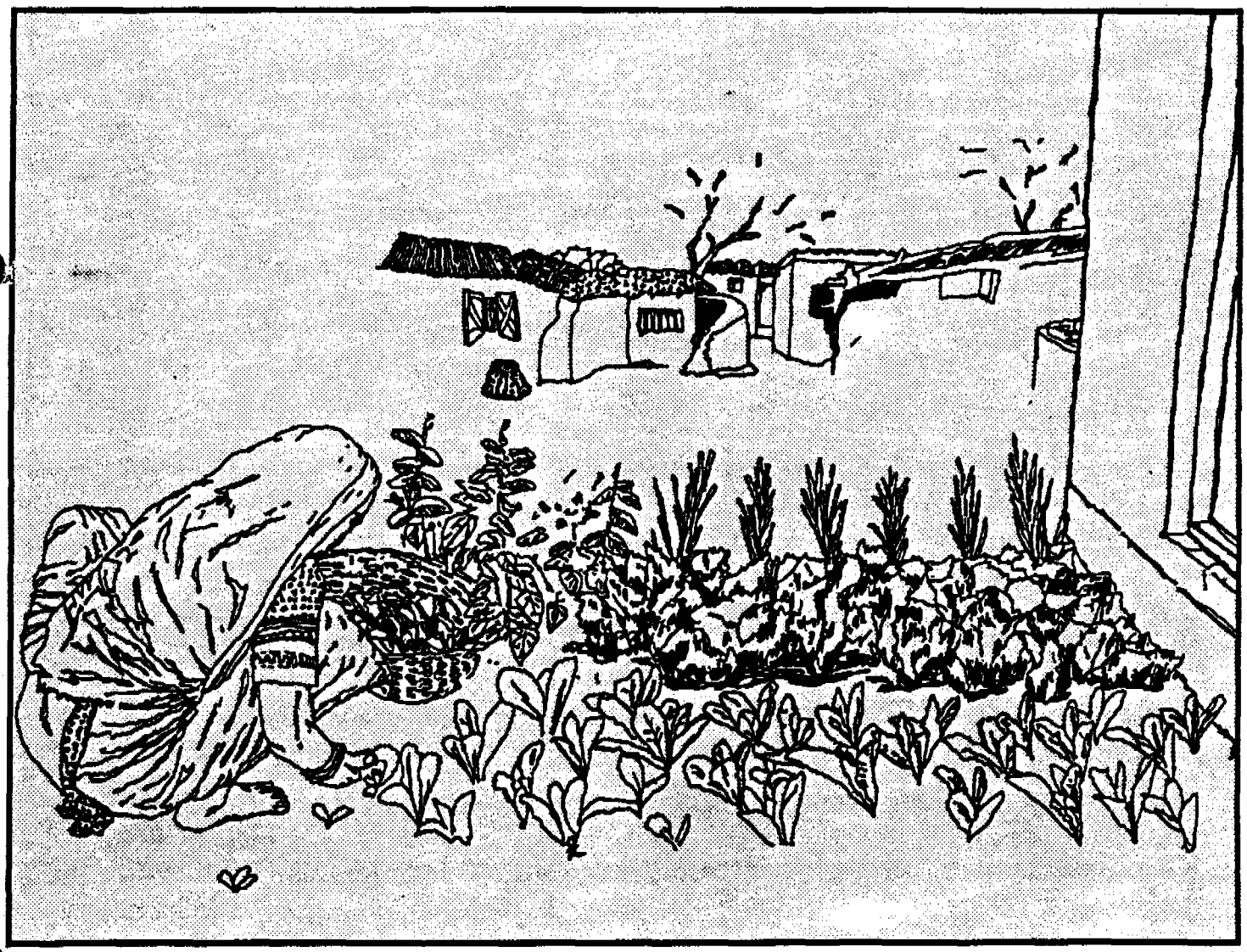
WATER, GARDENS, AND HEALTH



A GUIDE FOR COMMUNITY EDUCATORS.

WATER, GARDENS, AND HEALTH

A GUIDE FOR COMMUNITY EDUCATORS

TEST EDITION

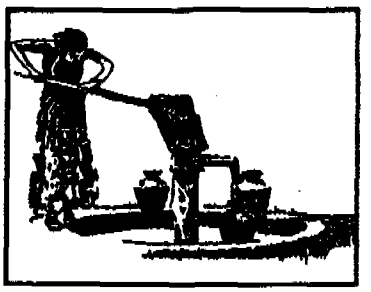
Written by: Stephen Minkin

Advisor: Nellie Mathu

Design: Manigault Design

Illustrations: Brian O'Neil

CONTENTS



Information for community educators is often in short supply. By educators we mean teachers, health workers, and community organizers involved in promoting healthy practices. Family members sharing knowledge with relatives, neighbors and friends are the most valuable educators.

