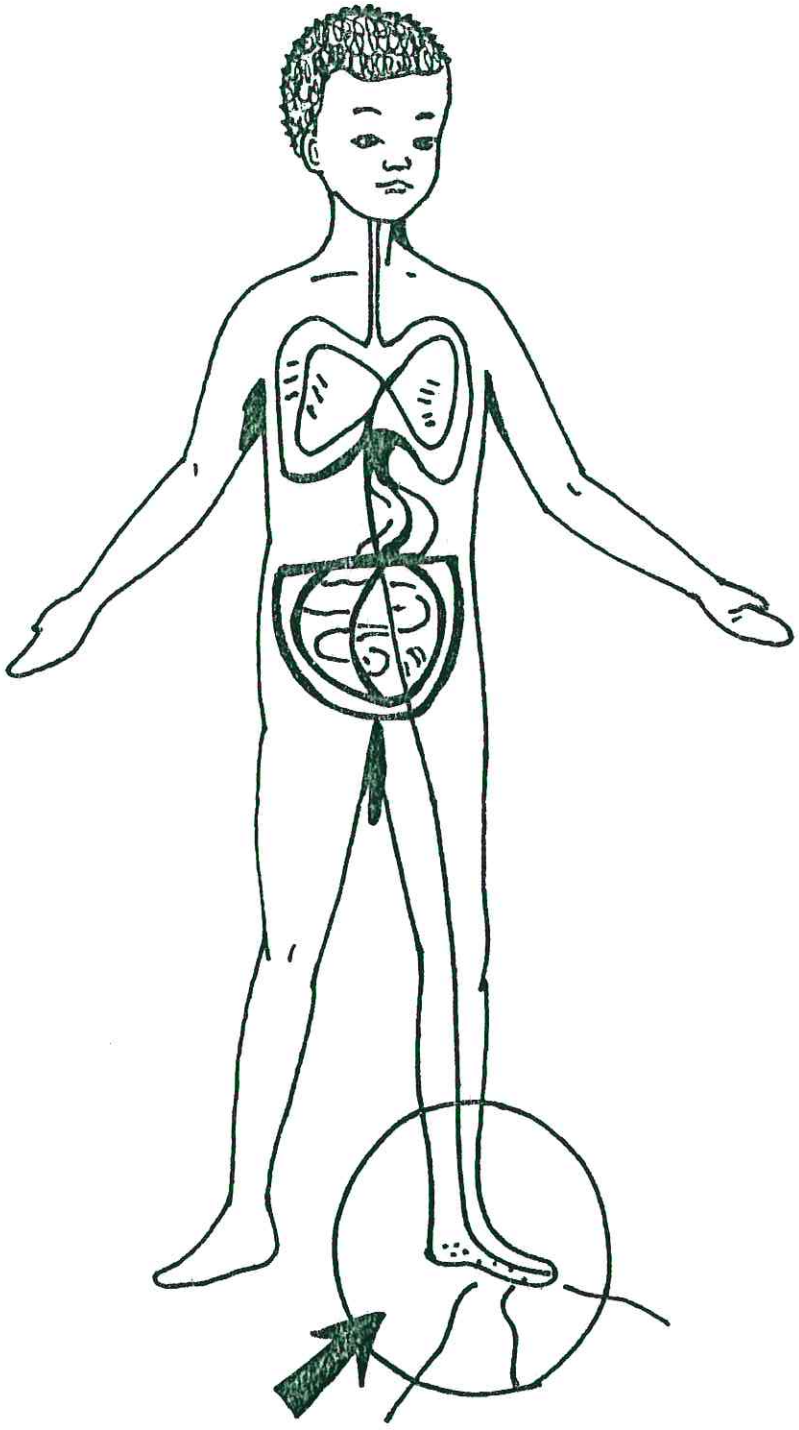
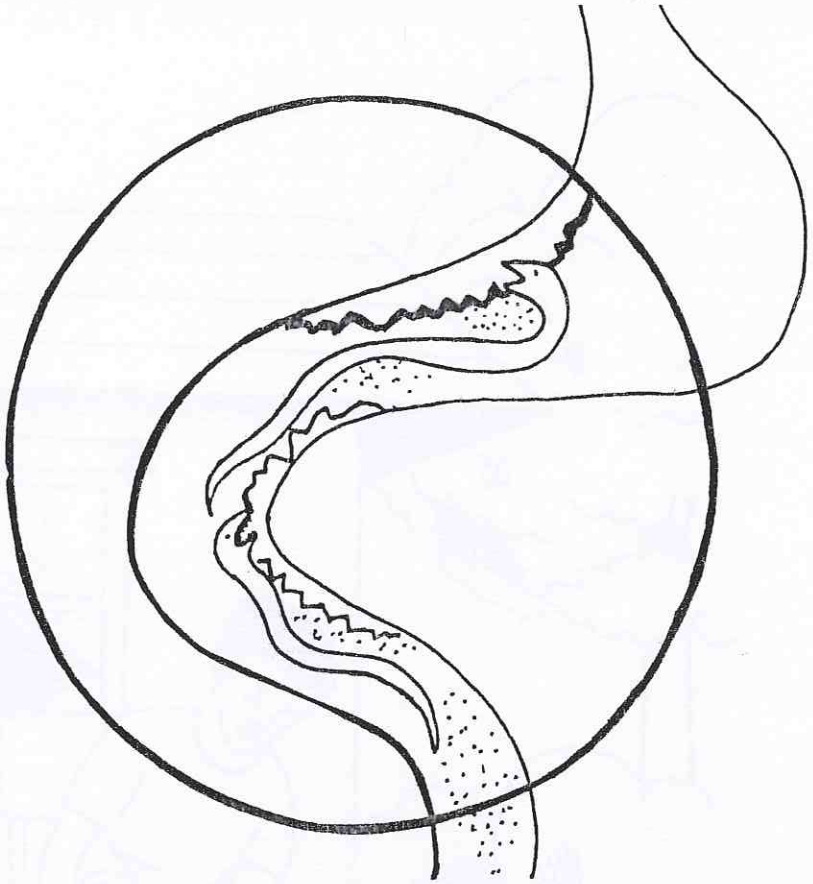


Illustration 3
Once inside the body, the small hookworms go first to James' lungs. This explains why James starts coughing. Then the hookworms travel to his intestines.

HOOKWORMS ATTACH THEMSELVES TO THE INTESTINES



THE MOUTH OF A HOOKWORM HAS VERY SHARP TEETH

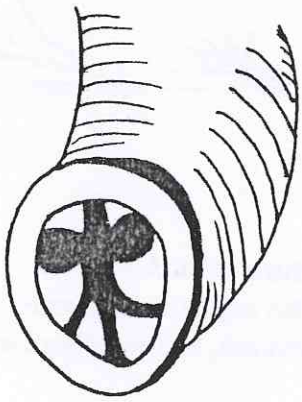


Illustration 4

Hookworms attach themselves with their sharp teeth to the intestinal wall. They can live there for years. Only worm medicines can kill them.

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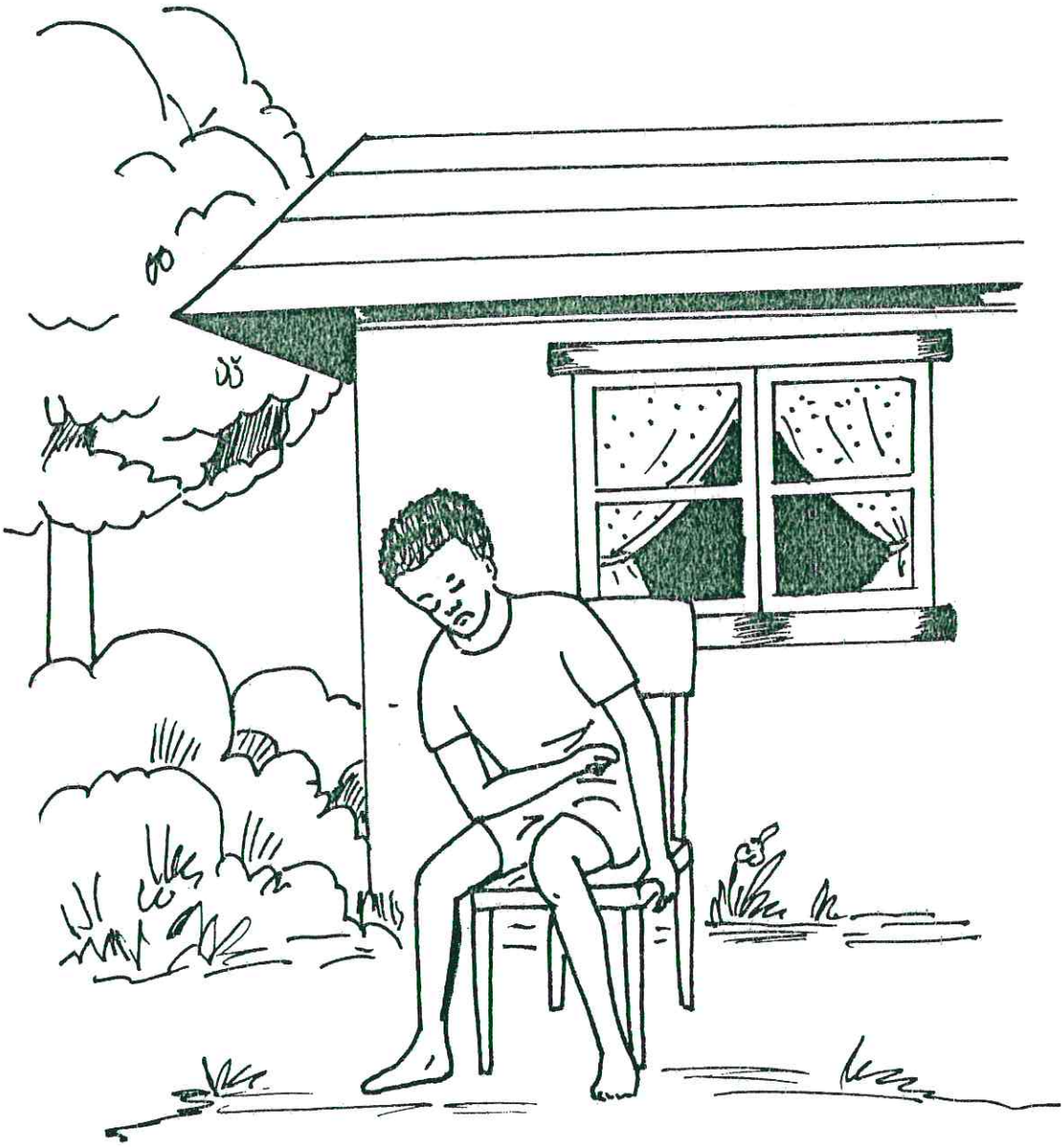


Illustration 5
This explain why James feels very sick and tired, he feels a lot of pain in his stomach, and has diarrhoea. There are many hookworm eggs in his stools.

LESSON 18: HOW FLIES SPREAD DISEASES

Objectives

By the end of this lesson, pupils should:

- Understand that flies leave their wastes anywhere.
- Want to get rid of flies.

Time

The timing of this lesson is unusual. Because it involves an experiment, you will need to have time on two consecutive days. You can integrate it into your school timetable as follows:

First lesson: 30 minutes, in the art and craft, free activities or story sessions.
Second lesson: 30 minutes on the following day, as the normal health lesson.

Materials needed

- 1 large, clear glass jar
- 1 lid for the jar containing holes (too small for flies to go in and out)
- 1 piece of white paper cut to fit on the bottom of the glass jar
- Some living flies which you or the children have caught
- Materials for washing hands

Teacher's notes

Flies look harmless to children. They cannot see the harmful germs and intestinal worm eggs that stick to the hairy legs and body of the fly. They cannot see the harmful germs that it carries in its stomach.

Flies pick up harmful germs and worm eggs from waste materials like rubbish and stools (faeces). They also like to land on cuts and sores of people and animals. In this way they spread germs and worm eggs to people and places.

The microbes and worm eggs left by flies can make us sick with:

- Typhoid fever*
- Intestinal worm diseases associated with anaemia (weak blood)
- Diarrhoea and dysentery**

**Typhoid fever* is an infection of the intestines that affects the whole body. It is spread from faeces to the mouth. It often comes as an epidemic (many people get sick at the same time). Typhoid is a very dangerous disease and people can die from it. A sick person needs to be very carefully treated, preferably in hospital.

***Dysentery*: when a person has more than three watery stools a day, he has diarrhoea. If mucus (sticky, gluey fluid) and blood can be seen in the stools, the person has dysentery, and needs medical help.

Before children learn how to get rid of flies, they need to understand how dangerous flies can be to our health. Then they will be more interested in finding out how to prevent diseases from being spread by flies.

Method

1. Discuss flies for a short time. Ask the children what they know about flies. Where do flies live? What do they eat? Do people like flies? Why or why not?

2. Tell the children that they are going to do an experiment with flies. Show them the glass jar. Put the piece of white paper into the bottom of the jar. *Make sure that the pupils see that the jar and the piece of paper are very clean.* (Do not tell them *why* you are pointing out that the jar and the paper are clean. Just let them observe this). Now put the living flies into the jar and put the lid on the jar. Do not put anything else into the jar. The lid of the jar should have some very small holes in it so that the flies can get air, but the holes should be so small that the flies cannot get out of the jar.

3. Let all the children look at the jar of flies. Tell them that they are going to leave the flies in the jar for a while and see what the flies will do. Ask the children to say what they think the flies will do. Will they fly around? Will they sit on the bottom of the jar? The children may have many suggestions, but probably they will not talk about the flies producing waste. *Do not tell them anything about the flies producing waste.* Wait and let the children make this discovery themselves.

4. Let the jar of flies sit for a few hours or overnight. Do not give the flies any food or water.

5. Let all the children look at the jar of flies again. Does it look the same as it did when the flies were put into it, or does it look different? Tell the children to look at the piece of white paper that is on the bottom of the jar. Does it have little black spots on it? Tell the children to hold the jar up to the light and look at the glass sides of the jar. If they look carefully at the sides of the jar, can they see black spots? Kill the flies that are in the jar and then take out the piece of white paper so that the children can see the black spots very clearly. Ask the children: What does this mean? (Be sure the children wash their hands after handling the dirty paper or touching the inside of the jar.)

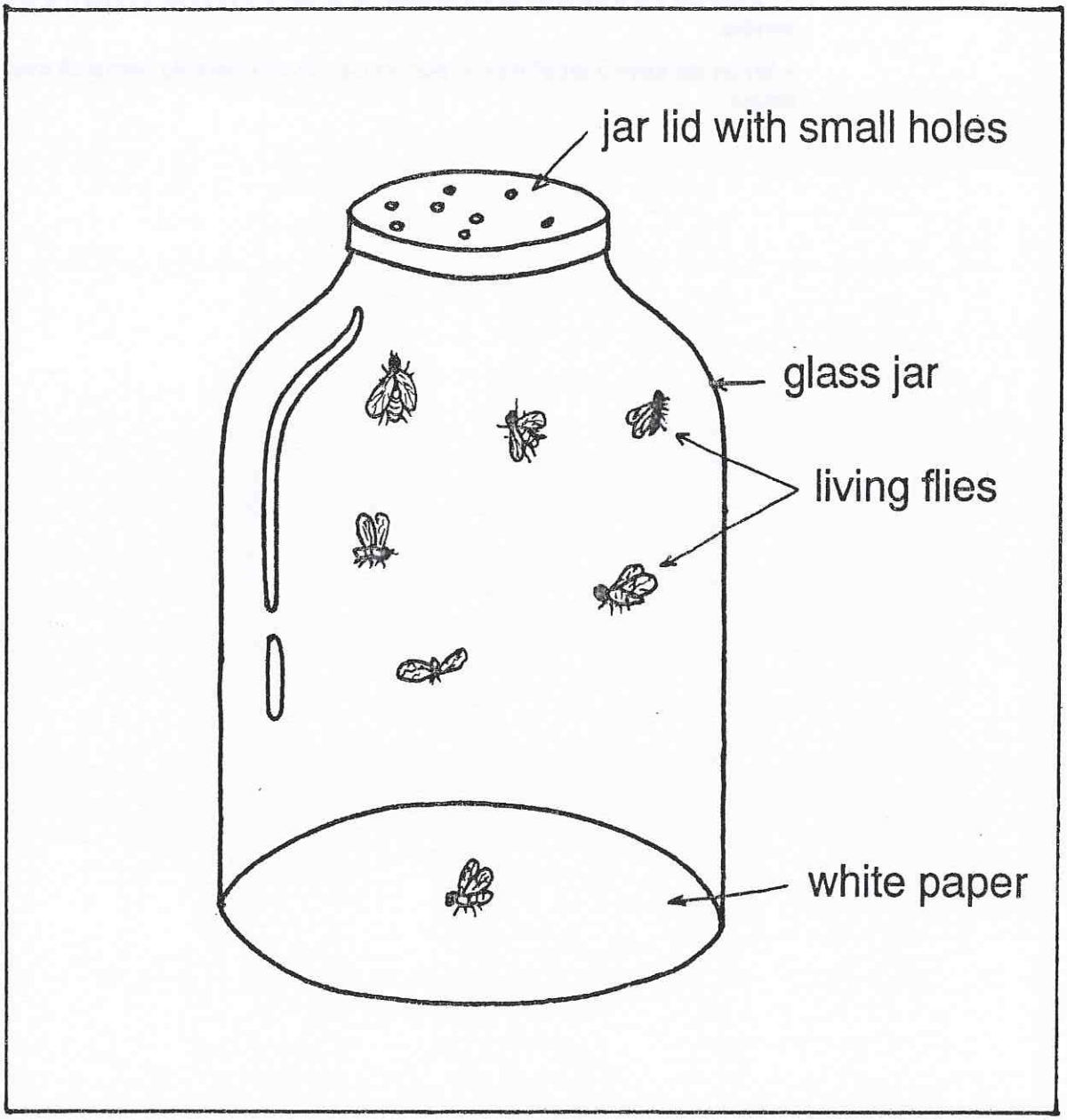
6. Discuss the experiment. Remind the children that when the flies were put into the jar, the jar and the piece of paper were very clean. Now the jar and the piece of white paper have black spots on them. Where did the black spots come from? Discuss this until the children begin to tell you that the black spots must have been made by the flies.

7. Now ask the children to think about what the black spots made by the flies are. Discuss this until the children decide that the spots must be wastes left by the flies. What kinds of wastes are these? They are the flies' stools (faeces), and material from the mouths of the flies, and material that was stuck to the legs of the flies.

8. Discuss the wastes from the flies with the children. They have discovered that the flies have left their wastes all over the jar. Flies do not have a special place for leaving their wastes. They just leave them anywhere.

9. Ask the children to think about the places where they have seen flies. Do they see flies on the food people eat? Do they see flies in people's homes? Ask them what this means. Help them to decide that when flies are in people's homes and on people's food, the flies will leave their wastes in the homes and on the food. If we eat food that has had flies on it, we will also be eating the flies' wastes. If we have a lot of flies in our house, we will have fly waste all over our house. That is one reason why it is good to get rid of flies.

AN EXPERIMENT WITH FLIES



Summary

- **Flies do not have a special place for leaving their wastes; they just leave them anywhere**
- **When we eat food that has had flies on it, we will also be eating the flies' wastes**
- **When we have a lot of flies in our house, we will have fly waste all over the house**

LESSON 19: HOW FLIES GROW AND REPRODUCE

Objectives

- To let children find out where flies live, how they are born and how they grow.
- To improve the pupils' understanding of what must be done to get rid of flies.

Time

The timing of this lesson cannot be given exactly, because the experiment requires a few minutes of observation every day for a week. This lesson will have to be integrated in other sessions, such as first thing in the morning, in the art and craft lesson, during free activities, in story-telling or in singing. The usual time of 30 minutes will be used to cover the conclusions of this lesson.

Teacher's notes

This lesson is important because:

- The children carry out an experiment by themselves.
- The lesson is a necessary step in helping the children to adopt *effective* measures for getting rid of flies.

In the last lesson the pupils investigated some of the ways that flies spread diseases. They learned that flies leave their wastes anywhere.

In this activity, the children will investigate where flies live, and how they are born and grow. They will learn what flies need in order to live and grow. When this is understood, they will be better able to understand what must be done to get rid of flies.

Materials needed

- 1 large, clear glass jar
- 1 jar lid with holes (too small for flies to get out)
- Some pieces of soft, mashed, ripe breadfruit or other soft starchy food
- Some sugar
- Some living flies which you or the children have caught
- Materials for washing hands

(It is a good idea to start this activity at the begining of the week so that the children can observe the life-cycle of the fly for five days in a row.)

Method

1. Discuss the previous activity on flies. Ask the children to think about what they found out about flies and their wastes. Help them to remember that flies can make people sick when they leave their wastes on people's food and in their houses. This spreads disease germs.

2. Tell the children that they are going to find out some of the ways in which we get rid of flies. But before we can learn how to get rid of an animal like the fly, we need to know what flies require in order to live and grow. When we know this, we can get rid of the things that flies need, and then they cannot live and grow any more. This is the easiest and best way to get rid of flies. It is much better than continuing to kill them every time we see them.

3. Put the soft, mashed-up starchy food, mixed with some sugar, in the glass jar. Tell the children that the flies are going to live in the jar. They cannot get out of the jar. The jar will now be the flies' home. Every day the children can look at the jar and see what the flies are doing in their new home. Put the jar containing the flies in a place where it is not too hot or in the direct sunshine. After a few days the jar will begin to have a strong smell, so you may not want to keep it in the classroom.

Make sure that children who handle the jar of flies wash their hands. Do this every time any pupil handles the jar of flies during this activity. Help them to understand why it is good to wash their hands after touching the jar of flies. It prevents the spread of diseases that the flies carry.

4. Ask the children to tell you what they think the flies will do in their new home. Will they eat the food? What else might they do? *Do not tell the children that the flies will lay eggs and have babies.* If the children do not mention this, just wait and let them discover it for themselves.

5. Put the jar in a safe place, where the smell that will probably develop does not bother anyone. Ask the children to look at the jar every day. What are the flies doing?

6. Soon the female flies will lay eggs in the food. In one day, the tiny white fly eggs will turn into larvae. These are often called maggots. Help the children to see the larvae. Do not tell the children what they are. Instead, ask the children:
– 'What are these?'
– 'How did they get into the jar?'
– 'What does this mean?'

7. Help the children to discover for themselves that the larvae have hatched out of the eggs that the flies laid. Ask them:
– 'What is going to happen next?'
Do not tell the children what is going to happen next. Let them discover it for themselves.

8. Let the children observe the growing larvae each day. Ask the pupils:
– 'What are these larvae doing?'
– 'How are these larvae growing?'
– 'What do they eat?'

9. On Friday, give the children a homework assignment for the weekend. Tell them to look around their homes and villages for larvae like the larvae they have seen growing in the jar. They should see who can find the greatest number of places around their homes and village where there are larvae like the larvae in the jar.

10. After the weekend, discuss the homework assignment with the children. Do this before they look at the jar. Ask the pupils:
– 'Where did you see larvae like those in the jar?'
– 'What kinds of places do larvae like to live in?'

Discuss all the places where the children found larvae. Ask them:
– 'Did you touch the place where the larvae are found?'
– 'Did you wash your hands afterwards?'

11. Now let all the children look inside the jar. What has happened to the larvae over the weekend? The larvae will probably have become darker in colour. They will have changed into pupae. Ask all the children to think about what is happening in the jar. Ask them:
– 'What has happened to the larvae?'
– 'Why are they not moving any more?'
– 'Are they dead?'
– 'What will happen next?'
Do not tell the children what will happen next. Let them discover it for themselves.

12. It will take about six days for the pupae to break open and the new flies to come out. Let the children look at the jar each day until this happens. Do not tell them what is going to happen. Let them guess, and let them discover the new flies for themselves.

13. When the new flies come out, discuss this with the children. Ask them:
– 'Where did these new flies come from?'
– 'How did they grow?'
– 'What did they eat?'
– 'Will these new flies have babies too?'

14. Discuss the results of the experiment with the children. What have they learned about how flies live and grow? What have they learned about how flies have babies? What have they learned about what flies eat?

15. Tell the children that you want to get rid of the jar of flies now that the experiment is over. Ask the children:
– 'What would be a good way to get rid of the jar?'

16. Help the children to think of a good way to get rid of the jar of flies safely so that they cannot spread any disease around the school. Burning the contents would be a good way. Burying would be another good way. Pouring water into the jar through the covering may be the fastest way.

Summary

- **Flies live in dirty places where there is waste and faeces (from people and animals)**
- **Flies also like to sit on the sores found on people and animals**
- **Female flies lay eggs. From the eggs come white larvae, which then turn brown; one week later, the larvae break open and the new flies come out**
- **The best way to get rid of flies is to prevent them from laying eggs and to prevent their larvae from living in waste materials**

LESSON 20: HOW TO GET RID OF FLIES

Objectives
By the end of this lesson pupils should:
• Understand the life-cycle of flies, so as to be able to get rid of them.
• Be given the chance to clean up those parts of the school compound where flies like to live.

Time: 30 minutes
Also, parts of the lesson can be integrated into other lessons such as art and craft or free activities.

Teacher's notes
If you do not have the equipment to photocopy the worksheets, you can still do the other parts of this activity.

Materials needed
• Copies of the set of large pictures showing the life-cycle of the fly *(pages 114-17)*
• A set of small pictures showing the life-cycle of the fly, if possible one for each pupil (can be photocopied) *(page 118)*
• Scissors
• Glue
• A space on the classroom wall where the large pictures of the flies can be hung in a circle to show the life-cycle of the fly, as shown on page 119

Method
1. Ask the pupils to think about what they saw happening in the jar of flies. First, there were some flies in the jar. Hold up the large picture of the fly for the children to see. Tell them that this is an enlarged picture to show one of the flies that was put into the jar. Hang this picture up on the wall. Put the rest of the pictures in a circle showing the life-cycle of the fly. Discuss each stage of the life-cycle as you hang up each picture.

2. Ask the children what would have happened if you had not got rid of the jar of flies. Help them to understand that the new flies would have had babies too. Show them the picture of the two flies. Tell them that these are a male and a female fly. Soon these flies will have babies. The mother fly will lay eggs and there will be more flies. Hang up the picture of the two flies near the top of the circle of pictures, next to the picture of the single fly.

3. Give each pupil a small set of pictures showing the life-cycle of the fly. Give everyone a piece of blank paper, some scissors and glue. Tell them to cut out the pictures along the lines drawn on the paper. Then they are to arrange the pictures in the correct order in a circle on their paper, using what they remember about the jar of flies and the pictures you have on the wall as a guide. Check to see if each pupil has the pictures in the correct order. If they are correct, the children should glue them on to the blank piece of paper.

4. After all the children have finished, ask them to look at their pictures and think about them. Ask them:

- 'Where does the mother fly lay her eggs?'
- 'Where do the fly larvae live?'
- 'What do the fly larvae eat?'
- 'If we wanted to grow a lot of flies, what would we need to do?'
- 'If we wanted to stop flies from growing, what would we need to do?'

5. Discuss the activity with the children. What have they discovered about flies? Remind them of the homework assignment they did. They found places where fly larvae grow around their homes and village. Where were those places? What did the fly larvae eat in these places? If we wanted to get rid of the flies around our homes and village, how could we do it ? *(Get rid of flies laying their eggs. Get rid of the food the fly larvae eat while they are growing.)*

If we get rid of things flies use for living and growing, then the flies will have to go away. If we get rid of the things the fly larvae use for food, the fly larvae will die. The larvae will not be able to grow into new flies. Then we will not have so many flies around our homes and in our villages. We will not have to spend time killing flies or waving them away from our food.

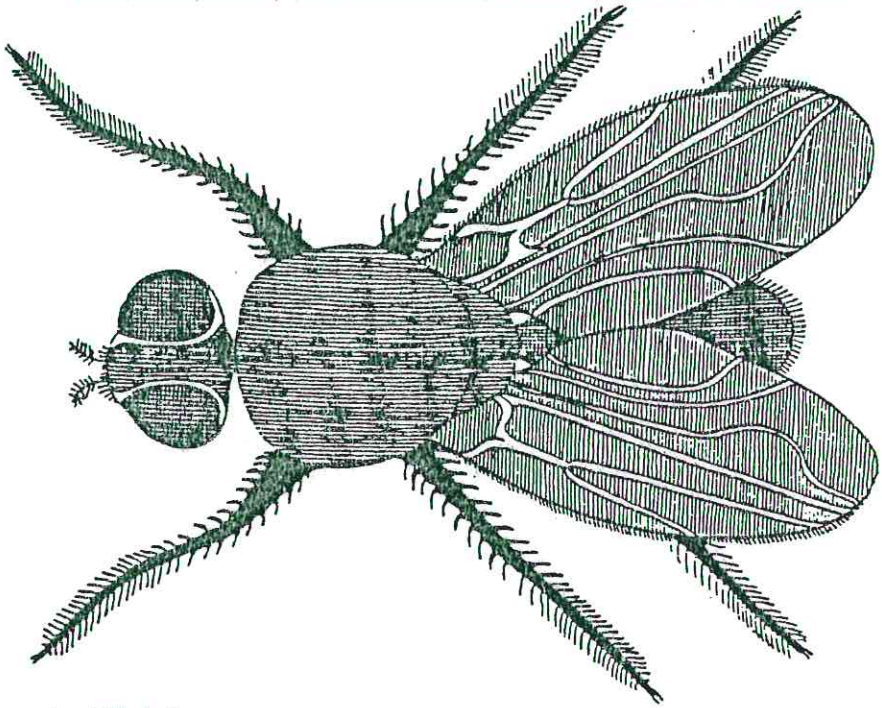
We will not be able to get rid of all the flies because there will always be some places where a few flies can grow. But we will be able to get rid of a lot of the flies. Then there will be less sickness spread by flies.

6. Ask the children to think of places where flies might lay their eggs around the school. Take the children on a walk around the school to look for fly larvae growing, and places where flies might like to lay eggs. After finding places like this around the school, ask the children to clean them up. (Burn or bury rubbish.) Help them to understand that this will help prevent the spread of sickness around the school.

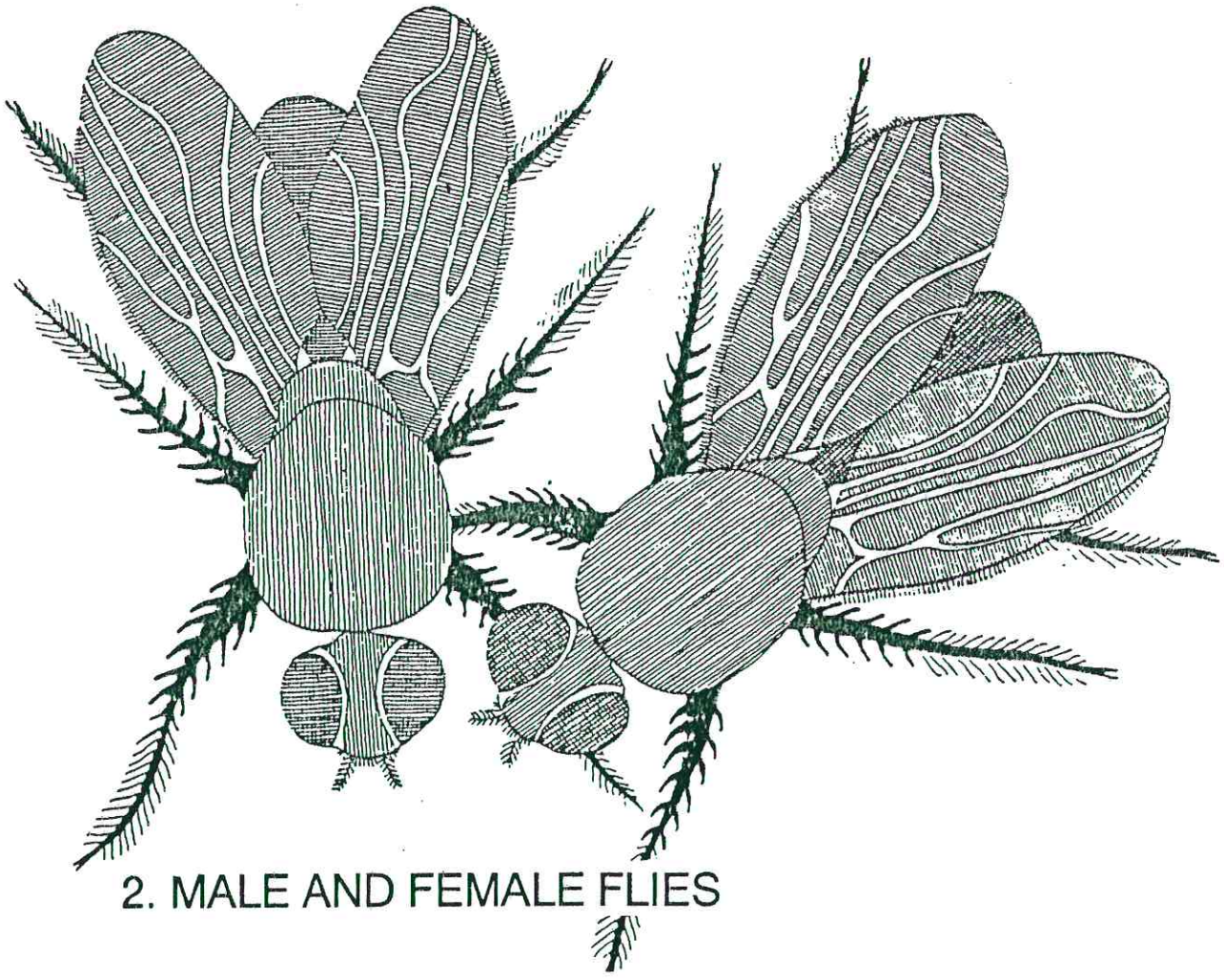
Summary

- **The best way to get rid of flies is to prevent flies from laying eggs and to prevent larvae from living in waste materials**
- **The best way to get rid of flies is to *burn* or *bury* waste materials, and to build and *use* good toilets**

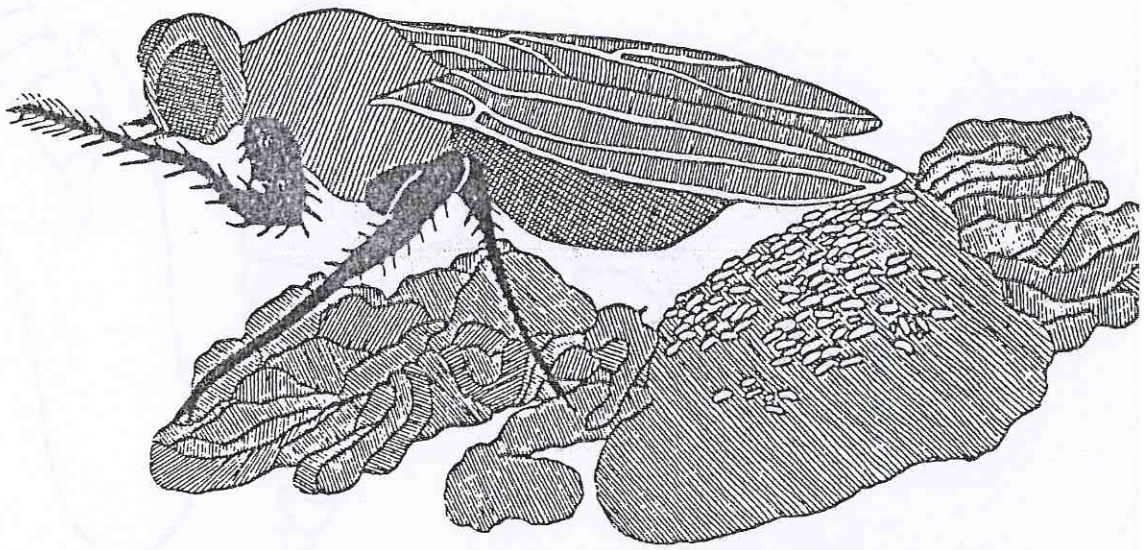
LIFE-CYCLE OF THE FLY: ENLARGED PICTURES



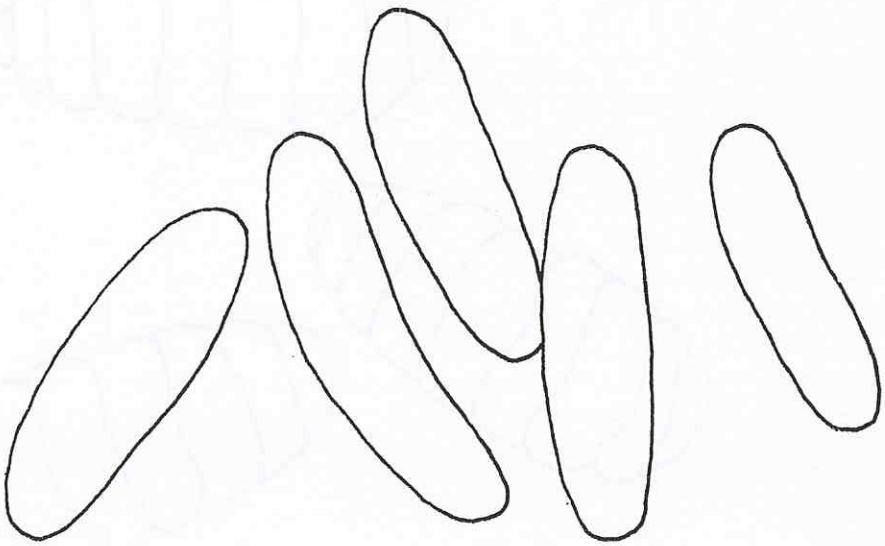
1. FLY



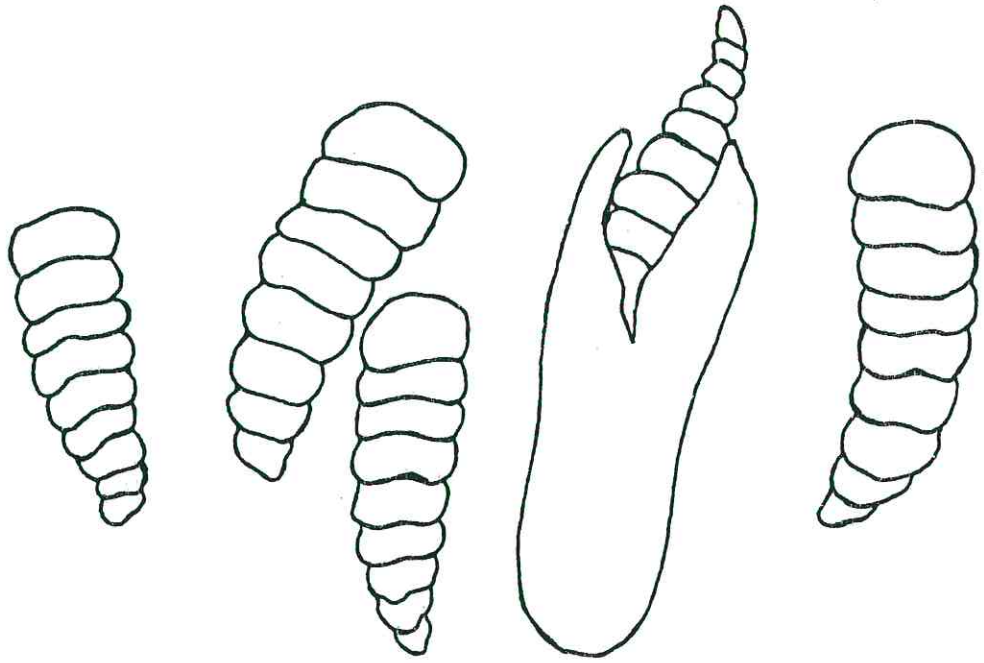
2. MALE AND FEMALE FLIES



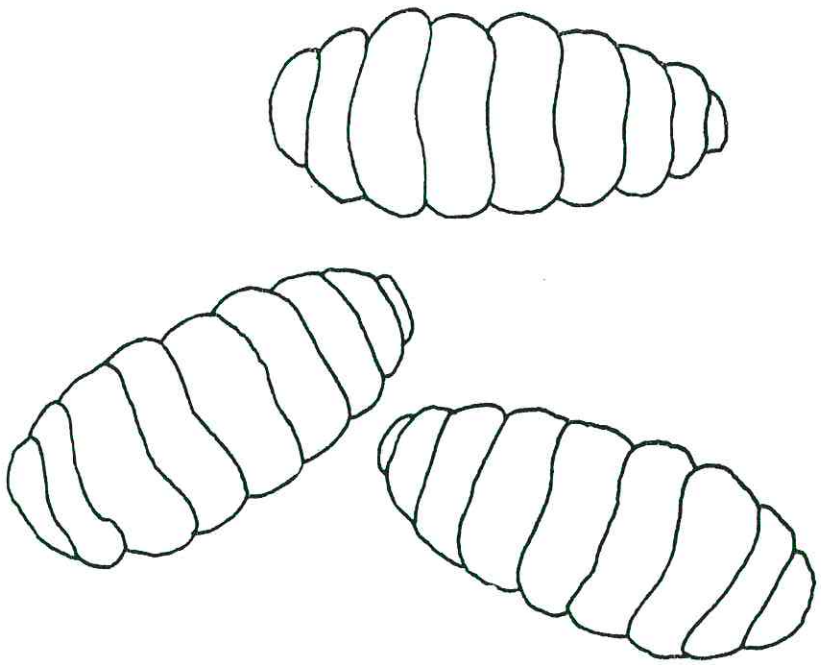
3. FEMALE FLY LAYING EGGS IN FOOD



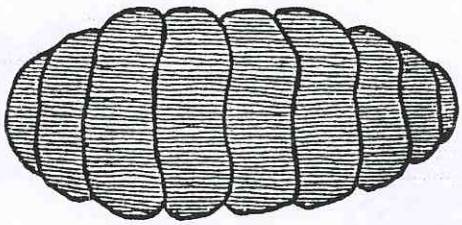
4. FLY EGGS



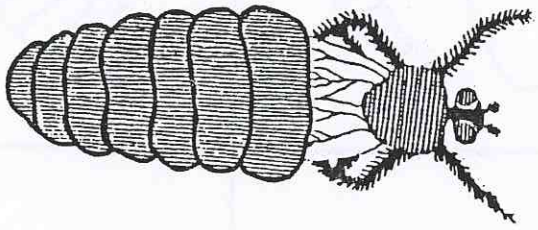
5. FLY LARVAE COMING OUT OF EGGS



6. FLY LARVAE GROWING

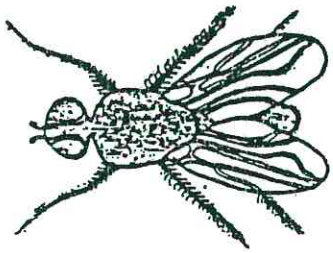


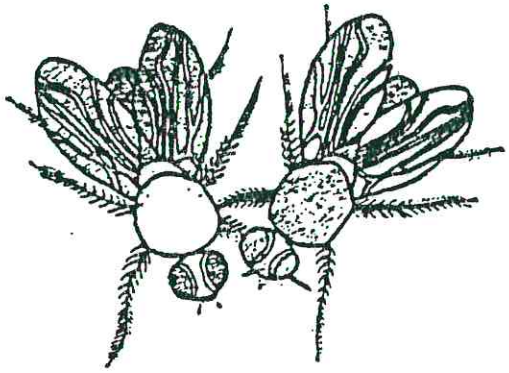
7. FLY PUPA

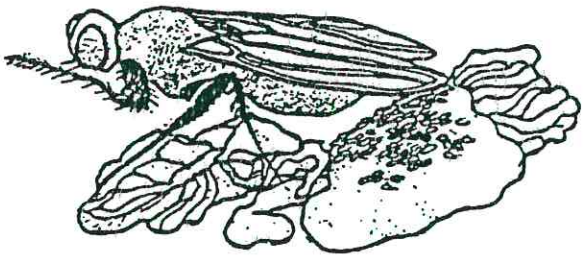


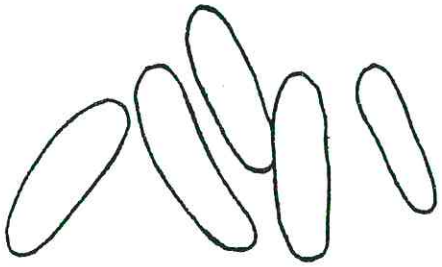
8. NEW FLY COMING OUT OF PUPA

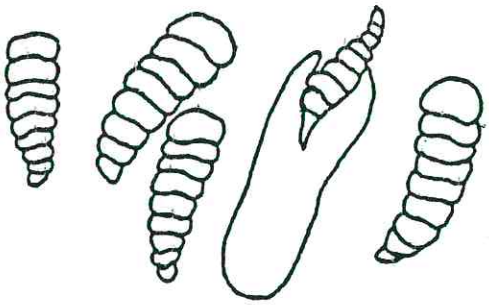
LIFE-CYCLE OF THE FLY: SET OF PICTURES FOR EACH PUPIL

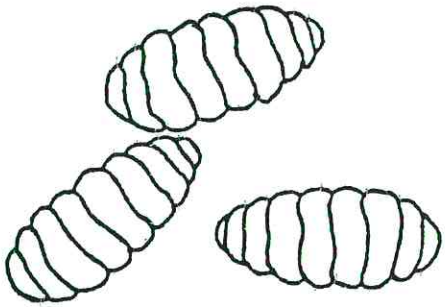


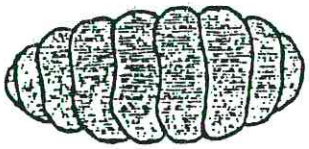


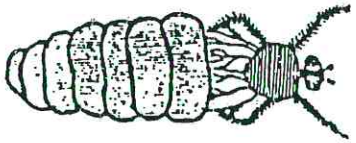




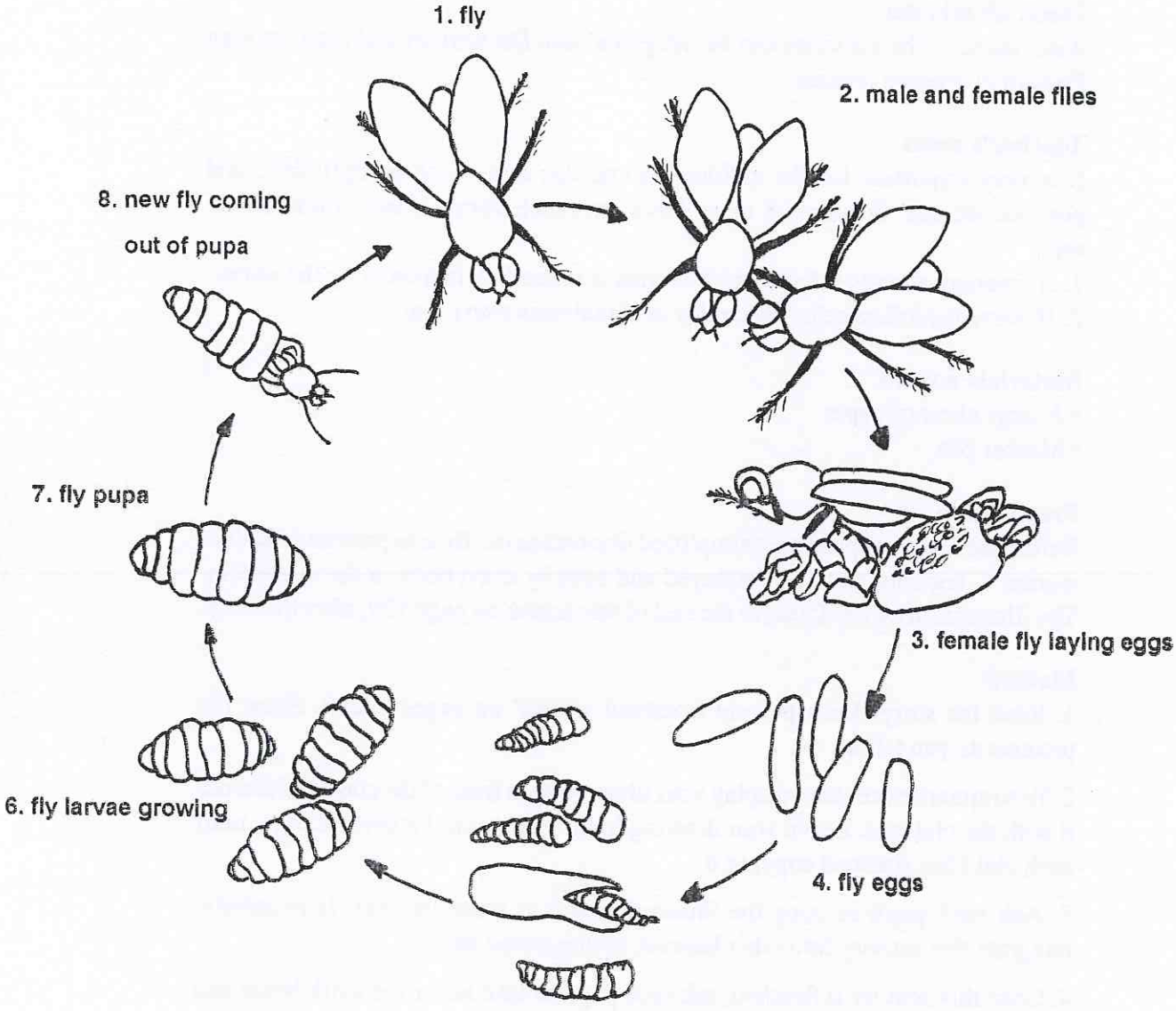








LIFE-CYCLE OF THE FLY



LESSON 21: HOW TO PREVENT DISEASES CAUSED BY INTESTINAL WORMS

Objectives

• By the end of this lesson, the pupils should know exactly what to do to be free of intestinal worms.