Food, water and environment are personal and immediate matters. Nutritious food maintains health, promotes growth in children, and prevents blindness. Safe drinking water nurtures and restores while unsafe water, even when it looks clean, is harmful. Puddles and rubbish laying around encourage rats and mosquitoes. Clean surroundings, gardens, and properly located latrines can make the neighborhood beautiful and safe.

Water, Gardens and Health is rich in information and experiences. The manual employs simple dialogue, messages, and illustrations . The division of material approximates the design of the human body. Community participation is the head, water and sanitation the torso. Maternal and child health are the arms, while everything is supported by the strong legs of nutrition and gardens. The arrangement of text and choice of language should make the manual accessible to people with a broad range of backgrounds and levels of literacy.

The whole concept has benefitted from numerous outstanding works such as UNICEF's successful Facts of Life. Look to the "Sources and Resources" section for more information. Our aim has been to provide specific yet non-technical frames of references for a wide range of subjects of immediate interest to people and communities.

Some readers may require further technical information. If so, check the above-mentioned references. Should sufficient reviewers call for them, technical supplements may be added at the end of the text. The ring binder design allows for the future introduction of new materials. The manual could develop into a periodic magazine with regular updates and information for teachers, health workers, and community organizations.

While the author and illustrator have made every attempt to express the universality of the concepts and messages contained in this manual, it is clearly impossible to do justice to the wide variety of socio-cultural conditions prevailing in countries and regions. We invite you, therefore, to use and adapt the manual to fit local conditions. Section II "How to use this Manual" gives suggestions on how to derive maximum benefits from it.

We would very much appreciate your comments and advice on this current test edition. Please send your comments to me at the address shown below.

Frank Hartvelt
Deputy Director

Address:

Division for Global and Interregional Programmes,
United Nations Development Programme,
One United Nations Plaza,
New York, N.Y. 10017
USA

Telephone: (212) 906-5858
Fax : (212) 906-6350

Water, Gardens and Health has many possible uses.

It could be translated or re-written to include stories using local characters and issues of concern.

People involved in the creation of local educational materials can use it as reference. Ideas for writing songs, poems, plays, comic books and newspaper articles may be found in the manual. So are captions and messages for posters.

School teachers can use the manual to involve students in promoting healthful behavior. Community workers can use it to promote discussions or group activities.

Those who can read could help others by reading the manual to them. People learning to read can improve their skills by using it. Literacy classes can use the materials for learners. Groups of new readers can study the material to hold on to their skills.

In many countries radio programmes will be developed based on these materials. National or community contests for the best locally produced posters, songs or dramas based on themes in the manual can involve many people and generate new ideas.

COMMENTS

This is a test edition. Your letters or answers to the questions below will be greatly appreciated, as would samples of your own work.

1. How will this manual be used in your programmes?

2. Is the book well organized? Yes ___ No__

3. Could you find what you wanted easily? Yes__ No __

4. Which parts of the manual are most useful and why?

5. Is the language clear? Yes __ No __ If not, what words, phases or expressions are not clear?

6. Did you find any factual errors ? Yes __ No __ If yes, please describe.

COMMENTS *(CONTINUED)*

7. Did you find the illustrations useful? Yes __ No __

8. What changes in illustrations should be made in the future?

9. Please comment on the design or format.

10. What difficulty did you encounter in using the manual?

11. What material should be added in the future?

12. What should be left out?

13. Have you any other advice?

ACKNOWLEDGEMENTS

This manual benefitted from the counsel of numerous individuals and organizations. Dr. Arumugan Kandiah at FAO enthusiastically gave of his time and knowledge of water resources management, as did Dr. Franz Simmerbach on the subject of nutrition. Hans Van Damme, Manieke Boot, Dick de Jong and other colleagues at the International Water and Sanitation Centre (IRC) in the Hague reviewed an earlier draft, and offered advice and valuable resource materials. Susan van der Vynckt, in nutrition education at UNESCO provided energy, comments and materials.

At WHO, Dr I. DeSoyza, Diarrhoeal Disease Control Programme, and Dr. Benbouzid, Family Health and Nutrition, made valuable suggestions. Harwant Singh Dhillon, Health Education and Health Promotion, repeatedly stressed the need to keep messages simple. Dr. Greg Watters and Dr. Dennis Warner, Community Water Supply and Sanitation Division reviewed drafts, gave encouragement, advice and a working space. Alexander (Sandy) H. Rotival, Cecile Davis and Chereyle Baker-Noordhuizen at UNDP helped in many ways.