Time: 20 minutes

Also, some of the activities can be integrated into the next art and craft, written English or singing lessons.

Teacher's notes

It is very important for the children to end this topic with an optimistic and positive attitude. People will never have intestinal worms if two condition are met:

1. If a person already infected with worms is immediately treated by the nurse.
2. If *everyone* follows the basic rules of cleanliness *every day*.

Materials needed

• A large sheet of paper
• Marker pen

Preparation

Before the lesson, reproduce a simplified illustration of 'How to prevent intestinal worms' – big enough to be displayed and seen by everybody in the classroom. The illustration can be found at the end of this lesson on page 129, after the story.

Method

1. Read the story 'Let's prevent intestinal worms' on pages 122–8. Show the pictures as you tell it.

2. To summarise the story, display your illustration in front of the class and discuss it with the children. Leave your drawing in the classroom for several days, until each child has finished copying it.

3. Ask each pupil to copy the illustration and to write the text. If necessary, integrate this activity into other lessons, as suggested above.

4. Once this activity is finished, ask each pupil to take his or her work home and explain it to their parents.

5. *(Optional)* Teach the children the song 'Soap and water'.

The song & mime 'Soap and water' (Tune: 'Brother John/Frère Jacques')

Soap and water, soap and water
Wash our hands, wash our hands *(Pretend to wash hands)*
Now we've washed and dried them *(Pretend to dry hands)*
Now we've washed and dried them
All clean now, all clean now. *(Hold up clean hands)*

LET'S PREVENT INTESTINAL WORMS

Illustration 1
We can help prevent intestinal worms.
One way is to use a clean toilet with no flies.
In this picture, which toilet keeps the flies away?

Illustration 2
We should always use the toilet when possible!
If there is no toilet, we must be careful. We must *bury* or *cover* our wastes so that flies can't land on them.

Illustration 3
We must always wash our hands *carefully* after using the toilet. We must wash them with soap and water.

Illustration 4
We should always wear slippers (thongs) or shoes when walking outside the house.

Illustration 5
We must always keep our food, dishes and drinking water covered. We must not allow flies to crawl on them.

Illustration 6
We must always wash our hands before we eat.
We must keep our fingernails short and clean. Worm eggs can live under dirty fingernails.

Illustration 7
If we think we have worms, we should see the nurse.
We should take the medicine that the nurse gives us.
Worms are our enemies.
They are harmful to our health.
They eat the food inside our digestive system. They can make us very sick.
We can get rid of them if we follow the basic rules of cleanliness.
Prevention is better than cure.

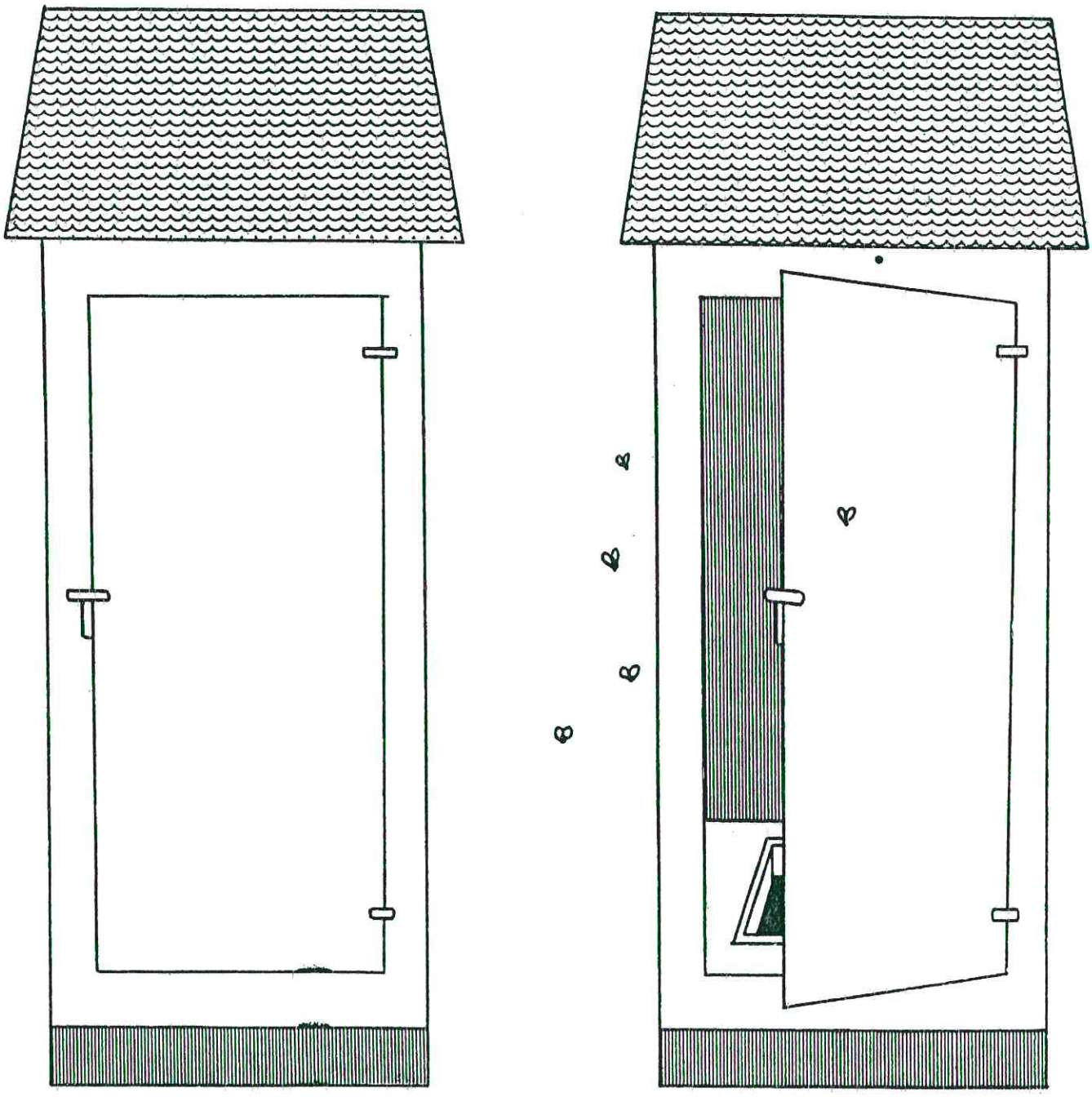


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Illustration 4
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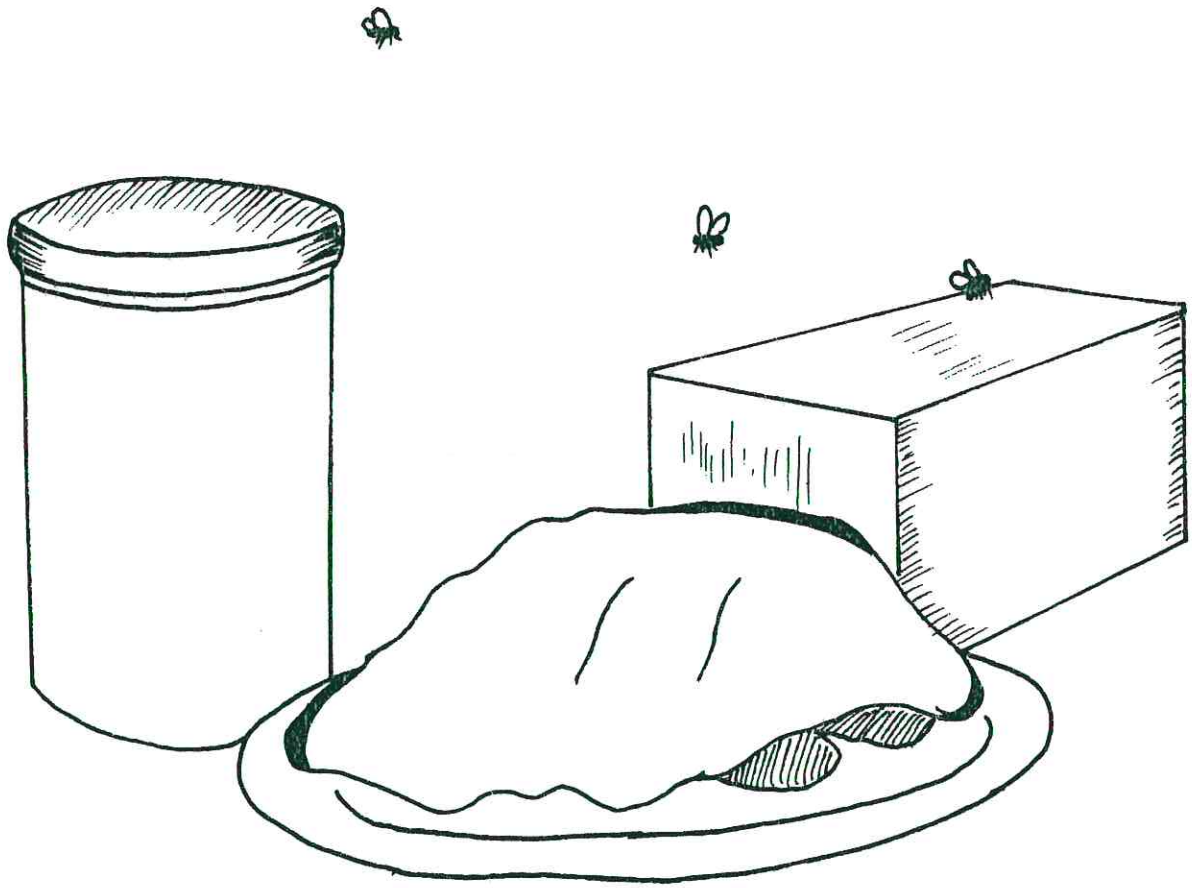
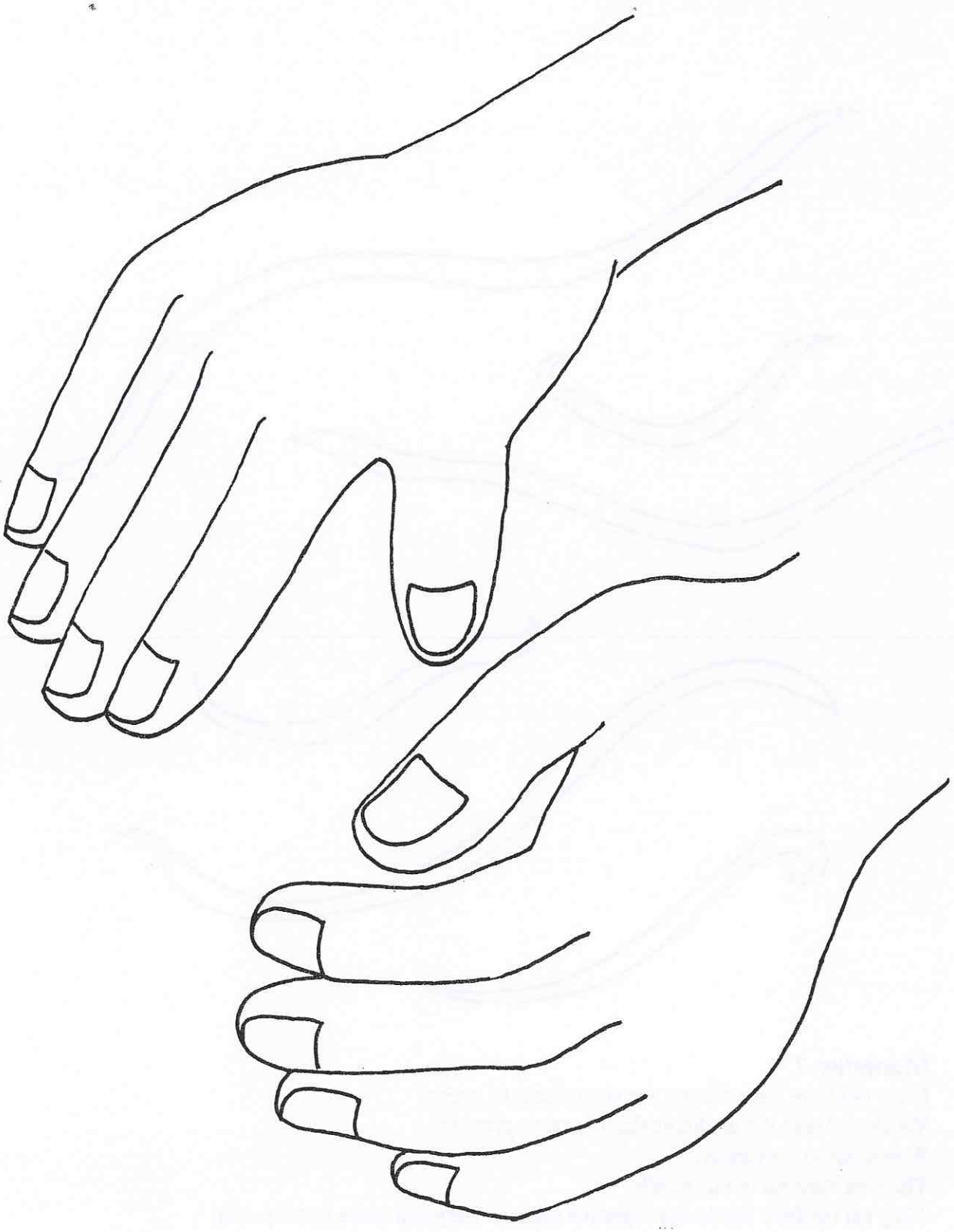


Illustration 5
We must always keep our food, dishes and drinking water covered. We must not allow flies to crawl on them.



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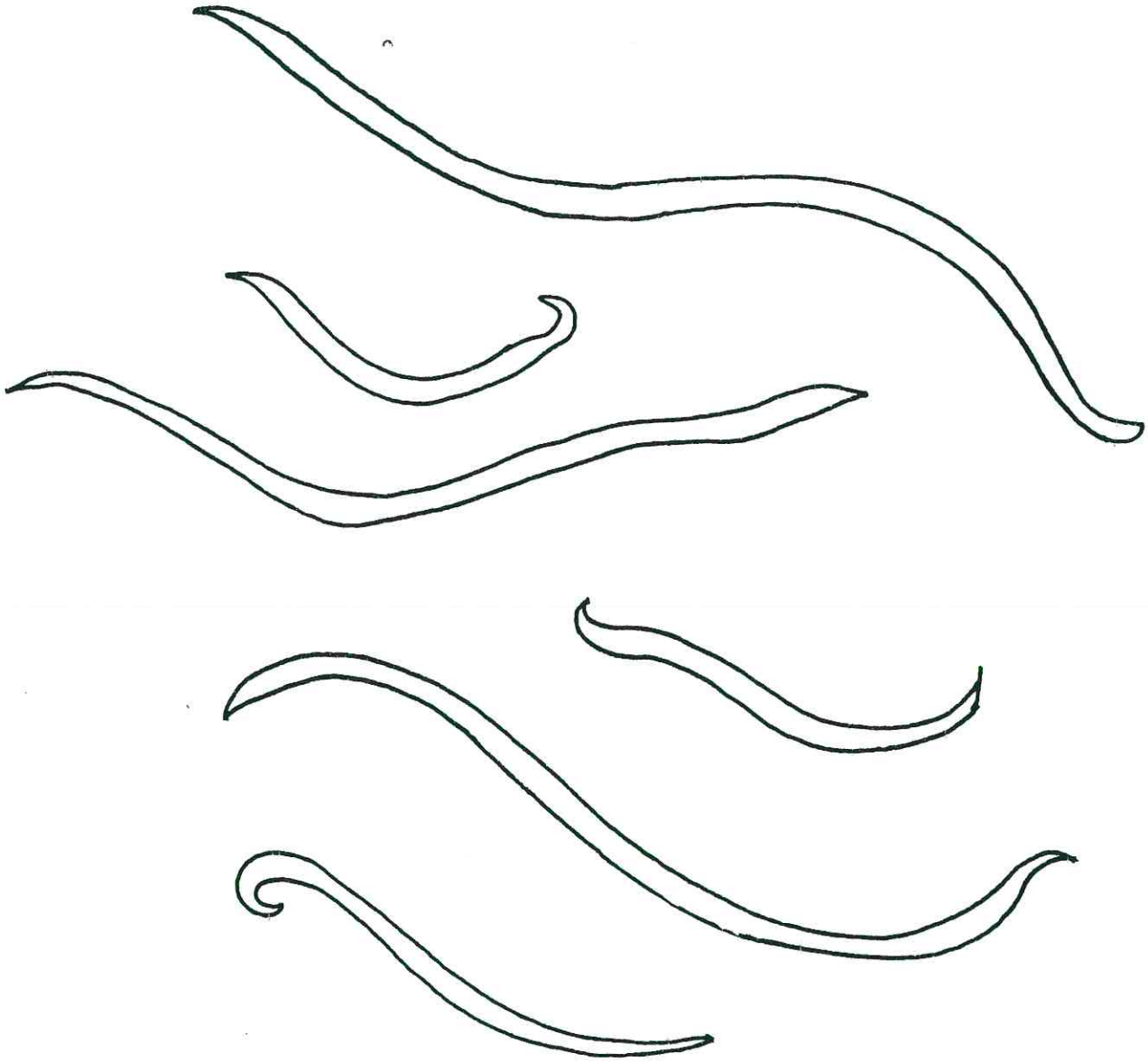

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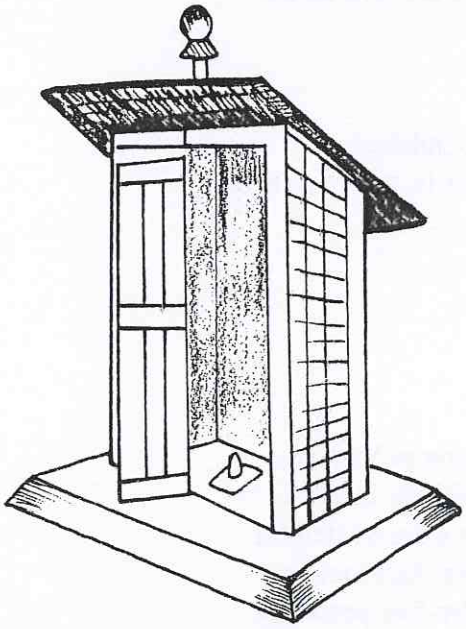
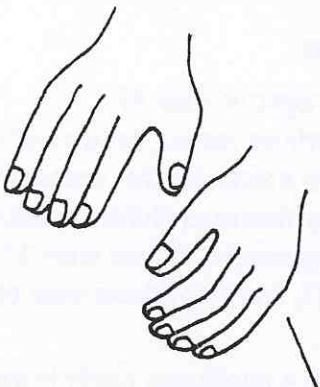
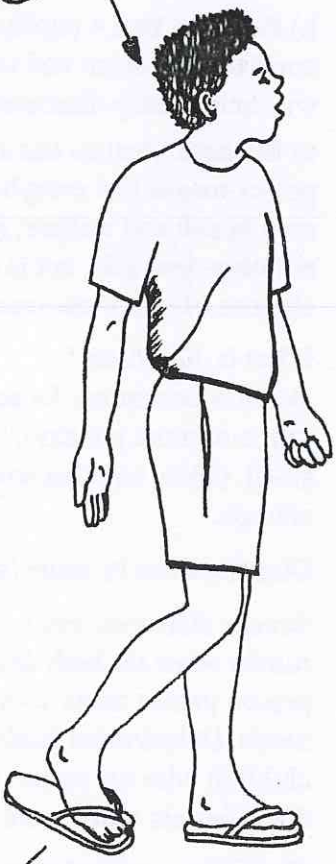
HOW TO PREVENT INTESTINAL WORMS



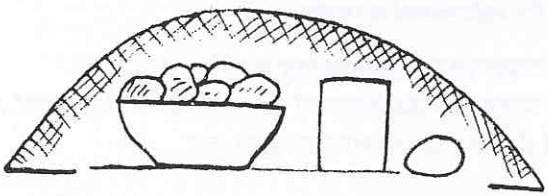
use toilets

have clean hands





wear slippers



protect food and drink

no worms

LESSON 22: THE DANGERS OF DIARRHOEA IN YOUNG CHILDREN

Objectives

- To make pupils aware of the dangers of diarrhoea in young children.
- To develop the idea that pupils can help to treat diarrhoea in their younger brothers and sisters.

Time: 30 minutes

Teacher's notes

Why teach this topic in Year 4?

a) Because diarrhoea among babies and infants is very common in Vanuatu, and because it is a sickness that causes the death of many children. In 1987, 782 out of every thousand children under the age of one year were treated for diarrhoea in dispensaries. There were 14 recorded deaths from diarrhoea in Vanuatu in 1987, and 10 of these were of children in the under-five years age group.

b) Because Year 4 pupils can easily learn how to make a special drink consisting of sugar and salt dissolved in water. In most cases, this simple drink will help to stop diarrhoea.

c) Because Vanuatu has adopted the policy of Primary Health Care. This policy means that everybody has to assume greater responsibility for his or her own health and welfare, and this includes self-treatment. This participation is not only desirable, but is a necessity. At school, the children who are the citizens of tomorrow must learn how to be able to look after their own health.

What is diarrhoea?

When a person has loose or watery stools, and when these stools are frequent (three or more per day), this person has diarrhoea. These stools have a different smell. Often, children with diarrhoea also have vomiting, a swollen stomach and cramps.

Diarrhoea can be acute (sudden and severe) or chronic (lasting many days).

Severe diarrhoea can cause *dehydration* (a large loss of water). *Dehydration results when the body loses more liquid than it takes in.* This can happen when a person passes many loose, watery stools, and so loses the water that the body needs. *Dehydration leads to death if not treated.* Diarrhoea is more dangerous in children who are malnourished, and in bottle-fed babies. Generally, they have diarrhoea six times more frequently than those who are breast-fed.

The main causes of diarrhoea are:

- Infection by different kinds of microbes; in Vanuatu, the majority of diarrhoea cases are caused by viruses
- Infection by intestinal worms

Infection occurs in the following ways:

- Drinking water contaminated by human and animal stools, dirt from washed clothes and dishes, flies, worm eggs, etc.

• Washing dishes in contaminated water
• Eating from dirty dishes, where flies have already walked
• Eating without washing your hands
• Playing with other children who are sick
• Sleeping next to others who are sick
• Swimming/playing in contaminated water (near over-the-water toilets or rubbish dumps)
• Eating food that flies have landed on
• Not washing hands properly after using the toilet
• Eating from a sick person's plate

Warning
Whoever introduces the ideas contained in this and the following lessons must be careful, because the explanations and treatment suggested in this book may be different from traditional treatments. *Parents and others will need to know what the children are learning and why. Seek the nurse's help* in passing on the information to parents and the community.

All over the world there is a belief that those with diarrhoea should not be given food or drink. This is a great mistake, because:
• Even a person with severe diarrhoea can absorb food and drink.
• Although medicines are often not very effective, any drink that puts water back into the child, like mild herbal tea, will help to fight the dehydration.
• Children with diarrhoea must be given food to help their bodies fight the sickness.

Preparation
On the morning of the health lesson, ask children to bring two cut plants to school. Put one in water and leave the other as it is.

Method
1. Begin by explaining that all living plants and animals contain more *water* than anything else. More than half (65%) of our own body is water. We need water to live, just like plants and all other animals. Ask the children to observe what happens to the plant put into the water and to the other one without water. Help the children realise that living things need water, and that the loss of water can cause damage.

2. Read the story on pages 137–46 and show the pictures as you tell the story.

3. Discuss the story. Ask the pupils if they know any children who have been sick with diarrhoea. What happened to them?

Stress the fact that the baby becomes more and more sick each time she passes watery stools, because her body is losing more liquid than it is taking in. The baby's body is drying out, just like the flower which has no water.

CAUSES OF DIARRHOEA (1)

CAUSES OF DIARRHOEA (2)

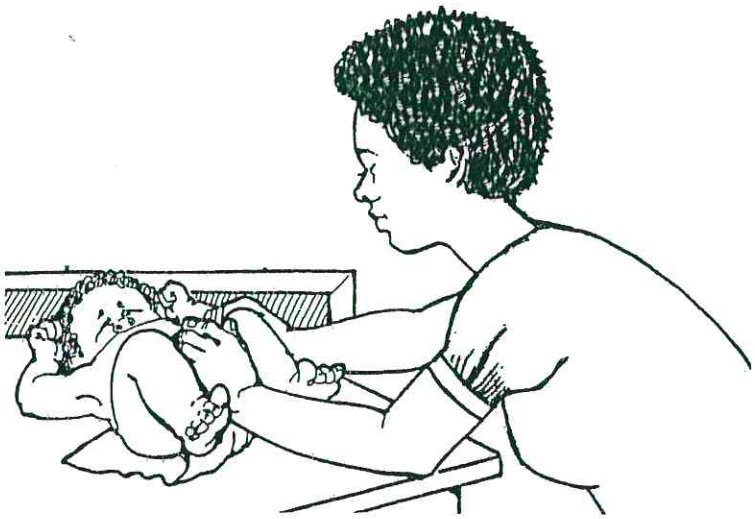
1

2

3

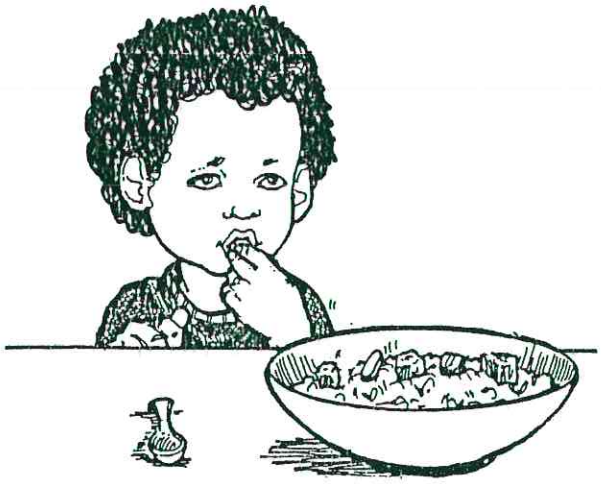
4

CAUSES OF DIARRHOEA (3)



1

2



3

4

Summary

- **When a person has loose or watery stools three or more times in one day, this person is sick with diarrhoea**
- **The body needs a lot of water in order to live**
- **Somebody with diarrhoea loses a lot of water; a baby can die of diarrhoea if he/she is not given anything to drink**

JANE AND MARY

Illustration 1

Jane is twelve years old. She has two brothers and a small sister called Mary, who is still a baby.

Jane helps in the house while her parents go to work in their garden for the whole day.

Illustration 2

One morning, Jane's parents wake up very early. They are going to work in the garden which is a long way from the house.

Before leaving, Jane's mother tells her: 'Take good care of your sister Mary because she has been crying the whole night and she is tired'.

Illustration 3

Jane sweeps the yard around the house. When she has finished, she goes to see her sister, who is sleeping. Mary smells, and there are lots of flies around her. Jane sees that Mary is dirty. All her clothes and the mat are also dirty.

Jane cleans up her little sister. Mary is very tired. She does not smile, but cries and then goes to sleep again.

Illustration 4

Jane cleans the clothes and the mat with soap and water. Then she puts everything outside in the sun to dry.

Illustration 5

Jane prepares a little food and some lemon tea for her small sister.

Mary does not want the food, but she drinks the whole cup of lemon tea.

Illustration 6

While Jane is doing the housework, she hears her little sister crying again. She goes to see her.

Mary has vomited, and there are a lot of stools once again on her clothes and on the mat.

Jane is scared because she knows that her little sister is sick and her parents have gone away for the whole day.

Illustration 7

Once again, Jane cleans Mary, her clothes and her mat.

Then Jane washes her hands, and goes to her neighbour's house to ask for help. Jane asks her neighbour to come and have a look at Mary.

Illustration 8

Jane explains: 'Mary is getting more and more tired. Her stools are watery and green, and they smell. Mary does not want to eat but she is thirsty. I am by myself at home today and I don't know what to do.'

Illustration 9

The neighbour says: 'Mary has got diarrhoea. When the stools are watery like you say, this means that the sickness is diarrhoea. You should go and see the nurse now. Don't wait, because Mary is losing a lot of water with the diarrhoea, and she might die.'

Illustration 10

The nurse congratulates Jane for bringing her littler sister so quickly to the dispensary. The nurse shows Jane how to prepare the salt and sugar drink that is a good medicine for curing Mary's diarrhoea. Jane must give her half a cup of the salt and sugar drink every time that Mary passes a stool.

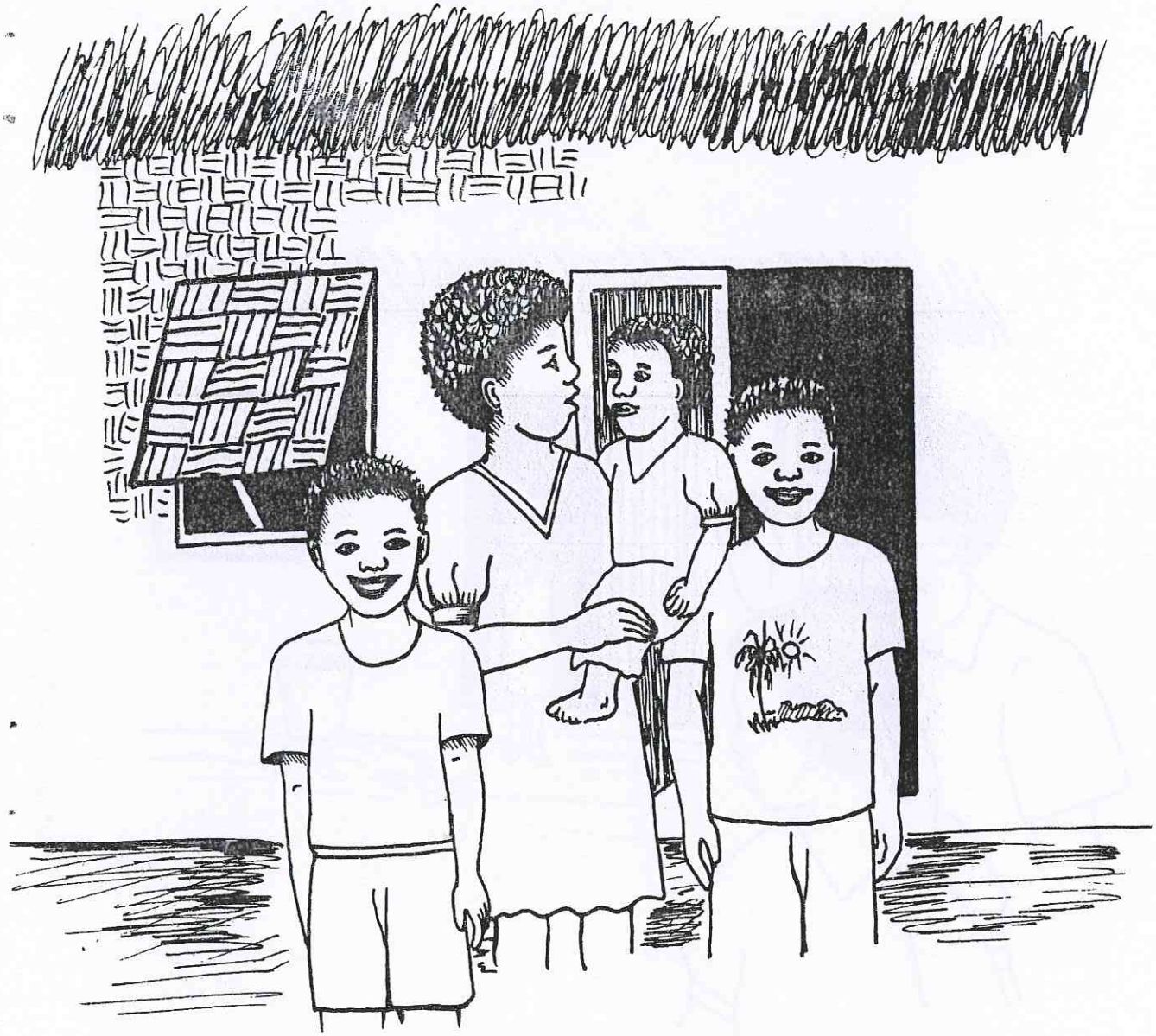


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Illustration 2

One morning, Jane's parents wake up very early. They are going to work in the garden which is a long way from the house.

Before leaving, Jane's mother tells her: 'Take good care of your sister Mary because she has been crying the whole night and she is tired'.

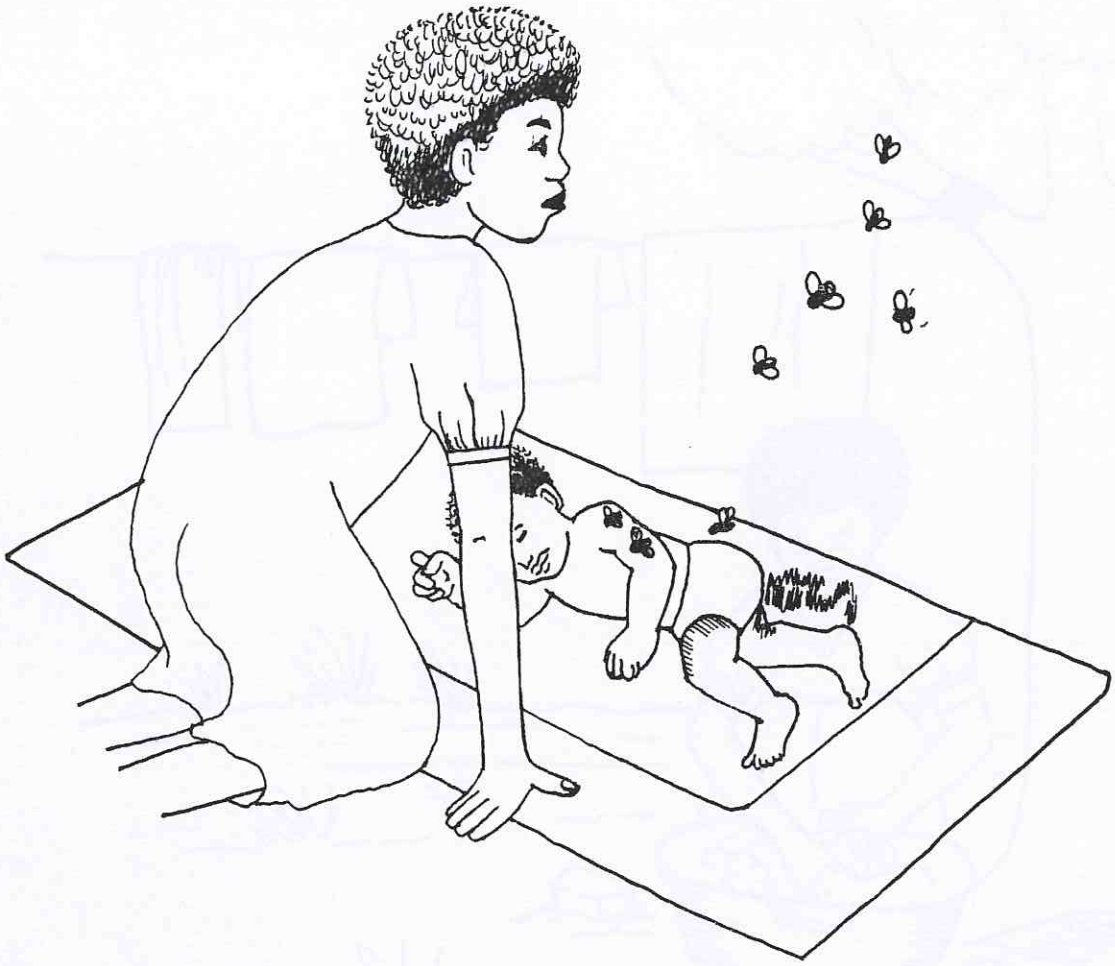


Illustration 3

Jane sweeps the yard around the house. When she has finished, she goes to see her sister, who is sleeping. Mary smells, and there are lots of flies around her. Jane sees that Mary is dirty. All her clothes and the mat are also dirty.

Jane cleans up her little sister. Mary is very tired. She does not smile, but cries and then goes to sleep again.

Illustration 4
Jane cleans the clothes and the mat with soap and water. Then she puts everything outside in the sun to dry.

Illustration 5
Jane prepares a little food and some lemon tea for her small sister.
Mary does not want the food, but she drinks the whole cup of lemon tea.

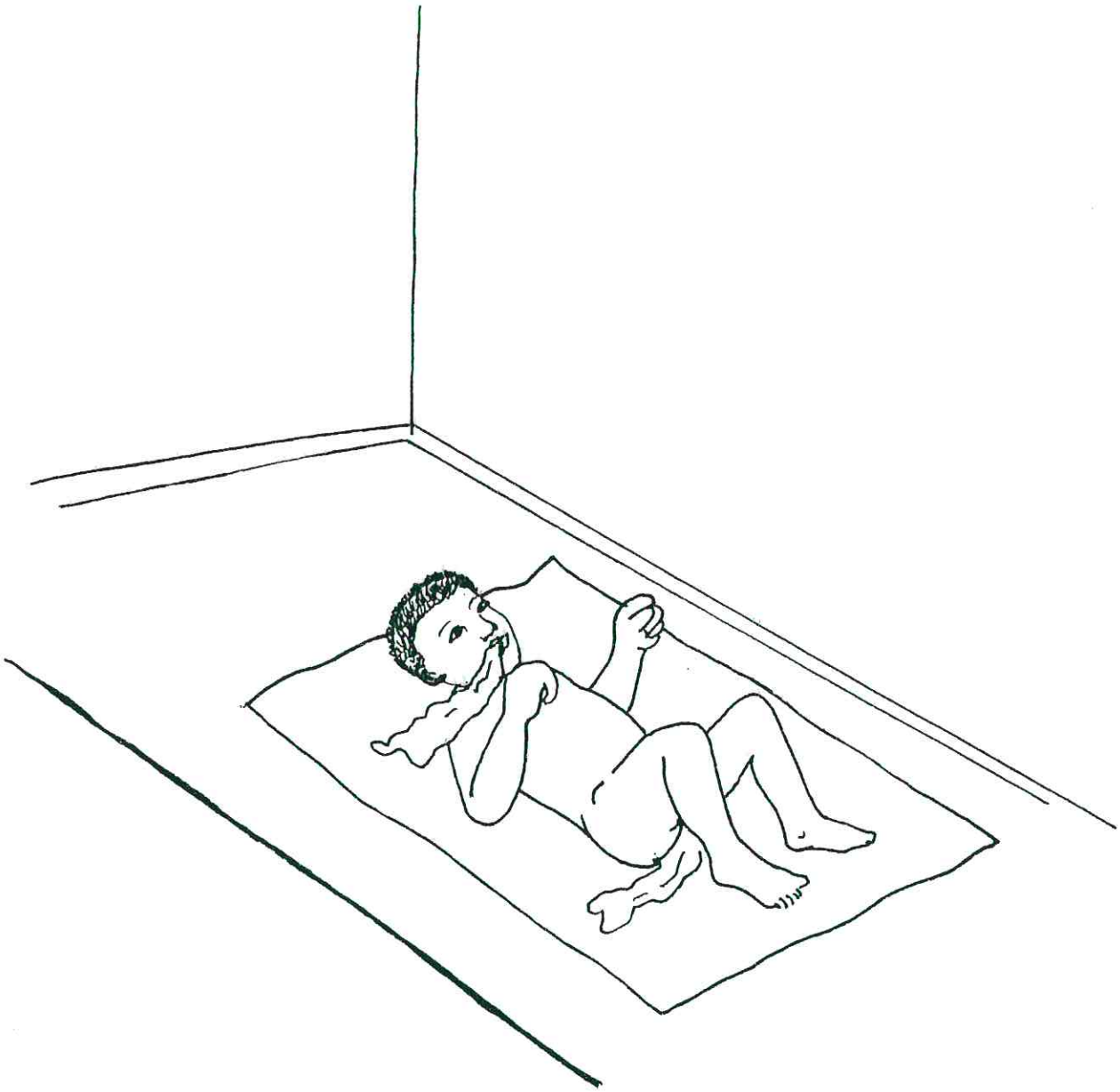


Illustration 6
While Jane is doing the housework, she hears her little sister crying again. She goes to see her.
Mary has vomited, and there are a lot of stools once again on her clothes and on the mat.
Jane is scared because she knows that her little sister is sick and her parents have gone away for the whole day.

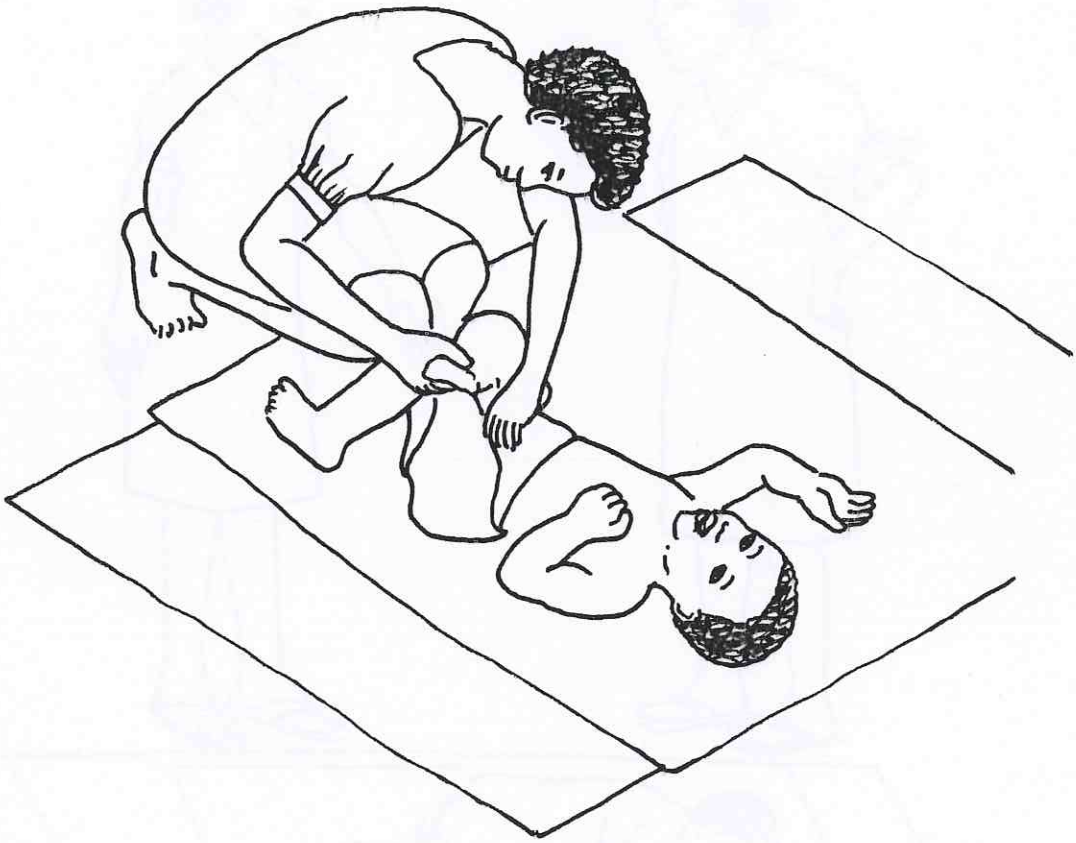


Illustration 7
Once again, Jane cleans Mary, her clothes and her mat.
Then Jane washes her hands, and goes to her neighbour's house to ask for help.
Jane asks her neighbour to come and have a look at Mary.

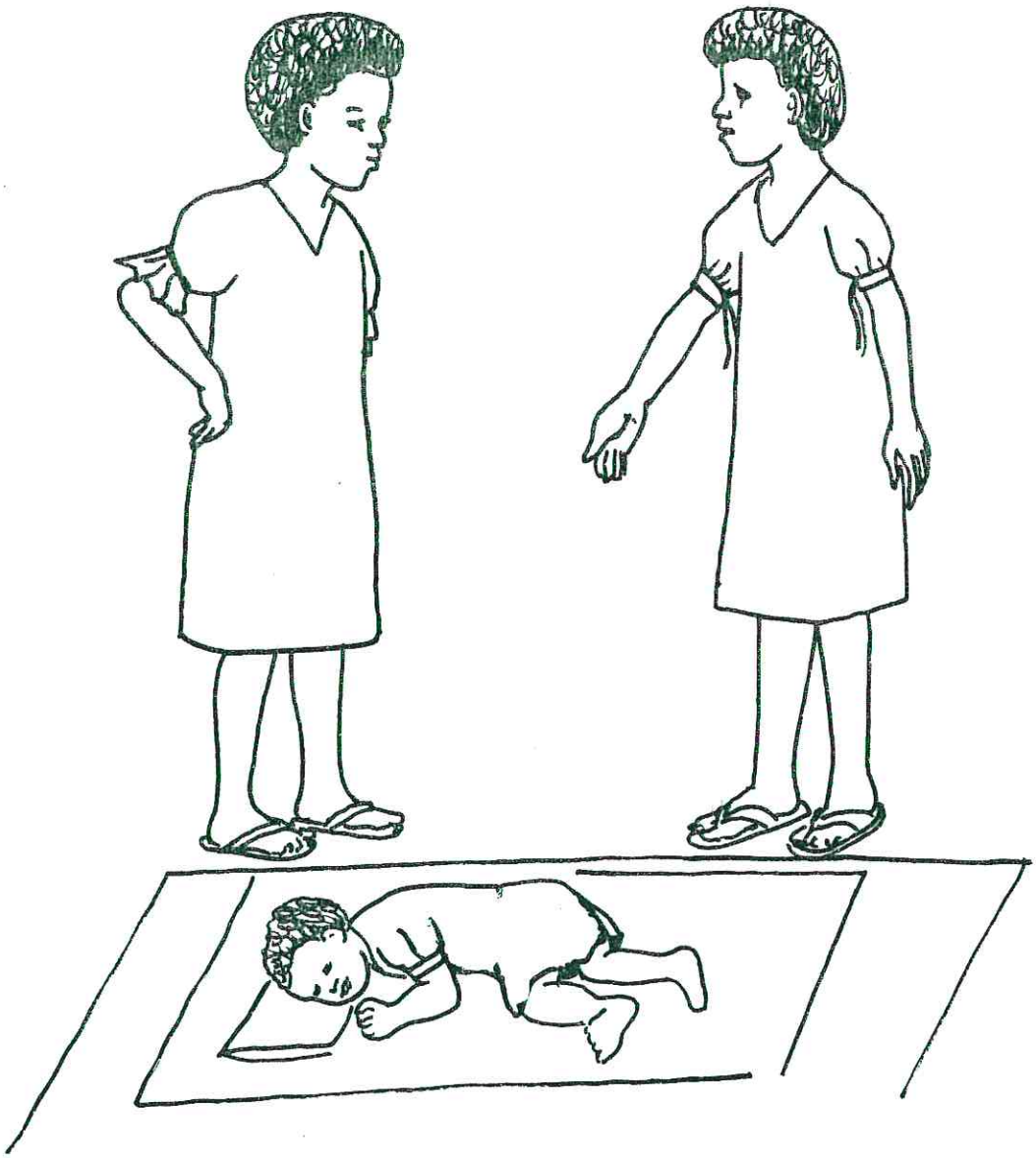


Illustration 8
Jane explains: 'Mary is getting more and more tired. Her stools are watery and green, and they smell. Mary does not want to eat but she is thirsty. I am by myself at home today and I don't know what to do.'