Considerable insight was gained during visits with David Collett at Water Aid. Sue Choudhry arranged meetings with numerous friends at OXFAM (U.K.). Information and resource material were obtained with the help of Mimi Khan of AHRTAG, and the staff Institute of Child Health. Sandy Caincross of the London School of Hygiene and tropical medicine provided valuable information and perspectives.

The health education staff at AMREF in Nairobi provided excellent resource materials and advice, as did Gunnar Schultzberg of the UNDP/World Bank Regional Rural Water and Sanitation Group in Nairobi.

Tony Hewett provided a project communication perspective based on the UNICEF global experience with *Facts for Life*. May Yacoob of WASH gave astute advice on material development and the anthropology of hygiene. Thanks to Deborah Maine of the Prevention of Maternal Mortality Programme at Columbia University, Joe Cook at the Edna McConnell Clark Foundation for information on prevention of schistosomiasis and trachoma. Recognition to Eveline Mc Dougal for organizing the draft and editorial help, and to Paz Lutz for careful review and suggestions. Elizabeth Wilson of the Developing Country Farm Radio Network for improving the manuscript.

Friends at PROWWESS Siri Melchior, Lyra Srinivasan and Deepa Narayan Parker reviewed materials and encouraged participatory approach to dialogue and activities. Mina Mauerstein-Bail of the Division for Global and Interregional Programmes at UNDP for networking and advice. Willie Barreiro of the World Bank for help in testing materials and Dr. Ruth Horner for sharing CARE's innovative approaches to reaching children with health and hygiene messages. Horst Offerstetter of Pan American Health Organization (PAHO) for providing a Latin American perspective. Halima Bibi, Moyna Begum and Baby and their family provided years of practical perspective in Bangladesh.

Gratitude to Angie De Hitta, Verna Hines and Isabel Relevo for their steady support at DGIP. Frank Hartvelt for vision and patience.

A WATER-WATCHING WALK

We have many problems with water. At times too much, often not enough.

Getting water takes up much time and energy. Usually water has to be carried a long way by women and young girls. Most of our water comes from small ponds, streams, and from the river. We also have open wells.

Our drinking water is not clean. It may look good, but if you "watchwater" you will know it is not clean. Watching water means learning about where water comes from, how it is handled and where it goes.

In some places you will find open drains, and puddles filled with dirty water and human waste.

"OUR ANCESTORS WARNED AGAINST PASSING WASTE OR URINE NEAR WATER SOURCES."

Although we want privacy, human waste in and near the community makes life unhealthy, unsafe, and uncomfortable. A few families have flimsy latrines built on stilts close to their homes. These latrines often collapse. They always smell from mounds of faeces lying on the ground.

Flies buzz around waste made by children who are too young to go into the bush, or who fear flimsy latrines. Most adults believe that the waste passed by young ones outside our homes is harmless, and it is hard to always clean up after them.

Much of this mess in and around the community is washed into our water. At different times of the day we can see people urinating and defecating in or near our ponds, streams, and wells. Our ancestors warned against passing waste or urine near water. We have forgotten their wisdom.

It is crowded now and so more waste gets into the water.

PUDDLES AND WATER COLLECTING IN RUBBISH BREED ANNOYING MOSQUITOES CAUSING MALARIA AND OTHER DISEASES.

You may see broken water pumps, sandpipes and abandoned latrines which were built years ago.

We collect water, drink and bathe alongside our animals. But do we really have any other choice?

During your walk you may see people who are sick from diseases caused by unclean water. Diarrhoea is very common and especially dangerous for young children. Often we have to rush them to the health centre. Many are saved. Some die.

Other diseases caused by unclean water and bad sanitation are cholera, typhoid, dysentery, polio, jaundice, and bilharzia. Mosquitoes breeding in puddles, open drains, and ponds cause malaria, dengue fever, and other diseases. Worms enter the body from water, food, and human waste on the ground.

Suggestions

Take water-watching walks in small groups of neighbours, students, members of community groups, water committees, or cooperatives.

Make a map of your community showing all sources of water, houses, and other places important to you.

On the map locate places where too much or too little water exists. Mark clean and unclean areas in different colours.

You can use the map in planning for safe water and sanitation in your community.

Discussion

What would you like to change about how your family gets drinking water?

What does clean water look like? Taste like?

Do you or members of your family often have to drink unclean water?

What can you do to make it clean?

WISE WOMEN IN A COMMUNITY

We often complain about living in an unlucky community. Diarrhoea is common. We feel weak. Flies and mosquitoes bother us.

Hearing our complaints my neighbour said, "Our luck will change when we protect our water and, as smart women, use it wisely."