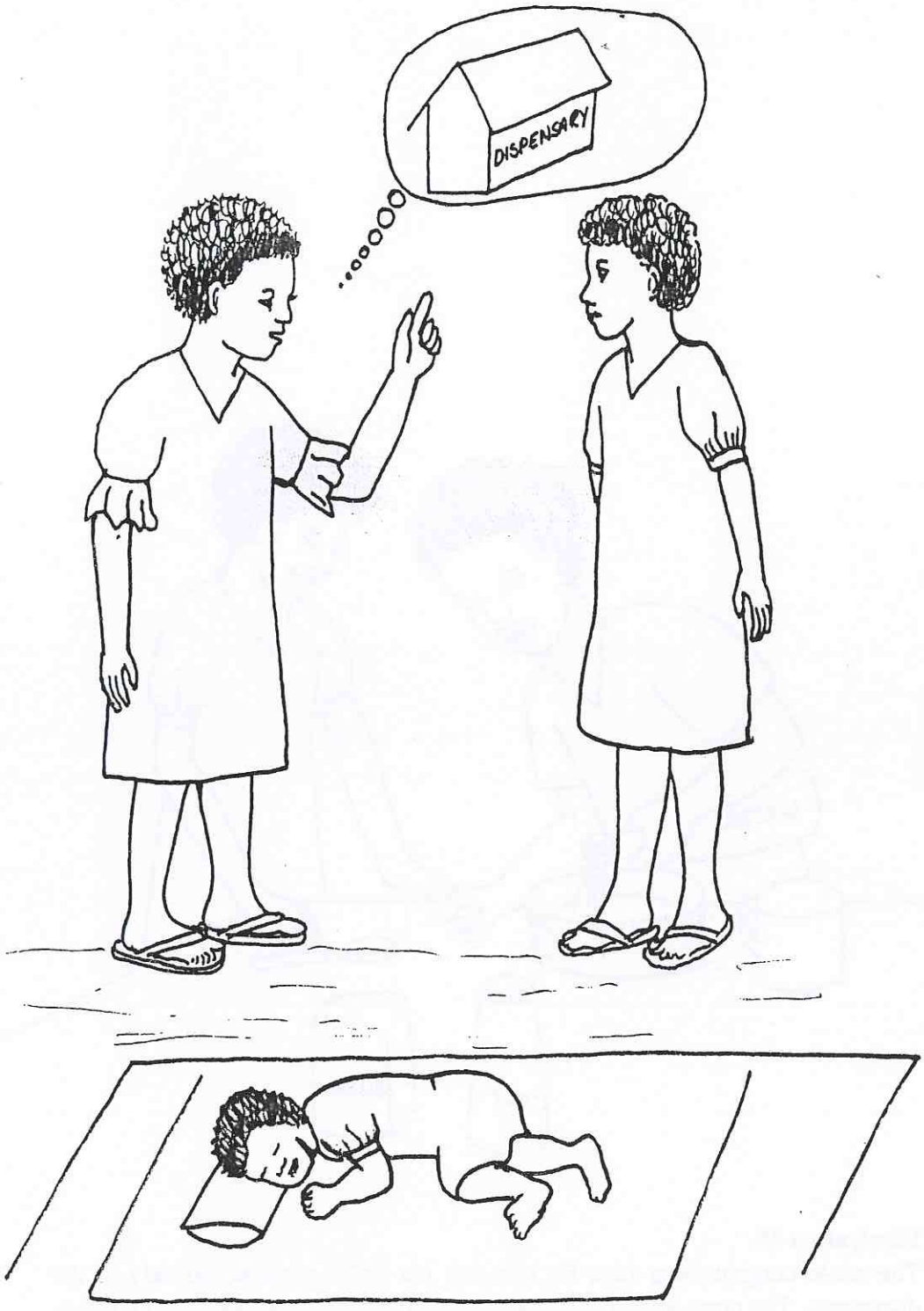


Illustration 9

The neighbour says: 'Mary has got diarrhoea. When the stools are watery like you say, this means that the sickness is diarrhoea. You should go and see the nurse now. Don't wait, because Mary is losing a lot of water with the diarrhoea, and she might die.'

Illustration 10
The nurse congratulates Jane for bringing her littler sister so quickly to the dispensary. The nurse shows Jane how to prepare the salt and sugar drink that is a good medicine for curing Mary's diarrhoea. Jane must give her half a cup of the salt and sugar drink every time that Mary passes a stool.

LESSONS 23 AND 24: HOW TO PREPARE A REHYDRATION DRINK

Objectives

By the end of this lesson, pupils should:

- Understand the importance of giving water to a child who has diarrhoea.
- Know how to prepare and give a rehydration drink, known as the 'salt-sugar drink'.

Time: 30 minutes each lesson

Teacher's notes

Some definitions:

Diarrhoea is when three or more loose or watery stools are passed in one day. Diarrhoea can cause dehydration when the body loses more liquid than it takes in. Dehydration can lead to death, especially among small children.

The verb *to dehydrate* means to deprive of, or to lose water, or to *dry* completely. The noun is *dehydration.*

The verb *to rehydrate* means to give back water again. The noun is *rehydration.*

The early signs of dehydration are:

- When a child is passing 4–10 liquid stools per day.
- When he is vomiting.
- When he has a dry mouth.
- When the skin of his abdomen or neck is pinched, and takes a long time to get back to normal.
- When the child has a sunken fontanelle. The fontanelle is the soft spot at the top of a baby's skull.

A child should be given the rehydration drink *as soon as* diarrhoea begins.

A child showing signs of dehydration should be brought to the dispensary. Generally the child will remain in the dispensary for at least four hours, in order for rehydration to be properly carried out.

The dangerous signs of rehydration are:

- When a child is passing more than 10 liquid stools per day
- When the child is vomiting frequently
- When she looks very sleepy
- When she has dry, sunken eyes
- When her breathing is very rapid and deep
- When she no longer passes urine or when she only urinates a small amount of dark yellow liquid

A child with any one of these signs should be brought to a dispensary *immediately*. He/she should be given small amounts of the rehydration drink every 2 or 3 minutes, day and night, until he/she urinates normally (every 2 or 3 hours). Older children can help their mother by taking turns in giving the rehydration drink to the sick child.

How to prevent dehydration during diarrhoea

Many of the herbal teas and soups that mothers give their children when they have diarrhoea do a lot of a good, because they help to put water back into the child. Breastfeeding provides both water and food, and should always be continued.

The 'tin game' used in this lesson will help pupils to understand the importance of giving a child with diarrhoea as much water as he is losing.

Giving lots of liquid to a child with diarrhoea may at first increase the amount of diarrhoea. This is all right. The dirty water that is inside the body must come out. The important thing is to *be sure that the child drinks as much liquid as he loses.*

The special rehydration drink made from salt, sugar and water is good for both children *and* adults who are suffering from diarrhoea. An adult needs to take two glasses of the drink for every loose stool that he passes. A school child needs one glass for every loose stool.

Rice water may be used instead of the rehydration drink, especially if the child refuses to drink it. Rice water can be prepared by boiling a quarter of a cup of white rice with 1 litre of water for 30 minutes. The rice water should then be drained off and cooled. For a baby, half a cup should be given after every loose stool. A child needs one cup. Besides the drinks, the sick baby should continue to be breastfed. The child can be given frequent small meals that are easy to digest: rice, bananas, soft coconut, pumpkin or pawpaw.

These detailed notes should enable you to answer many of your pupils' questions. You can also ask the nurse to help you teach this lesson.

Repeated warning

Whoever introduces the ideas contained in this lesson, pupils must take care. Parents and others will need to know what the children are learning and why. Seek the nurse's help in passing on the information to parents and to the community.

Materials needed

For the tin game:

- One clean tin with a hole in the bottom and a line marked on to show the water level
- Two glasses
- A bottle of water

For the preparation of the 'salt-sugar drink':

- A one litre bottle full of clean water (labelled 'boiled water')
- One teaspoon
- One tablespoon
- Salt and sugar
- One glass
- Each group of 4 children to bring a one-litre bottle, one teaspoon, one tablespoon and one glass

Method

1. Remind the children of what they learnt in the previous lesson about the two plants, one kept in water, the other kept without water. Which one died? Living things like plants, people and animals need water in order to live *(see p.151)*.

When a person is sick with diarrhoea, he/she loses water every time he/she passes stools.

2. Ask the children if they remember the story of Jane and her little sister Mary. It ends with the nurse explaining to Jane how to prepare the salt-sugar drink. Jane must give half a cup of the drink each time that Mary passes a stool.

3. Tell the children that it is important to give a person with diarrhoea as much water to drink as he/she loses through vomiting or diarrhoea. Say that you are going to show the class the 'tin game' *(see p.152)*.

- Show them the tin with a hole in the bottom.
- Show them that as long as just as much water is poured into the top as comes out of the hole at the bottom, the water *level* in the container will not go down.
- Let the children observe what happens when the water that leaves is not replaced at the top.
- See if they can relate this to a baby who loses fluid through diarrhoea and vomiting. An empty tin means a dead child.

Explain that a baby with diarrhoea needs half a cup (or glass) of liquid for each time that he has a loose stool. A school child needs one cup (or glass) each time.

4. You are now going to make the salt-sugar drink:

- Show the pupils the size of the spoons to use, the size of the bottle, and the cup (or the glass).
- Make the mixture: 1 teaspoon of salt and 2 tablespoons of sugar are mixed with water in the glass. The water is taken from the 1-litre bottle. Mix and thoroughly dissolve the sugar and the salt.
- Pour the mixture back into the bottle, shake well again, and *taste it.*

Important: the salt-sugar drink will not work unless you use the right amounts.

Always taste the solution. It should not taste more salty than tears. If it does, throw it away and start again.

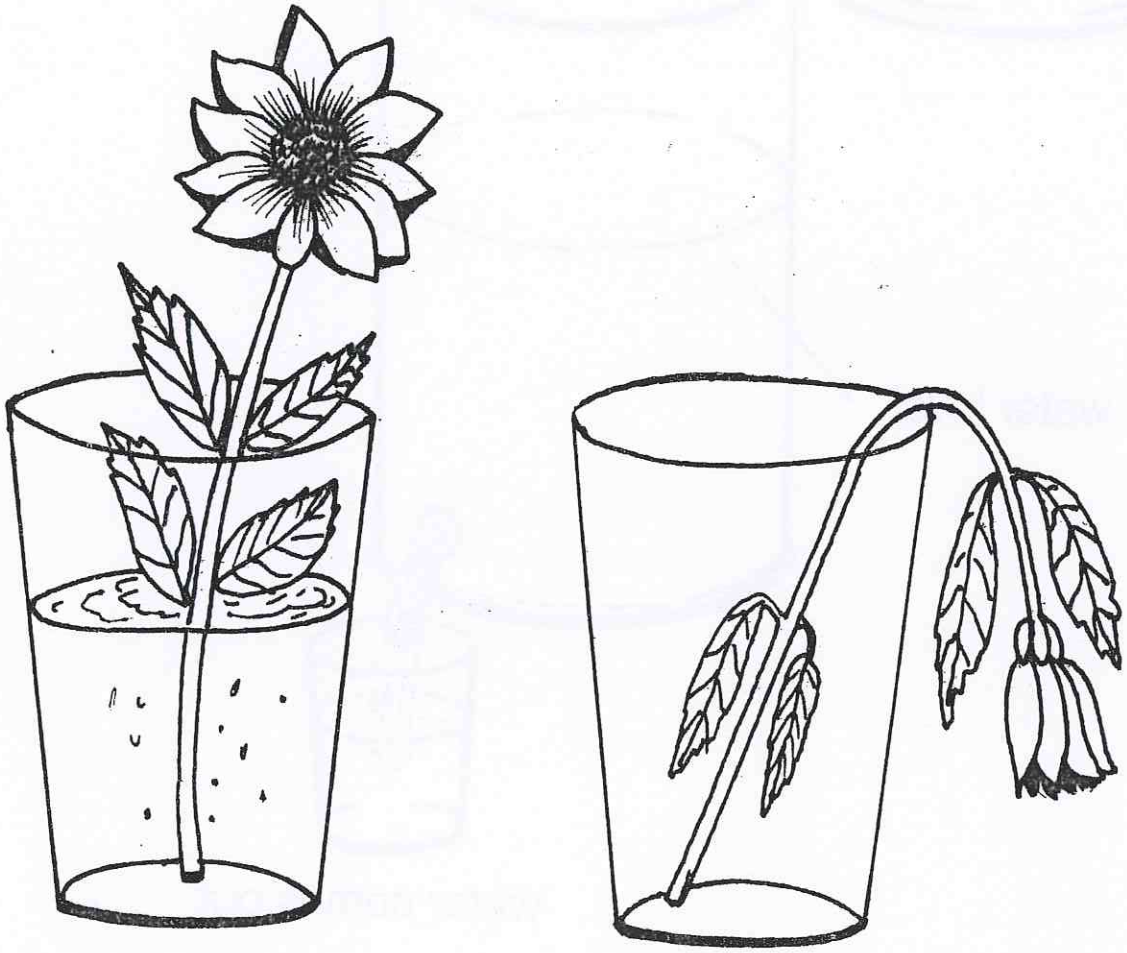
- Ask the children to come up and taste the mixture for themselves.
- Divide the children into groups of four. Ask them to make the salt-sugar drink and taste it themselves.

5. End the lesson by explaining to the children that the salt-sugar drink should be given *slowly* after each loose stool has been passed, until the diarrhoea has finished. Give the baby more drink if she is thirsty and wants it, because extra liquid will do no harm. If the baby at first vomits up the drink, this does not matter; just let her drink more slowly and in smaller quantities.

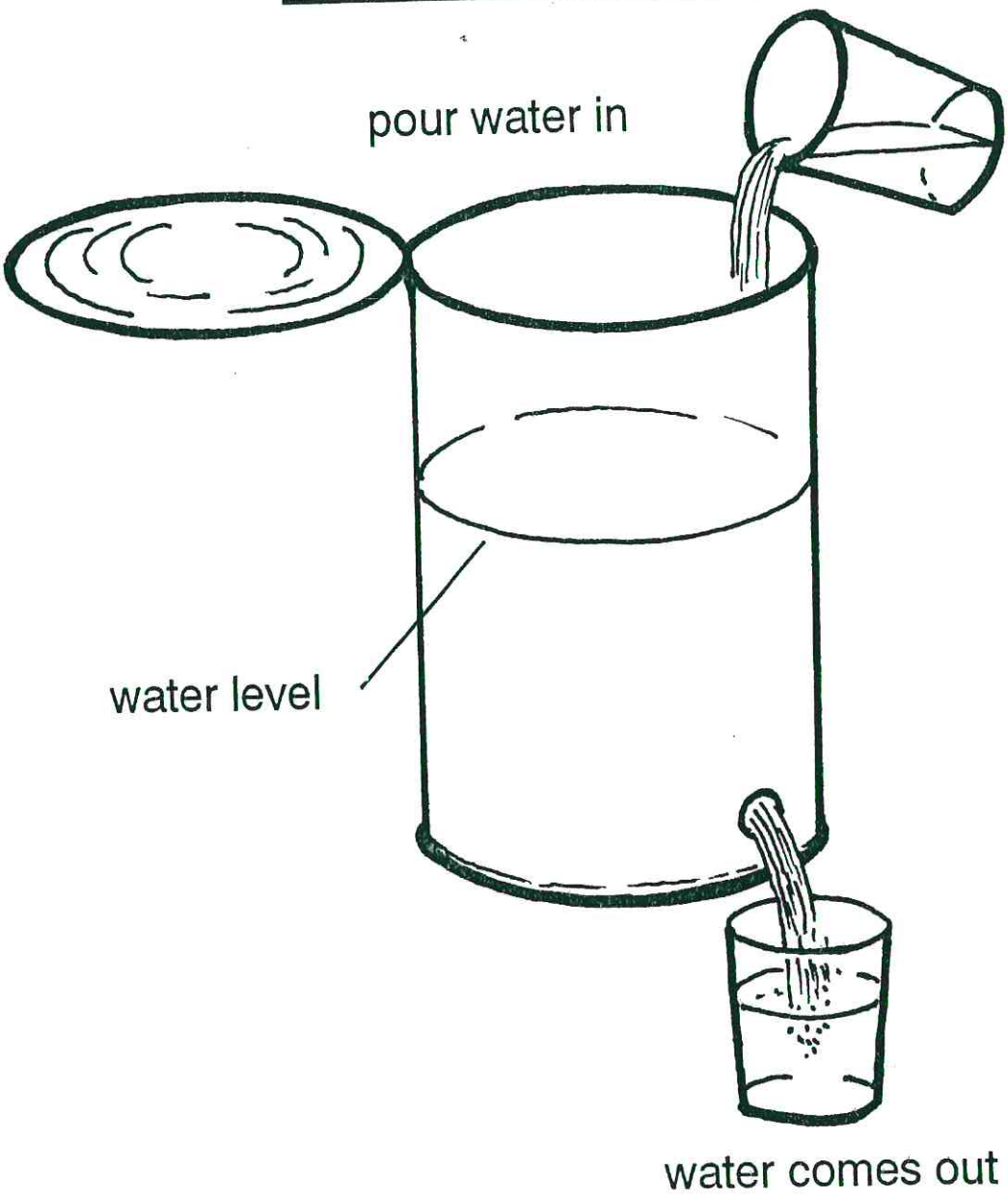
Summary

- A baby sick with diarrhoea needs to take half a cup of the salt-sugar drink for each time that he or she passes a loose stool
- A school child needs to drink one cup of the liquid each time
- To make the salt-sugar drink, we mix one teaspoon of salt with 2 tablespoons of sugar in one litre of water
- The salt-sugar drink should not taste more salty than tears; it should be given slowly

LIVING THINGS NEED WATER IN ORDER TO LIVE

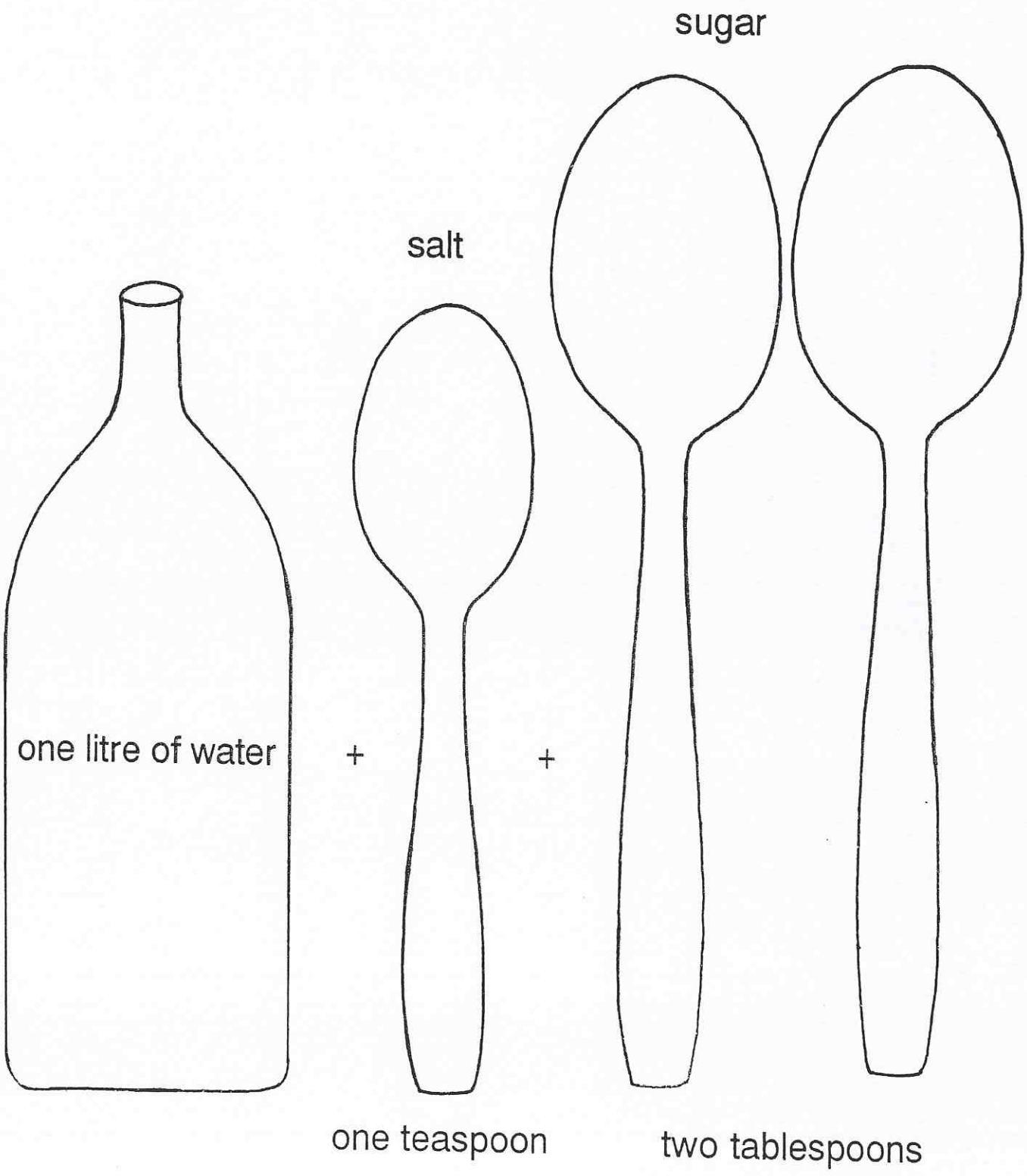


THE TIN GAME



A child with diarrhoea needs to drink one glass of liquid each time that he or she passes a loose stool

PREPARING THE SALT-SUGAR DRINK



Term 3

LESSON 25: UNDERSTANDING HOW DISEASES ARE SPREAD

Objectives
By the end of the lesson pupils should be able to:
- Explain what is meant by a contagious disease.
- Describe how diseases travel through the air from one person to another.

Time: 30 minutes

Method
Revise Lesson 6 and the first part of Lesson 10, which deals with the spread of disease by *direct* contact.

LESSON 26: UNDERSTANDING HOW DISEASES ARE SPREAD (CONTINUED)

Objectives
By the end of this lesson pupils should be able to describe the ways that diseases are spread through *indirect* contact.

Time: 30 minutes

Method
Revise Lesson 10.

LESSON 27: UNDERSTANDING THE TRANSMISSION OF MALARIA

Objective
By the end of this lesson, pupils should be able to understand the role of the mosquito in the transmission of malaria.

Time: 30 minutes

Teacher's notes
Revise the vocabulary for Lesson 6. Remember that an *infection* is a disease created by the invasion and development of germs in the body.