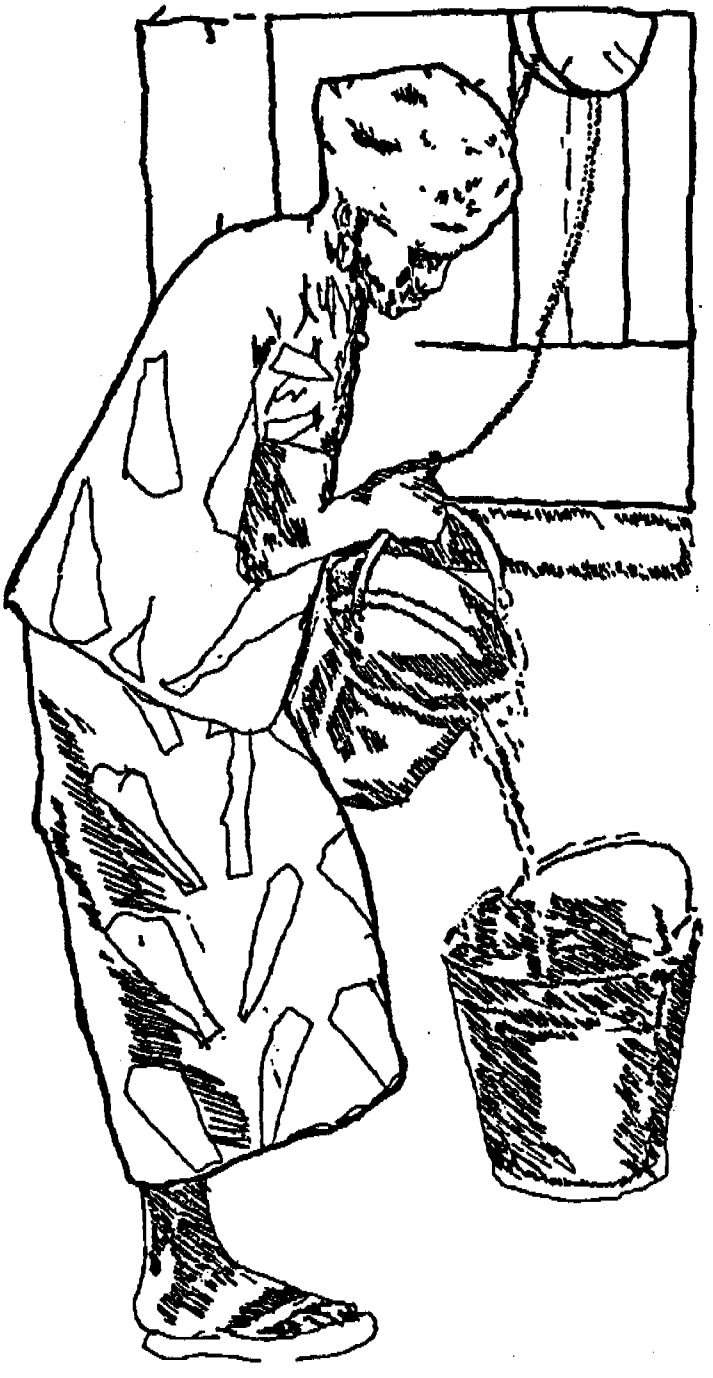
Another woman agreed. "I visited my sister last month. Her children are strong and healthy. They haven't been sick with diarrhoea for years. The people in her village do seem better off. They have wells close to their homes, and clean water."

Someone laughed saying, "Clean water! What does clean water have to do with children having diarrhoea? I know people with tubewells whose children still get sick."

My neighbour answered, "No matter where you get your water it is necessary to keep it clean." She goes to classes and has learned to read. She recited to us from a book called *"Water, Gardens, and Health"* :

"All living things need water, ourselves, our children, the animals we raise, and the plants we grow. Good use of water keeps our families healthy, provides nourishing food, saves us money and earns cash.

THE BEST WATER IS FROM A PROTECTED SOURCE



Lifting, pumping, and carrying water is hard work. After so much effort take simple steps to keep water safe and pure.

Faeces and urine get into rivers, streams, ponds and swamps. Dirty water is dangerous. Each year many people in our country die from diseases spread by water. To stay healthy it is necessary to drink water from safe and protected sources.

Even though the water is flowing and looks clear it can contain very small harmful germs too tiny to see without a microscope. These germs cause diarrhoea, jaundice, dysentery, cholera, and other diseases."

"This is what some of the germs look like under a microscope," she said pointing to a picture with a lot of little circles and dots. "It is harder to imagine what germs look like than to understand what we can do to get rid of them.