In malaria the germs are very small parasites called 'plasmodium'. (Revise the teacher's notes from Lesson 10.)

Why use malaria as the example of a disease spread by indirect contact? Because it is a very common and dangerous disease in Vanuatu. In 1987, malaria was the main reason for people's admission to hospital (11 out of every thousand admitted). Among children aged 0–4 years, malaria was the second most important cause of death (14 out of every 100 deaths). For people under 50 years old, malaria was the leading cause of death (12.6 out of every 100 deaths). For persons of all ages, malaria was the third most important cause of death (7.8 out of every 100 deaths).

Method
Read to the children the following text about how we catch malaria. Discuss the pictures.

Summary

- **Mosquitoes carry malaria and dengue fever**
- **Mosquitoes give these diseases to the people they bite**
- **Mosquitoes suck up the malaria microbes from the blood of a sick person, and inject them into the next person they bite**

HOW WE CATCH MALARIA

Illustration 1
This man was working in his garden when he suddenly felt very cold and very tired. Now his head hurts, and he feels the fever inside his body. The night is coming, and on his way home he rests for a while near a tree.

The man is sick with malaria. The bad malaria microbes are growing in his blood and making him sick. While he is resting near the tree, a mosquito flies around him and bites him.

Illustration 2

In this picture you can see an enlarged drawing of what is happening. When the mosquito bites the man with malaria, it sucks up his blood through its long mouth. The malaria microbes are moving around in the man's blood like the leaves carried by a river.

When the mosquito sucks up the blood of the sick man, it swallows the malaria microbes at the same time. The microbes will stay alive for several days inside the stomach of the mosquito. The mosquito is never sick with malaria.

Illustration 3

The next time the mosquito is thirsty for blood, it will bite somebody who is healthy. When it pierces the person's skin with its long mouth, the mosquito injects the malaria microbes into the person's blood. What will happen now?

Illustration 4

The malaria microbes will grow and increase in number in this person's blood. Several days later, it will be this person's turn to become sick with malaria. *This is the only way in which malaria can pass from one person to another.*

Illustration 1
This man was working in his garden when he suddenly felt very cold and very tired. Now his head hurts, and he feels the fever inside his body. The night is coming, and on his way home he rests for a while near a tree.

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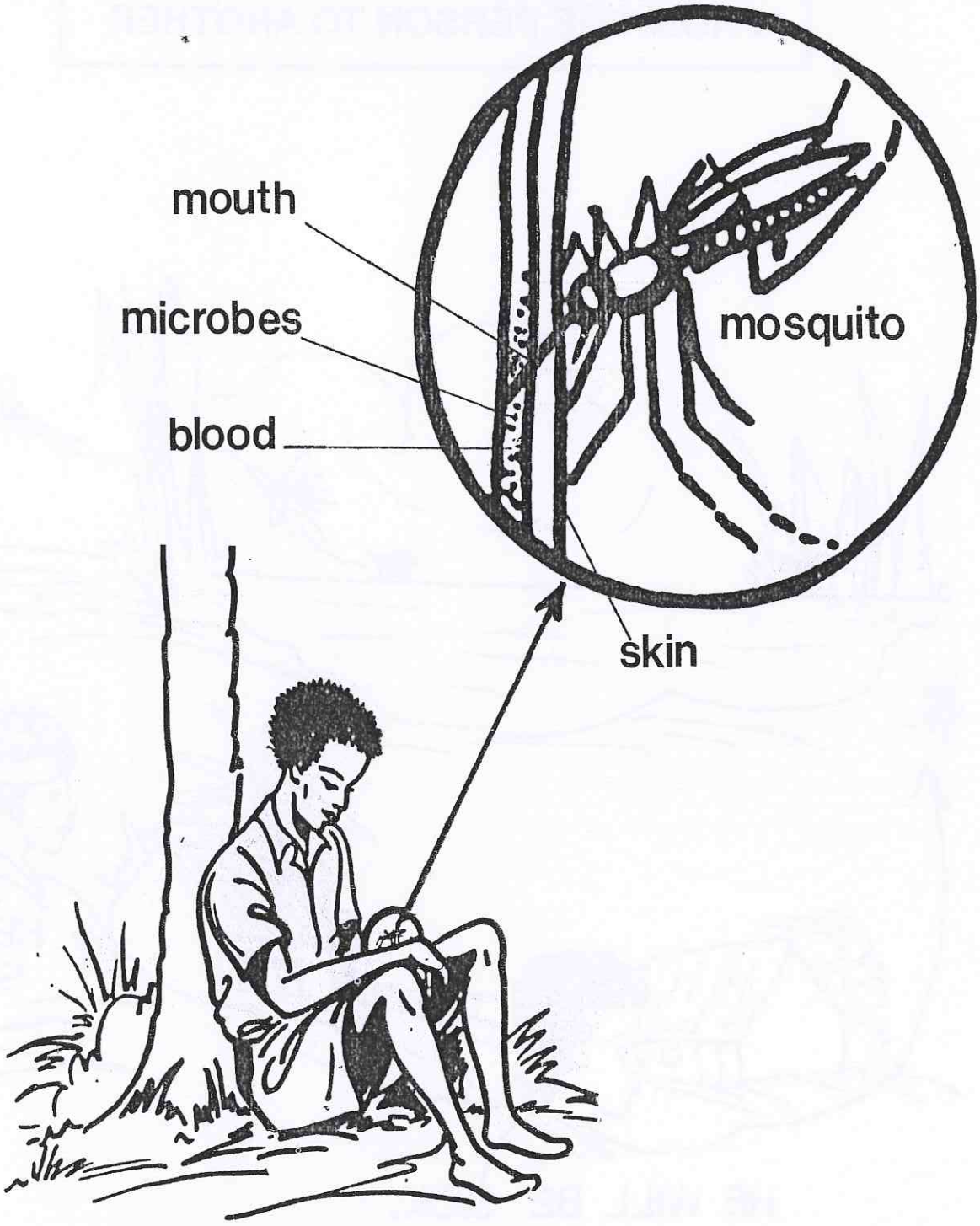

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HOW MOSQUITOES PASS MALARIA FROM ONE PERSON TO ANOTHER

Illustration 3

The next time the mosquito is thirsty for blood, it will bite somebody who is healthy. When it pierces the person's skin with its long mouth, the mosquito injects the malaria microbes into the person's blood. What will happen now?

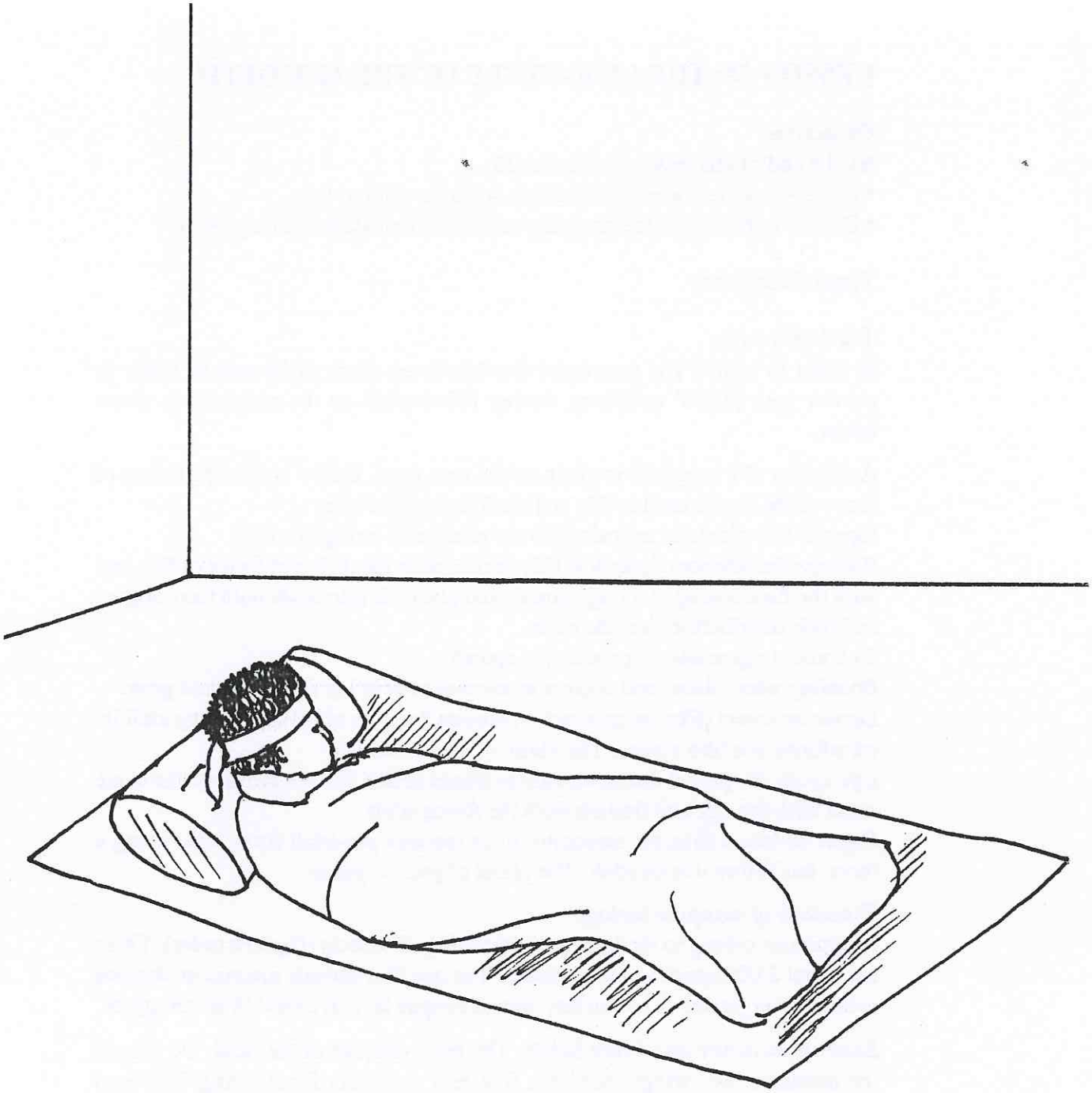


Illustration 4
The malaria microbes will grow and increase in number in this person's blood. Several days later, it will be this person's turn to become sick with malaria. *This is the only way in which malaria can pass from one person to another.*

LESSON 28: THE LIFE-CYCLE OF THE MOSQUITO

Objectives
By the end of this lesson pupils should:
- Understand that the mosquito needs water in order to live.
- Be able to recognise the mosquito at the different stages of its growth.

Time: 30 minutes

Teacher's notes
In order to enable you to prepare for this lesson more easily and be ready to answer your pupils' questions, further information on the mosquito is given below.

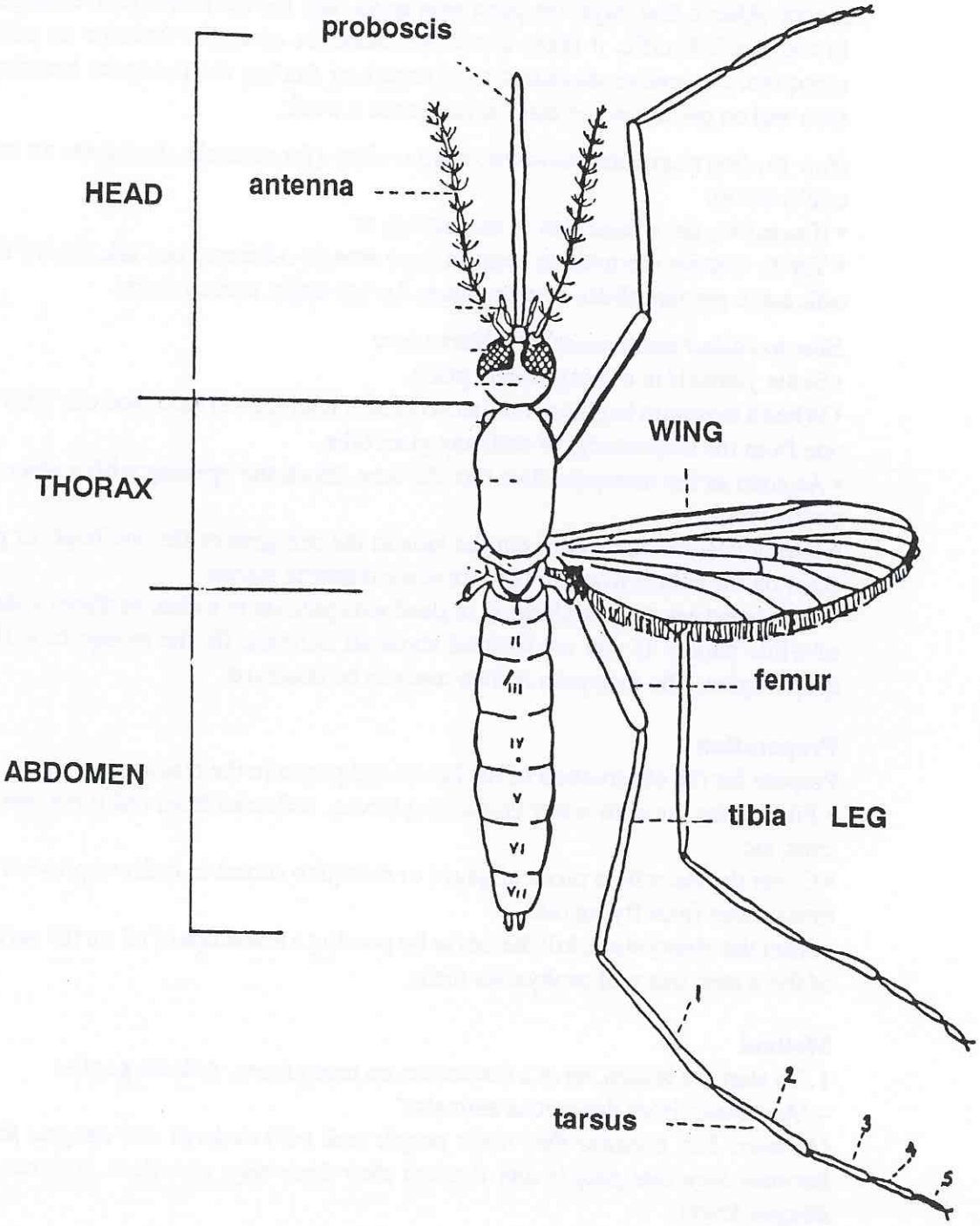
A diagram of a mosquito is given on the next page. Below is an explanation of some of the words used in this and the following lessons:
Aquatic life: plants or animals (like the mosquito) living in water.
Biology: the science of physical life, dealing with the different forms of life, and with the functioning of living animals and plants. It also deals with their origins and their distribution over the earth.
To breed: to generate, to produce, to spread.
Breeding sites: places and objects where mosquitoes lay their eggs and grow.
Larva: an insect (like the mosquito) between the time of leaving its egg until its transformation into a pupa. The plural of larva = larvae.
Life-cycle: the period that covers all the stages of life. For the mosquito the cycle starts with the egg and finishes with the flying adult.
Pupa: an insect (like the mosquito) in its inactive pre-adult form, after being a larva, but before it is an adult. The plural of pupa = pupae.

Essentials of mosquito biology
Mosquitoes belong to the family of 'two-winged' insects (*Diptera* order). There are about 2,000 species of mosquitoes. The one that spreads malaria in Vanuatu is called *'Anopheles'*. The one that spreads dengue fever is called *'Aedes Aegypti'*.

External structure and living habits: The body consists of the head, the thorax, the abdomen, two wings, and long, frail legs used only for standing. The head bears long antennae which are very hairy on males. Among the mouth parts, the proboscis fulfils the double function of piercing and sucking. The males feed on nectar and plant juices. The females feed on blood, which they need in order to lay their eggs. If they suck blood from someone who has malaria, when they next feed, the females may inject malaria germs into the blood of another person. They can fly up to 4km at a time, depending on the local wind conditions. Three days after feeding on blood, a female will lay about 100 eggs on the surface of stagnant water. A small air float on each side of the egg prevents it from sinking. The life span of a mosquito varies according to temperature and humidity. A female can live for up to 30 days, whilst a male dies after mating (1–10 days).

Life-cycle: This section is particularly important because it is the basis for preventive measures against malaria.

ENLARGED DIAGRAM OF A MOSQUITO



Eggs are laid on the surface of stagnant water in pools and along the sides of rivers, in empty tin cans, storage drums, roof drains and gutters, old tyres, buckets, empty bottles, coconut and cocoa husks, etc. These places are known as 'mosquito breeding sites'. The *larva* soon emerges from the egg. It lives just under the water, but makes frequent visits to the surface in order to breathe. The larva attaches itself to the surface by its *'spiracles'* for the intake of air. A few days later, the larva changes into a pupa. The pupa has a very large head and a thorax. After a few days, the pupa skin splits, and the adult mosquito emerges. In the South Pacific, it takes about one week for an egg to become an adult mosquito. Preventive measures are focused on finding the mosquito breeding sites and on getting rid of them at least once a week.

How to observe an adult mosquito in your class (for example, during the art and craft lesson):
- If possible, get a hand lens (a magnifier), or
- Try to contact the malaria team in your area *in advance*, and ask one of the officers to prepare slides of mosquitoes for use under a microscope.

How to collect mosquitoes for observation:
- Settle yourself in a damp, shady place.
- When a mosquito begins to bite, slowly cover it with a test tube (you can borrow one from the dispensary) or with any glass tube.
- As soon as the mosquito flies into the tube, block the opening with a piece of cotton wool.
- Immobilise the mosquito: put the tube in the refrigerator for one hour, or put ether on the cotton wool, or blow in some cigarette smoke.
- With tweezers, put the sleeping or dead mosquito on to a clear surface (a sheet of white paper). If you are worried about air currents, fix the mosquito with a drop of glue. The mosquito is then ready to be observed.

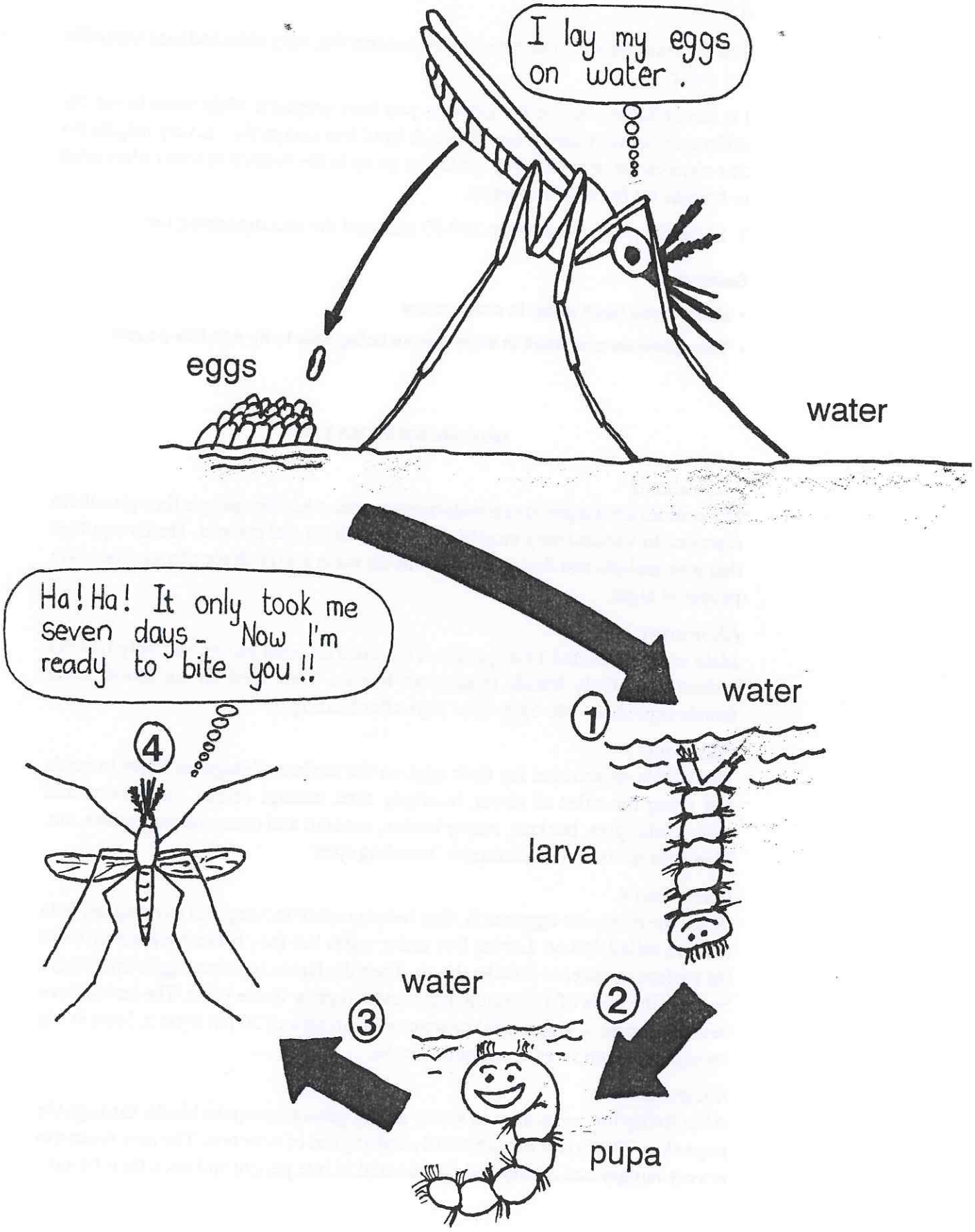
Preparation
Prepare for the observation of the larvae and pupae in the classroom:
- Fill a glass jar with water containing larvae, collected from old tyres, empty cans, etc.
- Cover the top with a piece of gauze or mosquito screen in order to prevent the mosquitoes from flying out.
- After the observation, kill the larvae by pouring a few drops of oil on the surface of the water: this will asphyxiate them.

Method
1. To start the lesson, have a discussion on mosquitoes. Ask the pupils:
– 'Are mosquitoes dangerous animals?'
(Answer: Yes, because they make people sick with malaria and dengue fever; because they bite people and through their bites they give them malaria and dengue fever)

- 'Why do mosquitoes bite people?'
(Answer: Because when they are hungry they feed on people's blood)

2. Show the larvae and pupae to the children.

LIFE-CYCLE OF THE MOSQUITO



Tell the children that mosquitoes are born in water and that they spend their childhood there. Stress the important fact that *mosquitoes need water in order to live.*

Tell the children that young mosquitoes cannot fly; they twist and turn around in the water.

Let the children observe the glass jar you have prepared. Help them to see the difference between larvae and pupae. A hand lens (magnifier) is very helpful for this observation. Explain why the larvae go up to the surface of water (they need to breathe air from time to time).

3. Show the pictures on pages 169-73 and read the accompanying text.

Summary

- **Mosquitoes need water in order to live**
- **They grow for one week in water before being able to fly and bite people**

HOW MOSQUITOES LIVE

Illustration 1
Mosquitoes are dangerous animals because when they bite people they give them diseases. In Vanuatu they mostly give dengue fever and malaria. The mosquitoes that give malaria rest during the daytime on walls and in shady places. They bite people at night.

Illustration 2
Male mosquitoes don't bite people. They feed on plant juices, and only live for a short time. Only female mosquitoes bite us. They feed on our blood. Each female lays about 100 eggs three days after feeding.

Illustration 3
The female mosquitoes lay their eggs on the surface of stagnant water in pools and along the sides of rivers, in empty cans, storage drums, roof drains and gutters, old tyres, buckets, empty bottles, coconut and cocoa husks, canoes, etc. These places are called mosquito 'breeding sites'.

Illustration 4
When the mosquito eggs hatch, they become small moving and twisting animals that are called *larvae*. Larvae live under water but they make frequent visits to the surface in order to breathe the air. Then the larvae become bigger and bigger because the body of a mosquito has started to grow inside them. The larvae have become *pupae*. A single pool of water with an area of 30 cm (6cm x 5cm) is big enough to contain 1,000 mosquito larvae.