WHEN PEOPLE URINATE OR DEFECATE NEAR WATER SUPPLIES OTHERS MAY GET SICK. NO ONE SHOULD EVER URINATE OR DEFECATE IN PONDS, RIVERS, OR STREAMS.

My neighbour finished reading with the words, *"Wise women and their families guard water in the ground, at the well or standpipe, on the way to the house, and in the home."*

"Both children and water have accidents if we don't protect them", she told us. "We rush around keeping our little loved ones from serious mischief. Water too needs care or germs will make it unsafe to drink."

"Oh that's why my sister always keeps water in clean covered containers!"

Suggestions

Design a puzzle or game maze showing the complicated path to safe water.

Your game should show that the path to safe water requires organization, material, knowledge and change in attitudes.

Act out the different ways men, women and children have with respect to use water in your community.

Dialogue

How are knowledge, attitudes and materials important in creating a health environment?

How can your group or class help improve the health of your community?

What role does the government or voluntary agency have to play?

Who should pay for clean water and sanitation?

WATER FROM OPEN SOURCES MAY LOOK CLEAN AND STILL CARRY HIDDEN DISEASES FROM HUMAN FAECES AND ANIMALS.

GOLDEN RULES: "DO UNTO WATER"

We looked at pictures in the book. We saw women in fine clothes pulling the handles of new tubewells. Water was gushing out.

"A nice dream but that wouldn't work here," someone said. "The tubewells here have been broken for years."

"Isn't there any way we could protect our water?" my neighbour asked. "Lets make some rules for protecting our water."

After some discussion we agreed on Five Golden Rules for Safe Water.

Golden Rule # 1

No one should pass a stool or urinate near or in a source of drinking or bathing water.

Golden Rule # 2

Keep animals away from water collection areas.

Golden Rule # 3

Water for drinking must always be boiled or filtered and covered against flies and dust. Most germs causing diarrhoea will be killed when water begins boiling rapidly.

Golden Rule #4

Keep drinking water in a clean container. Be sure hands do not touch the water inside. Cover the container to keep water free from insects and dust. Clean the container and change the water regularly.

Golden rule #5

Always wash hands with water and soap or ash before preparing food, eating or feeding little children, and after bowel movements.

Someone said, "We need an *Extra Special Rule.*" So we added another.

The 'Extra Special Rule' is:

"Show love and care for your family and neighbours by building latrines, by using them, and by keeping them clean."

"Rules #1 and # 2 are more difficult to keep," a friend said, "because they need everyone to cooperate."

"How can we get everyone to join in to make our water safer?" we wondered.

"We can," my neighbour replied, "Everyone have to drink?"

Suggestions

Have local artists and students design posters to explain Golden Rule messages.

Make up a play or story about one or more rules.

Write a popular song about clean water and sanitation in your community.

COMMUNITY SELF-IMPROVEMENT

We now have real support in the community for clean water. Many groups are involved. Students and teachers, women's clubs, cooperatives, health workers, religious leaders, a development organization (NGO), and even artists and entertainers support the Golden Rules.

In the beginning it was difficult for people to realize how much we all depended on one another for better health. Some, who could afford clean water and latrines for themselves, showed little interest. Others said they were too poor to get involved.

We now have a large map showing our water sources and problems. We have drawings of tubewell sites. People often study the pictures on the map and discuss them.

Our new water user's group is eligible for tubewell supplies and latrines. The group set up a bank account and then collected money to pay for local contractors and materials. We had meetings about sites for new wells, and we talked about how many families should share them. We learned about several different water payment schemes, and we hired well attendants.

We organized a meeting. The health worker brought a film, and we helped to attract a large crowd. The film showed how the members of a family became ill.

A young man became ill because someone passed human waste upstream from where he drank water. He became ill but did not use soap or clean ash to wash his hands. He took water from an open vessel with a cup and his hands entered the drinking water of his family.

Soon his children and wife became ill from drinking that water. They made waste in nearby bushes. Flies carried the waste to uncovered food at a nearby home. The next day members of that family became ill and passed their illness on to other neighbours.

Later we saw how the community really changed. People organized to place tubewells or standpipes near their homes. They learned how to repair them and make good use of the water. The water running off the wells didn't collect in puddles but flowed into nearby gardens. Local women, not too different from ourselves, were shown fixing the tubewell. One of the women explained that in the past, broken wells were a big problem. Now tubewells are designed so that local men as well as women could repair and maintain them.

People also bought slabs and dug latrines. They built them away from water sources at a safe distance from their homes. They swept the latrines and always washed their hands with water and soap or ash after using them. Some people, built VIP latrines with ventpipes to remove bad odours which attract flies. Others who couldn't build ventilated latrines used wooden covers to keep flies out of the latrine holes.

After seeing the film, a group of actors and singers created their own plays and songs about safe drinking water and waste disposal.

Suggestions

Could your community organize such a meeting?

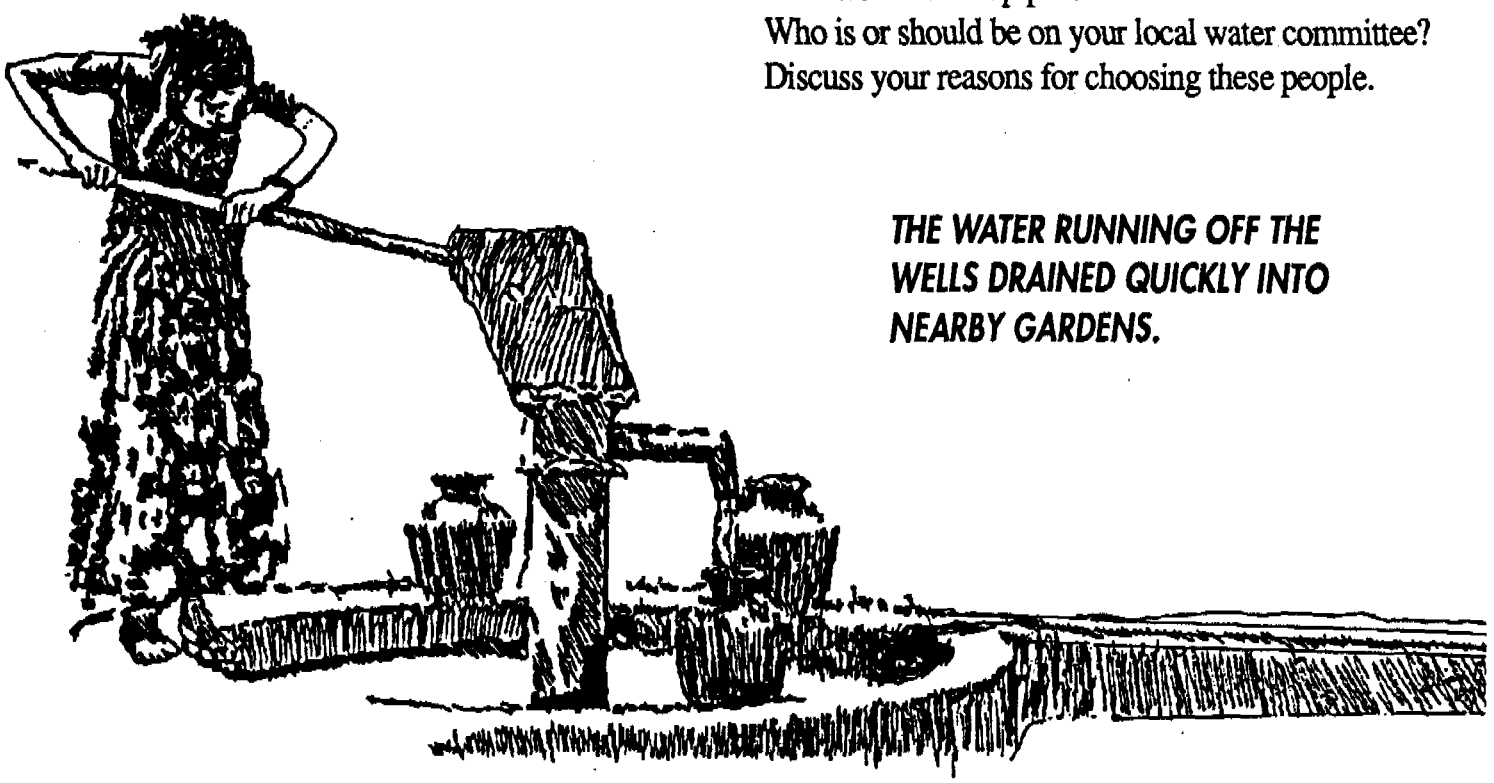
If you don't have a film, could local artists perform and make a play?

Take a message and use it to make a song in folk or popular styles.

Have local artists and students design posters to explain any of the Golden Rules.

Discussion

Think of ways people can work together to help pay the cost of latrines and tubewells.
What is the cost of not using latrines or clean water from wells or sandpipes?
Who is or should be on your local water committee? Discuss your reasons for choosing these people.



THE WATER RUNNING OFF THE WELLS DRAINED QUICKLY INTO NEARBY GARDENS.

THE WATER COMMITTEE

We set up a water committee to decide where to dig new wells. The committee discussed the kinds of wells we needed for home use, crops, and raising animals. A training programme on water and sanitation had been arranged at a nearby community. Several members of our water committee attended the training.