Illustration 5
After living for seven days in water, a fully grown mosquito breaks through the pupa skin. This is just like a butterfly coming out of a cocoon. The new mosquito is very hungry and thirsty and flies around to bite people and suck their blood.

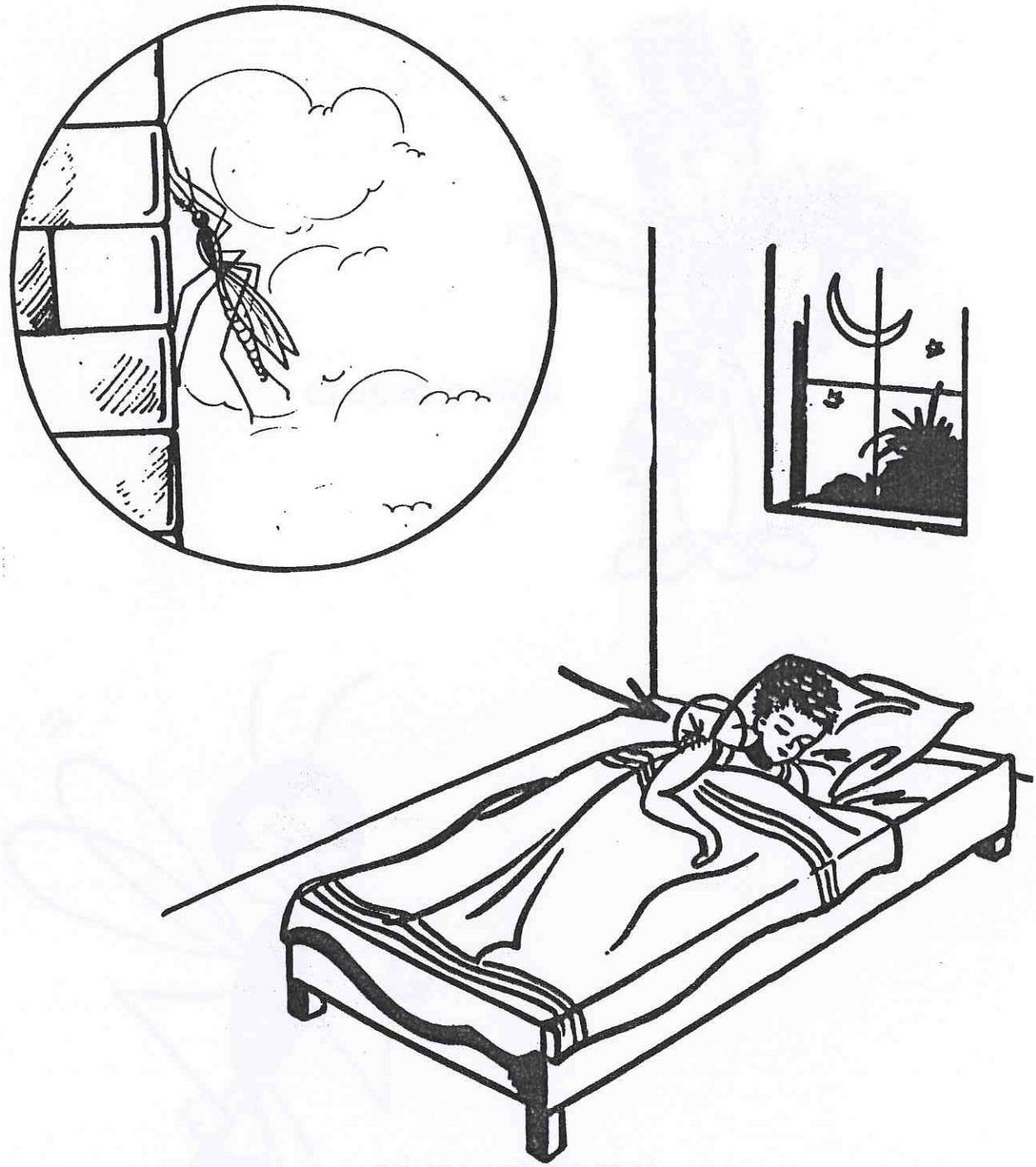


Illustration 1
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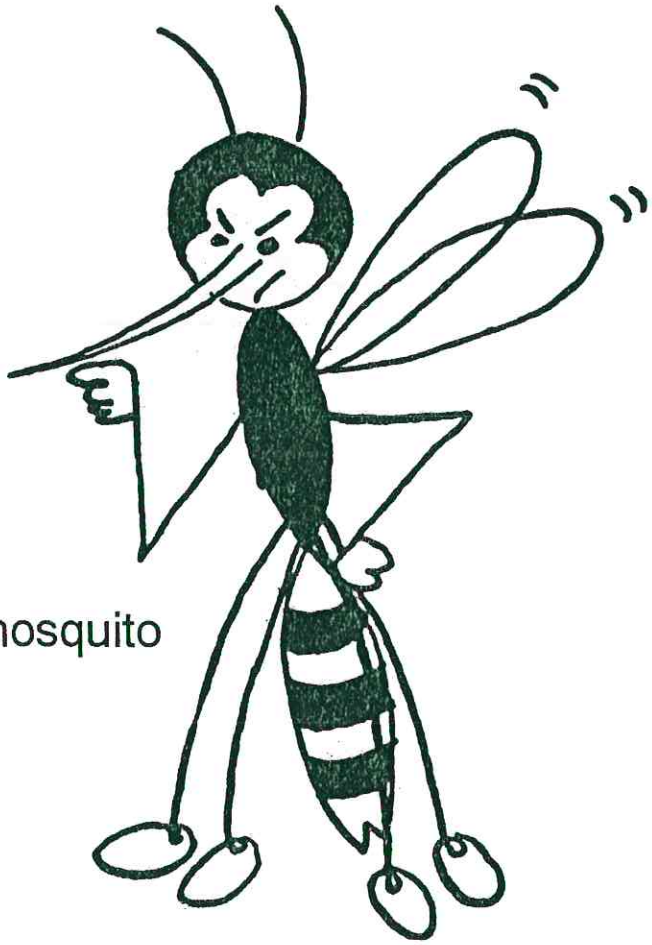
male mosquito



female mosquito

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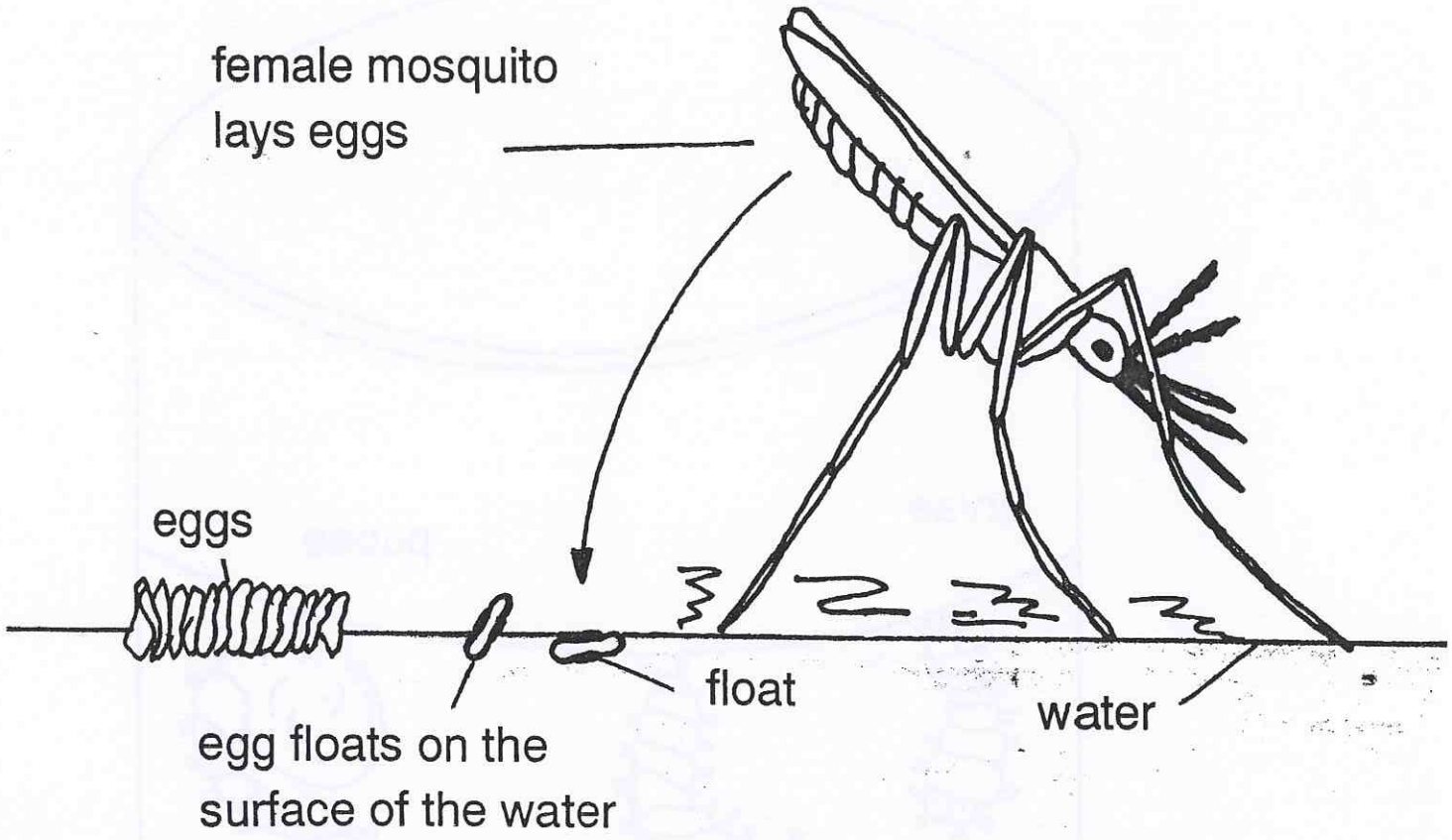

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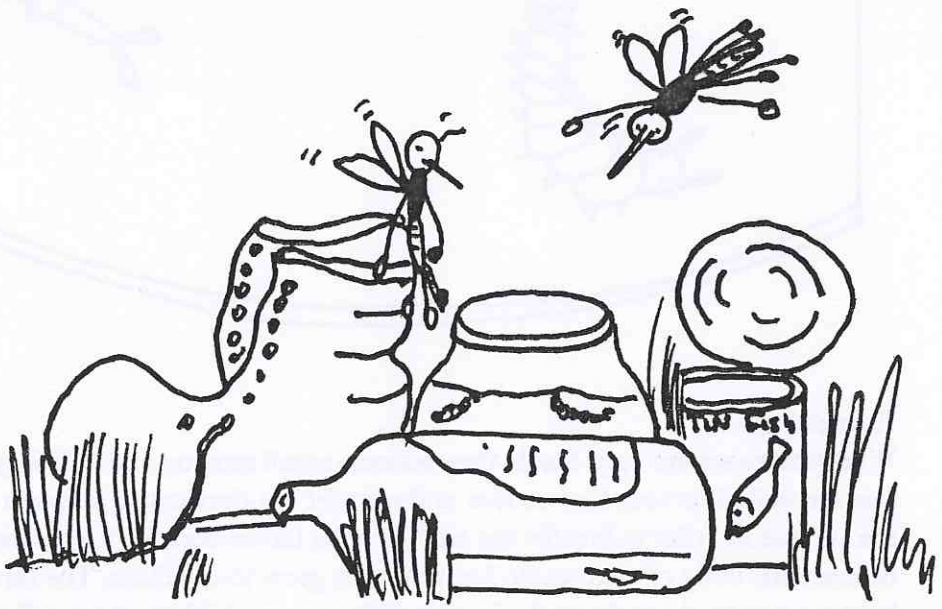

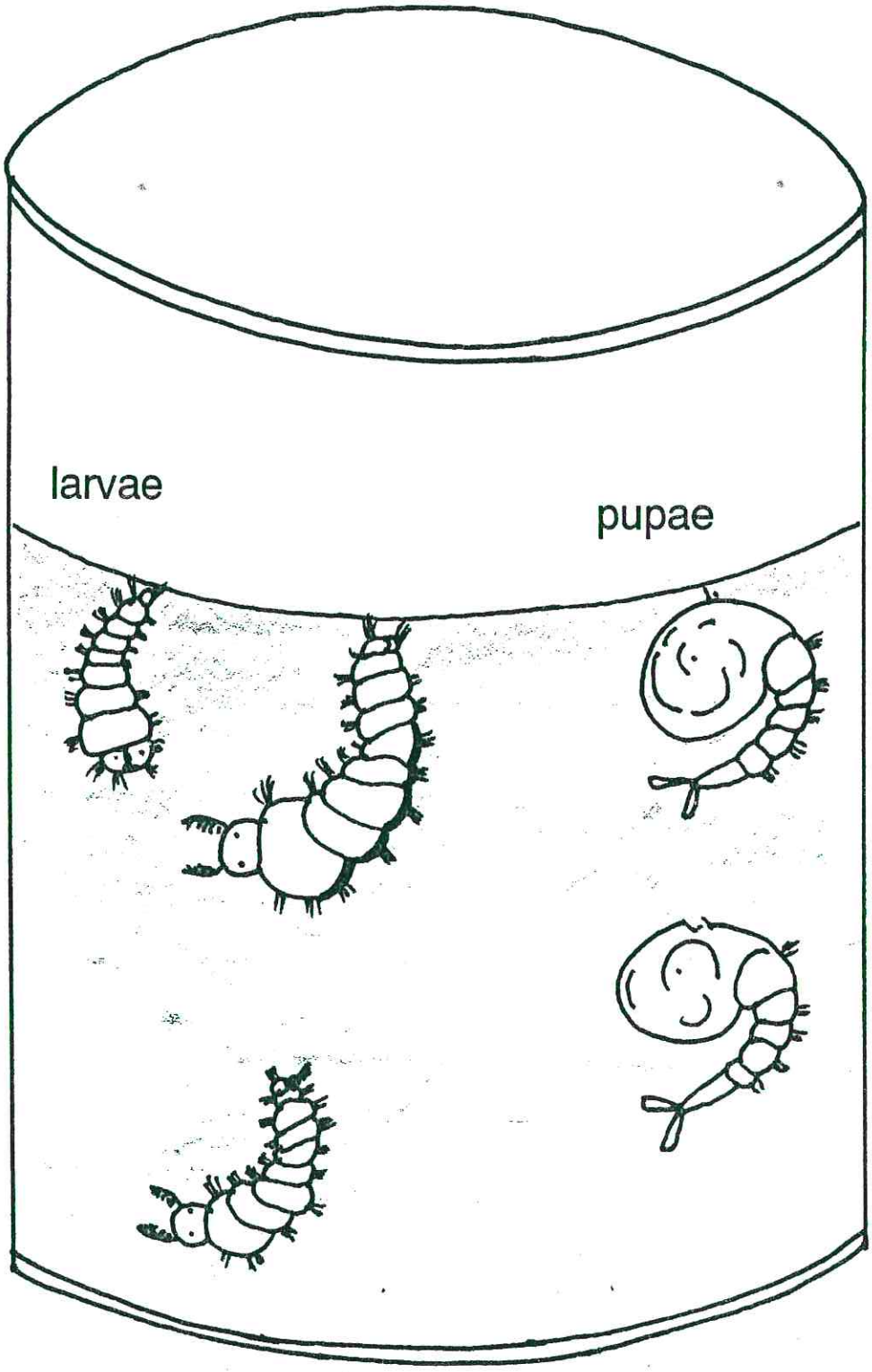

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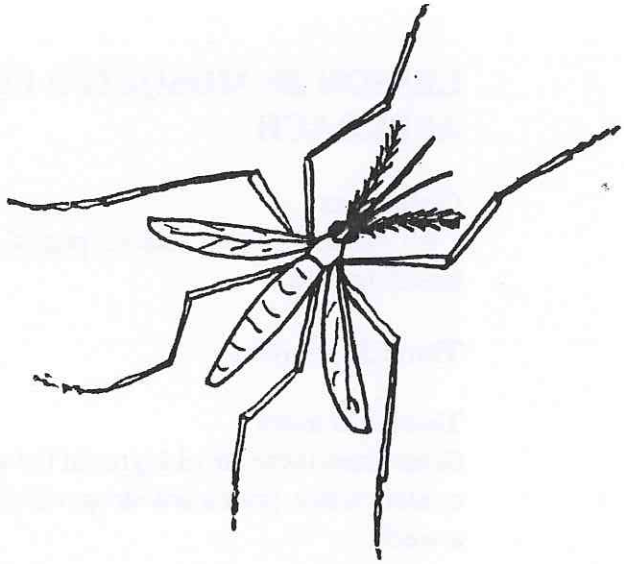
When the mosquito eggs hatch, they become small moving and twisting animals that are called *larvae*. Larvae live under water but they make frequent visits to the surface in order to breathe the air. Then the larvae become bigger and bigger because the body of a mosquito has started to grow inside them. The larvae have become *pupae*. A single pool of water with an area of 30 cm (6cm x 5cm) is big enough to contain 1,000 mosquito larvae.



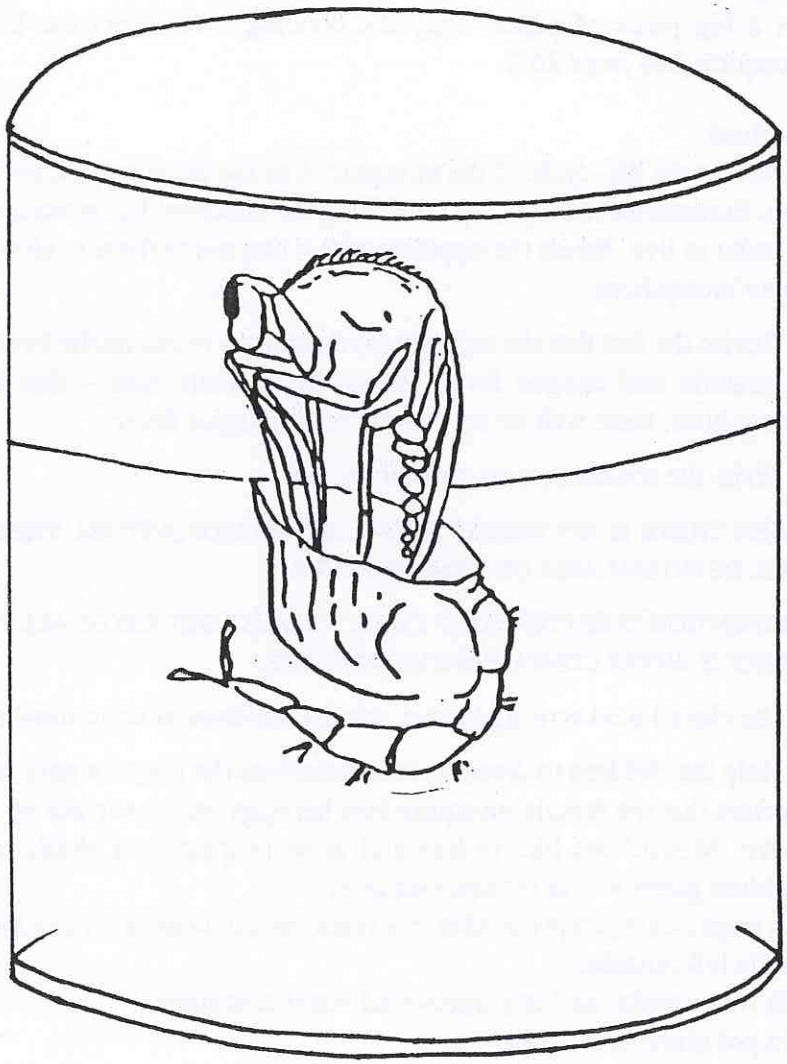


Illustration 5
After living for seven days in water, a fully grown mosquito breaks through the pupa skin. This is just like a butterfly coming out of a cocoon. The new mosquito is very hungry and thirsty and flies around to bite people and suck their blood.

LESSON 29: MOSQUITO CONTROL – THEORETICAL APPROACH

Objectives

• By the end of this lesson, pupils should know where to look for mosquito breeding sites.

Time: 30 minutes

Teacher's notes

Sometimes there are old tyres in the school playground. Beware of them! If they contain water, pour a few drops of oil or kerosene on to the surface, at least once a week.

Preparation

On a big piece of paper, copy the drawing that shows the life-cycle of the mosquito *(see page 167)*.

Method

1. Revise the life-cycle of the mosquito. Use the drawing you have made to help you. Summarise the topic by reminding the children that mosquitoes need water in order to live. Stress the opposite case – that when there is no water, there will be no mosquitoes.

2. Revise the fact that the mosquito is dangerous to our health because it can give us malaria and dengue fever. Stress the opposite case – that if there are no mosquitoes, there will be no malaria or no dengue fever.

3. Write the conclusion on the blackboard:

WHEN THERE IS NO WATER, THERE ARE NO MOSQUITOES. THEREFORE THERE WILL BE NO MALARIA OR DENGUE FEVER.

PREVENTION IS BETTER THAN CURE. WE MUST GET RID OF ALL PLACES WHERE THERE IS WATER CONTAINING MOSQUITOES.

In the class's next writing lesson, ask the children to write these sentences.

4. Help the children to discover for themselves the places where mosquitoes live. Explain that the female mosquito lays her eggs on the surface of *stagnant (still) water*. Mosquitoes like to live and grow in *quiet and shady places*. Can the children guess where mosquitoes live?

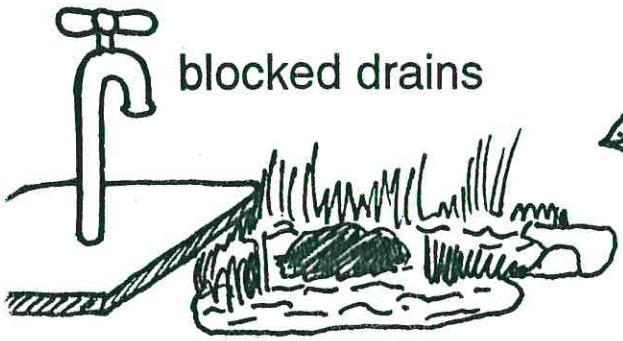
• In empty cans, empty bottles, old tyres, coconut shells, or any kind of container that is left outside.
• In water tanks, and any uncovered water container.
• In pot plants and flower vases.
• In tree holes and crab holes.
• In pools along the edges of a river where the bush is very thick and prevents the water from running freely.

5. During the next art and craft lesson on the timetable, ask the children to draw some breeding sites under the sentences they have written. They should take their work home and show it to their parents.

Summary

- **Prevention is better than cure**
- **No water = no mosquitoes = no malaria or dengue**
- **We must destroy all the places where mosquitoes live**

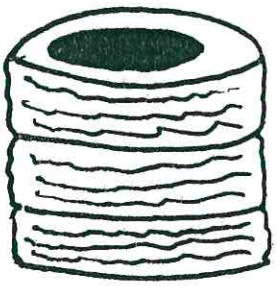
MOSQUITO BREEDING SITES



blocked drains

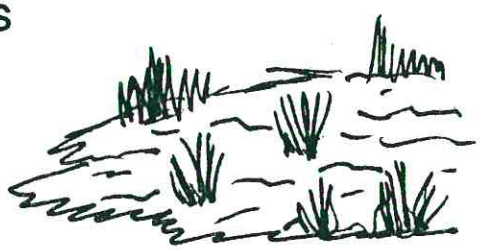
pot plants

old tyres

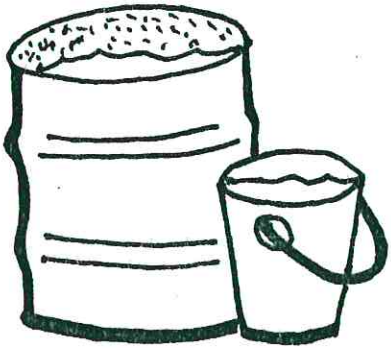


a vase of flowers

containers

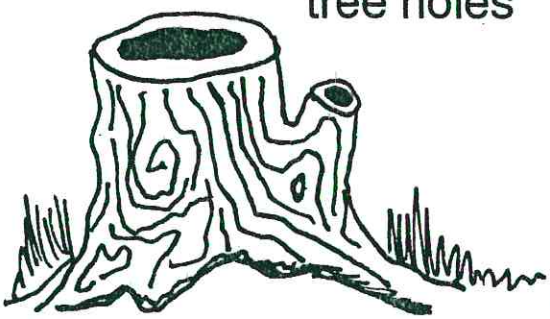


pools of water



water storage containers

tree holes



coconuts

DO YOU KNOW ANY OTHERS?