We knew it would cost money to build wells. We were eager to put an end to the bouts of diarrhoea and other diseases. We collected money and opened a bank account. We used this money to pay women to work as well attendants and for the future purchase of spare parts.

THE ATTENDANTS ARE TRAINED TO MAINTAIN AND REPLACE ALL PARTS OF THE PUMP.

The committee chose three women to be trained as well attendants. These women now maintain and replace all parts of the pump.

The well attendants check the wells every day.

They must:

1. Remove mud and rubbish from around the well.
2. Check to see that water easily drains away from the pump into drain pits or gardens.
3. Check the fences around the well to keep animals away.
4. Keep children from playing around wells.
5. Check to see that the pumps are working.
6. Replace worn-out parts.

Checklist for getting and maintaining tubewells.

1. Set up a water committee.✔
2. Collect money and deposit it in a bank account.✔
3. Hire a good contractor, and provide labour for digging wells.✔
4. Install pumps.✔
5. Build a concrete platform with a drain.✔
6. Make a fence around the well.✔
7. Hire and train local women to work as well attendants.✔

BATHE AND WASH CLOTHES AWAY FROM THE WELL.

We use well water for cooking , drinking, washing, and growing food.

We also decided to collect well water and use the run-off from wells to provide water for community and school gardens. Our wells are surrounded by concrete aprons. The aprons prevent dirty water from seeping back through the ground into the supply of clean water. Our concrete drains are kept clear of debris so that water can flow easily into the gardens. It is important that water easily drains because puddles near the well become breeding grounds for mosquitoes. Standing water and mud around wells are slippery, dirty, and dangerous.

PUMP ATTENDANTS REPLACE THE PINS HOLDING THE PUMP HANDLE.

The attendants check the wells every day.

They must:

1. Remove mud and rubbish from around the well.

2. Check to see that water easily drains away.

3. Check the fences around the well to keep animals away.

4. They also know how to repair pumps and report serious problems.

IS BOILING DRINKING WATER TOO MUCH TROUBLE?

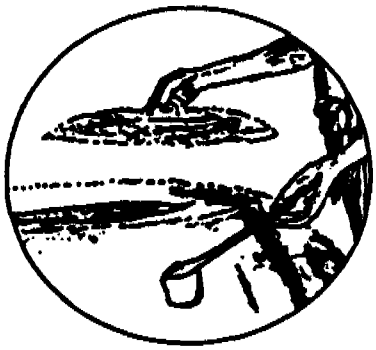
"The Golden Rule about boiling water isn't clear to some of us. How long do we have to boil water to make it safe?" we asked.

The health worker answered," In the past we were told to boil water for a long time. Now the World Health Organization says that the germs causing diarrhoea are killed simply by bringing water to a rapid boil. Usually you don't have to boil drinking water longer."

"Then boiling water really isn't so much trouble."

"After boiling, store water in clean, covered containers. Don't forget that dirty hands make boiled water dirty again," she reminded us.

BOIL WATER TO PROTECT AGAINST DIARRHOEA, DYSENTRY, TYPHOID, HEPATITIS, AND CHOLERA.



Most of us now store boiled water in clean, covered containers. Children quickly picked a catchy tune some students wrote about keeping hands out of drinking water.

"You can pour water from a jug
or dip in with a ladle.
You can store water in a jerry can,
or inside a tomato."

"Dirty hands ruin our water.
Keep your drink clean with a lid.
Do what you ought to
or you'll feel very, very sick."

Water can also be made safe to drink by using a good filtration system built by the community such as slow sand filteration.

KEEP HANDS OUT OF DRINKING WATER.
USE A DIPPER TO KEEP WATER CLEAN.

Here are some ways of making water safer when you are unable to boil it. Regardless of the method, remember to always get water from the cleanest possible source, keep it in a clean covered container, and keep hands out of the water.

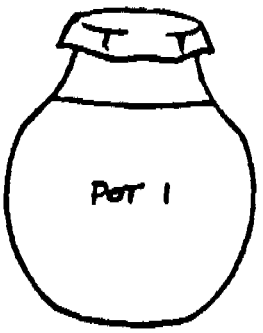
THREE POTS

You can make water safer by letting it stand for two days inside a pot. The three-pot method can provide clean water for drinking and cooking.

You need three pots. Two large ones and one smaller.

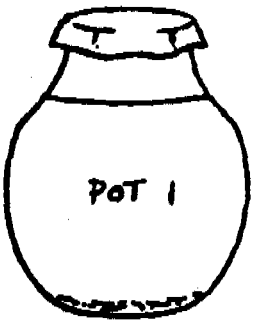
First day.