LESSON 30: MOSQUITO CONTROL – PRACTICAL APPROACH

Objective

• During this lesson pupils should discover for themselves some actual mosquito breeding sites.

Time: 30 minutes

Teacher's notes

Contact, *in advance,* somebody from the malaria health team who can come with you and your class and help you to discover mosquito breeding sites. If possible, the same person can come with you during the next lesson, when you try to get rid of mosquito breeding sites.

Inform the parents *in advance* that their children will be going for a walk around the school and the village, to learn how to look for mosquito breeding sites.

Material needed

• A piece of paper and a pencil for each group 'secretary'.

Method

1. Tell the children the purpose of this lesson. They are to go out and look around the school for places and objects containing stagnant water, where mosquito larvae and pupae can live and grow.

2. Divide the class into small groups. Ask each group to choose a 'secretary' who will record the different kinds of mosquito breeding sites that they find.

3. Ask the children to walk around the school compound for 20 minutes.

4. Back in the classroom, make a list of the mosquito breeding sites that the children have discovered. Keep the list for the next lesson.

LESSON 31: MOSQUITO CONTROL – PRACTICAL APPROACH (CONTINUED)

Objectives

By the end of this lesson, the pupils should:

- Know how to get rid of mosquito breeding sites.
- Be able to make up some rules for their classroom and their school in order to get rid of mosquito breeding sites.

Time: 30 minutes

Teacher's notes

The more you can involve other people in helping (your colleagues, malaria or health department staff, parents), the better you will achieve your objectives. If you are by yourself, here is some further information about the way to eliminate (get rid of) mosquito breeding sites.

How to eliminate mosquito breeding sites:

- Clean and drain streams and puddles. Allow stagnant water to run away.
- Pour kerosene or used car oil on to ponds which cannot be filled or drained.
- Clean bush and plantations.
- Pierce or crush empty tins.
- Put rubbish and crushed tins in a hole, and cover them with a layer of earth or sand.
- Cover water tanks with a piece of material such as a rice bag, and keep the material tightly fastened with string or rope.
- Don't leave empty tins, bottles, buckets and drums around. Turn them upside down and protect them from rain.
- Clear leaves and other rubbish from the roof gutters.
- Make sure that soakaways, septic tanks, and water traps are tightly closed, and fill in any holes and cracks in their cement tops.

Choose the methods of elimination that your pupils can carry out easily. This will develop their sense of responsibility.

Method

1. Refer to the illustration of the mosquito's life-cycle on p.167 and revise this topic. Stress the fact that it takes one week for an egg to become a flying mosquito. *Therefore, to stop mosquitoes from growing, their breeding sites should be eliminated once a week.*

2. Explain the different ways of getting rid of the mosquito breeding sites that the children found during their previous lesson.

3. Adopt a few simple rules to follow each a week. If the collected items have to be stored before they can be thrown away, shelter them from rain. When children clean the bush, check that besides cutting the grass they also collect any empty tins, bottles and coconut shells, *and then destroy them* (burn, bury, pierce or crush them).

4. Tell the children that from now on, they must put into practice what they have learned!

LESSON 32: WHAT ARE POISONS?

Objective

• By the end of this lesson, the pupils should understand what a poison is and what it does.

Time: 30 minutes

Teacher's notes

Poisons are not new to Vanuatu. Certain fish are poisonous. Certain plants are poisonous. Children usually learn about these poisons at home. However, there are many new poisons such as Javel (chlorox or bleach), gasoline, kerosene, medicines and insect killers. The next three lessons deal with the new poisons.

In 1987, petroleum products (kerosene, gasoline) were the leading cause of hospital admissions through accidents among children of 0–4 years old.

In cases of poisoning, it is important to start First Aid quickly. Pupils in Year 4 can help out with emergency situations such as poisoning because the steps are very simple to follow. This and the next two lessons on poisoning are very important for your pupils, because they can help to save lives and prevent unnecessary suffering among babies and small children.

Preparation

• On a large piece of paper, draw the symbol for poison and draw simple pictures of things that are poisonous. Refer to the chart on the next page to help you.
• Cut out these pictures and obtain some sticky tape or 'blu-tack' so that they can be fastened to the blackboard later on.

Method

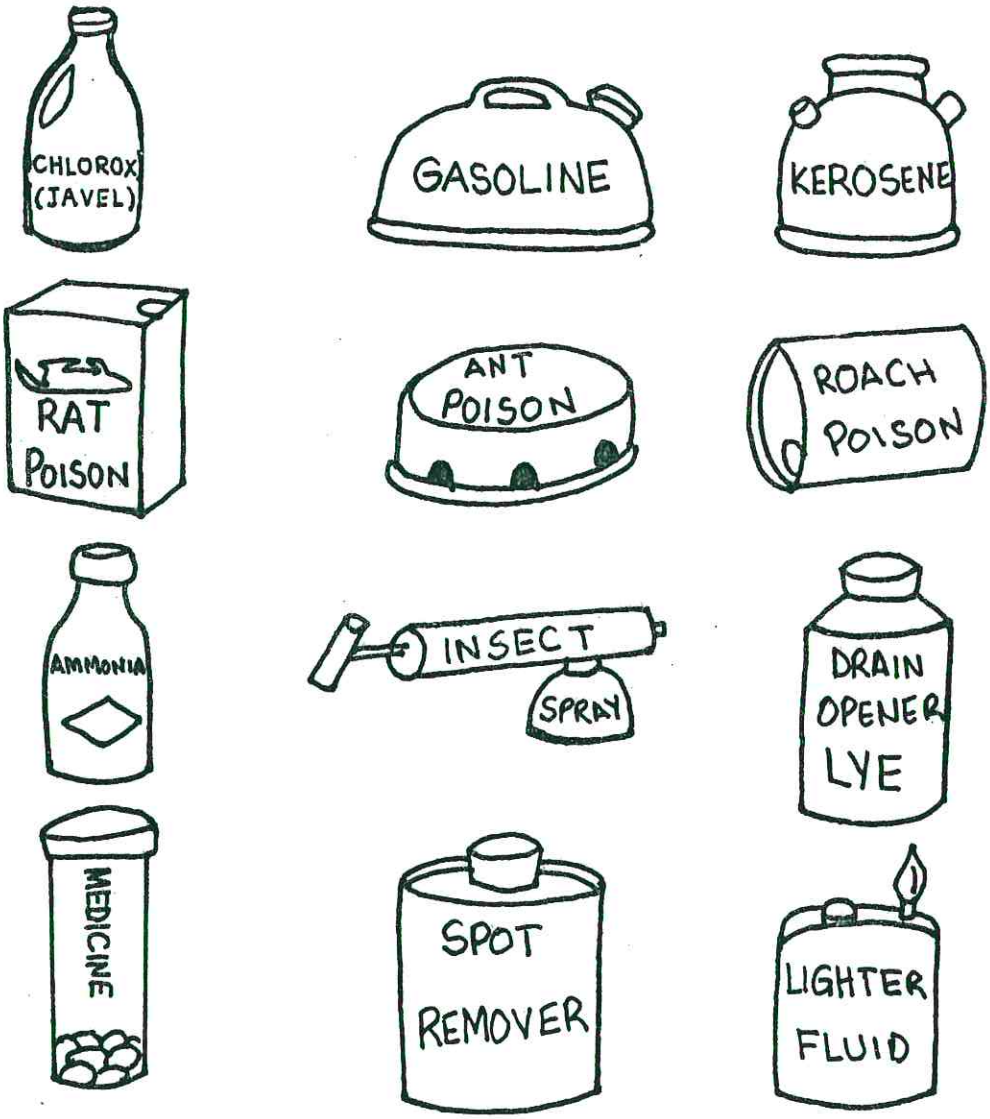
1. Write the word 'poison' on the board and fix the picture of the symbol for poison underneath. Ask:
– 'What do you think of when you see this?'
– 'What does it mean?'
– 'Where have you seen it before?'

Explain that a poison is something that
• can make us sick, and *may kill us*
• we usually find in bottles or cans
• we should not put in our mouths
• makes us sick if we swallow it, or sometimes if we breathe it in or it gets on our skin.
In Vanuatu, the most common poison swallowed by young children is kerosene.

2. Tell the children that some things we buy or have at home are poisons. Explain:
• A poison is any substance which, when taken into the body, will produce injury or death.
• Some things are poisonous if taken in very *small* quantities.
• Other things become poisonous if they are taken in *large* quantities.

POISON CHART

←→POISON



3. Display your pictures on a table and ask some of the children to pick up those that they have already seen and to stick them on the board. This will now become a poison chart. Here are the most common substances that are poisonous:

- rat poison
- insecticides
- herbicides
- cleaning substances, such as Javel (chlorox or bleach)
- medicines that are only for use on the outside of the body.
- medicines, if too much is taken at once (nivaquin, aspirin, panadol, sleeping tablets, etc.)
- petrol and kerosene

4. Tell the children to look around their home and see if they can see any poisons that are not already on the chart. These can be added to the chart the next day at school.

Pupils may also draw plants and animals that are poisonous.

Summary

- **POISONS MAKE US SICK**
- **POISONS CAN KILL US**

LESSON 33: POISONING – FIRST AID

Objectives
By the end of this lesson pupils should know what to do in an emergency when somebody has taken poison – whether to make the person vomit or whether to give the person something to drink.

Time: 30 minutes

Teacher's notes
The directions given to the children are very simple. They are only for emergency situations, while waiting for medical help to arrive.

The main things to remember are as follows:
• Start First Aid quickly; try to stop the poison from entering the blood.
• Get the poison out of the stomach by getting the person to vomit. However, this should not be done with *petrol, kerosene, chlorox, lye or acids.*
• For poisoning with petrol, kerosene, chlorox, lye and acids, you must dilute the poison. Make the person drink water!

Method
1. Explain to the children what to do if someone takes poison. *Always send for someone to get medical help.*

Kerosene: if you find a young child crying and choking and if he is holding an open bottle of kerosene, DO NOT MAKE THE CHILD VOMIT. Kerosene burns the skin. If the child vomits, he may get some of the kerosene inside his lungs, which will cause burning and could lead to a bad sickness of the lungs called 'pneumonia'.

GIVE THE CHILD SOME MILK OR WATER TO DRINK.

This dilutes the kerosene in the stomach. This means that the milk or water makes the kerosene thinner or weaker so that it will not burn so badly.

If you are alone with the child, *take the child to the aid post or clinic right away.*

During the next writing lesson on the timetable, ask the children to write down the rules for the treatment of kerosene poisoning.

Medicines: if you find a young child with an empty bottle of pills or other medicines, if he looks sleepy, if he cries because his stomach aches, and if he tells you that he has swallowed some pills or medicines, MAKE THE CHILD VOMIT RIGHT AWAY! You have to stop the poison from being digested and from entering the blood.

Drinking methylated spirits causes a person to go blind.

To make a child vomit, put a spoon handle at the back of the throat. You should use a spoon instead of your fingers because the child might bite your fingers.

Another way of making a child vomit is to make him drink water which has salt in it.

After the child has vomited, give drinks of water or milk and TAKE HIM/HER TO THE DISPENSARY. Take some of the poison (or the bottle) with you to show the nurse.

2. During the next activity, singing or story lesson, get the children to perform a mime about the treatment of kerosene poisoning.

Choose the actors who will perform the mime, and ask them to plan it themselves. The other children will have to look at the mime and decide if it is correct. They will have to revise carefully the steps that should be taken.

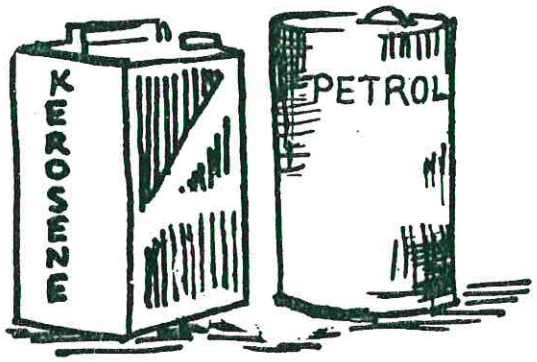
Summary

- **For poisoning by KEROSENE, do not make the child vomit – MAKE HIM/HER DRINK**
- **For poisoning by MEDICINE, you must MAKE THE CHILD VOMIT.**

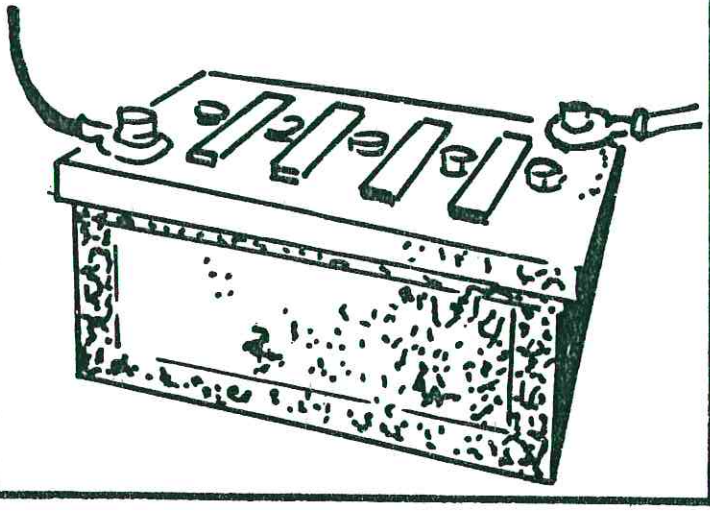
POISON MAKES YOU SICK
POISON MAY KILL YOU

THESE POISONS BURN YOUR SKIN:

DO NOT MAKE THE PERSON VOMIT



KEROSENE AND PETROL
Sometimes these are swallowed by children, who mistake them for soft drinks

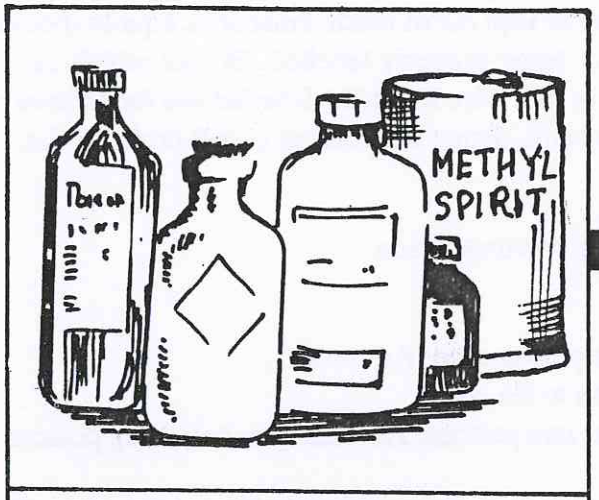


ACIDS IN BATTERIES, CAUSTI SODA, AMMONIA
Sometimes these are swallowed by mistake

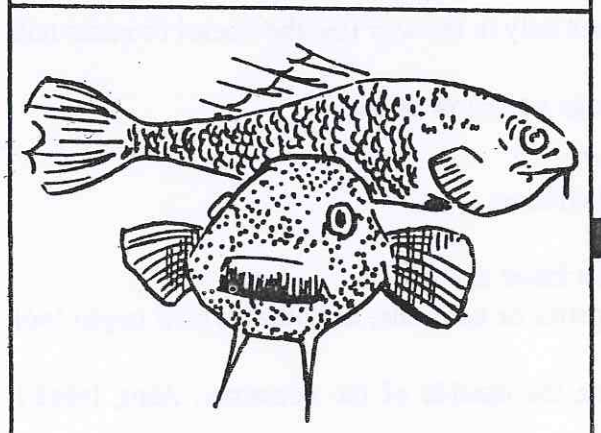
MAKE THE PERSON DRINK

POISON MAKES YOU SICK
POISON MAY KILL YOU

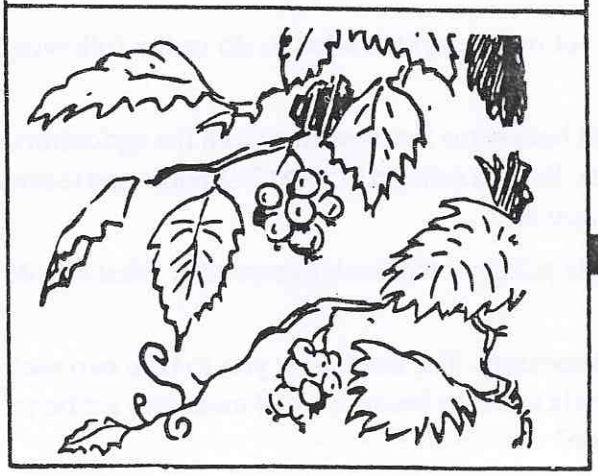
MAKE THE PERSON VOMIT



MEDICINES, WEED KILLER AND METHYLATED SPIRIT
Sometimes children play with these. They might think they are sweets or something to drink



SOME FISH
Some fish are poisonous to eat



SOME PLANTS AND BERRIES
Sometimes children eat these

LESSON 34: POISONING – PREVENTION

Objectives
By the end of this lesson, the pupils should:
• Know that poisoning can be prevented.
• Know the simple rules of preventing poisoning.

Time: 30 minutes

Teacher's notes
The poisoning of children is caused by careless older children and adults. As soon as there is a toddler (a child just learning to walk) in a house, everything that is poisonous should be locked away or kept out of reach. Poisonous liquids should *never* be kept in bottles without being properly labelled. Bottles which once contained Coca Cola, lemonade or fruit juice should be *labelled* and *locked away in a cupboard or tin trunk.* Better still, do not put poisons in soft drink bottles.

Materials needed
The poison chart made during the previous lesson.

Method
1. Ask the children to look at the poison chart. Ask them:
– 'Can you add any more pictures to the chart?'
– 'Young children sometimes get into poisons. How can you help keep poisons away from them?'
– 'Why should you take medicines only in the way that the doctor or nurse tells you?'
– 'Why is it good to only eat things you know about?'

2. List the following on the board:
• Keep poisons away from small children.
• Use medicines correctly.
• Only drink or eat things that you know are safe.
• Do not keep poisons, such as petrol or kerosene, in bottles which might look like something to drink.
• Put the name of the poison on the outside of the container. Also, label it 'POISON'.

3. Let small groups of children act out or explain what to do in the following cases:

(a) Your older brother has brought back some insect poison from the agricultural station. He puts some on the plants. He puts some in a Coca Cola bottle and leaves it under the house. What should you do?

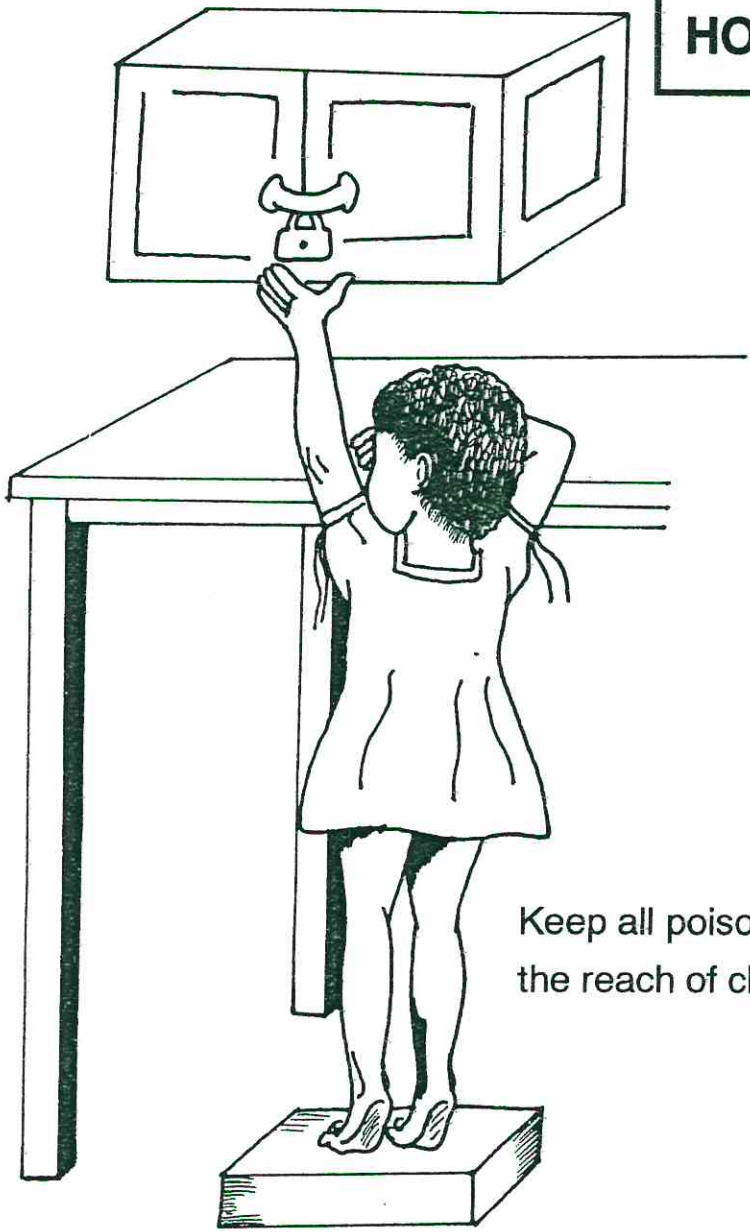
(b) You find a small jar. It has little pills in it that look like sweets. What should you do?

(c)You get some pills from the dispensary. The nurse tells you to take two each day. Your brother tells you to take six each day because it will make you get better more quickly. What should you do?

Summary

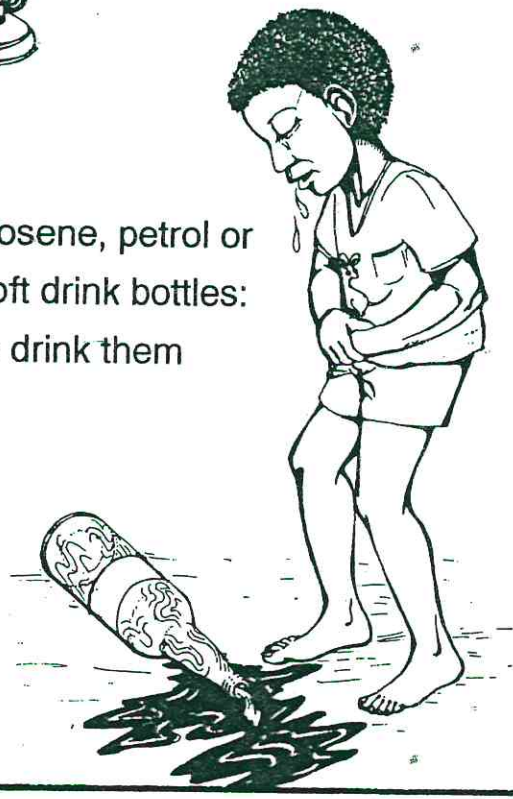
- **To prevent poisoning, you must:**
  - **Put the name of a poison on the container**
  - **Lock away all poisons**
  - **Keep poisons out of the reach of children**
- **Prevention is better than cure**

HOW TO PREVENT POISONING



Keep all poisons out of the reach of children

<u>DO NOT</u> keep kerosene, petrol or other poisons in soft drink bottles: children may try to drink them



LESSONS 35 AND 36: REVISION

Teacher's notes

These lessons should be used to revise the work done in the whole of Year 4. The summary at the end of each lesson will help you to do the revision.

Teach and interest the community by preparing a School Health Day when the parents and village leaders can come and visit the school. Display the children's work and drawings that have been done during the year. Try to get help from the Health Department. The presence of a microscope, which gives the opportunity to look at microbes, malaria parasites and mosquitoes, is the key to success, and can lead to greater parental co-operation in achieving better health for all.