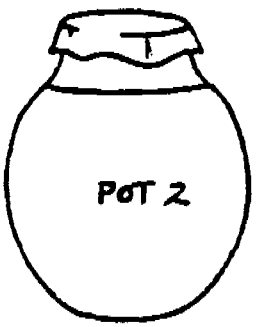
Begin by filling a large pot with water. Cover the opening and let it stand for 2 days. You can mark the pot with the number 1.



Second and third day

Dirt and germs in the water will begin to settle at the bottom of the pot. Fill the second large pot with water. Cover the opening and leave it closed for two days.

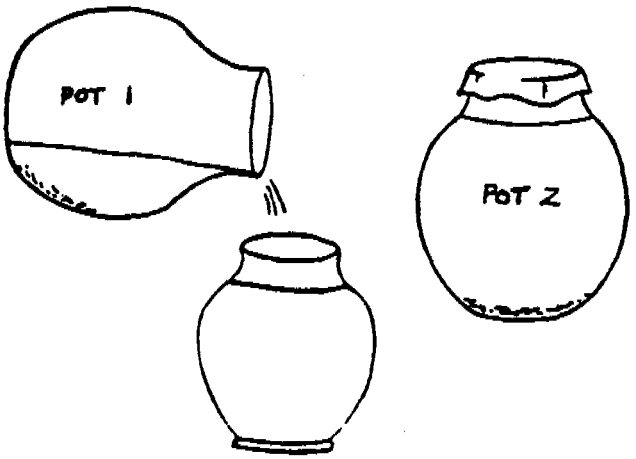




(illustrations courtesy of the Developing Country Farm Radio Network)

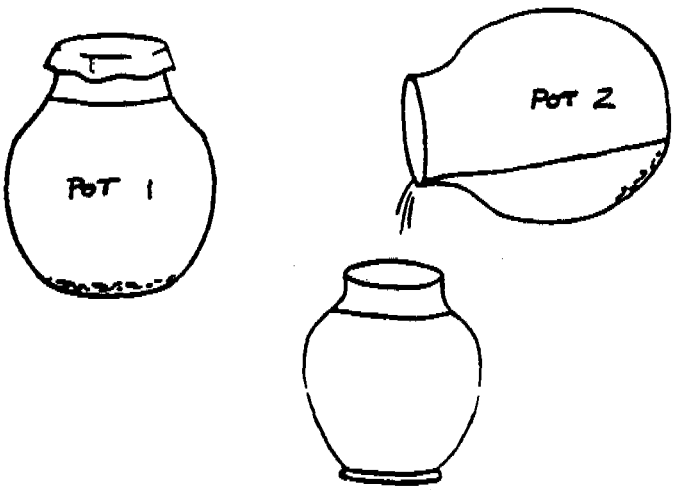
Fourth day.

Carefully pour or scoop off the clean water at the top of the pot marked number 1. Empty the dirty water onto your garden or at the base of the trees growing near your house. Carefully wash the pot, fill it with water and cover it again.

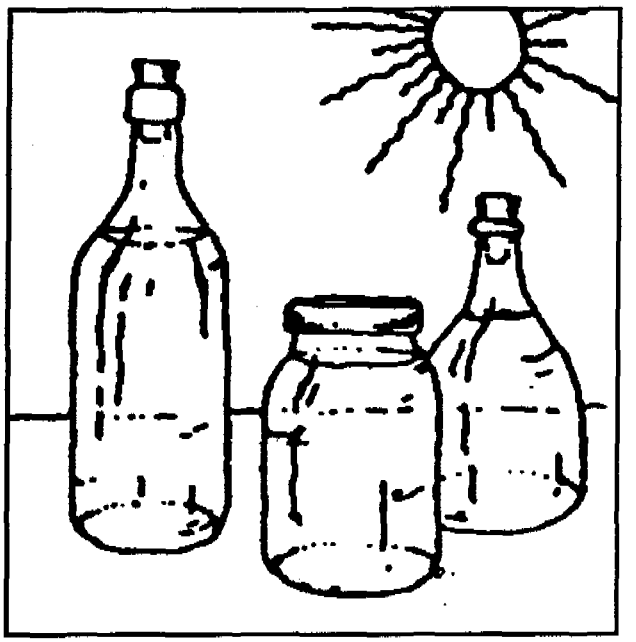


Fifth day.

Pour off top clear water from pot number 2. Then refill cover and leave for two days.



Note - If you live in an area where Guinea worm is a problem, you must filter the water before pouring it into the pots.



(illustrations courtesy of the Developing Country Farm Radio Network)

Sun Light

We can use the sun to get rid of harmful germs in our water. You need colourless or light blue glass or clear plastic containers. You should be able to see through any container you use.

Remove any labels or paper from bottles. Collect water from the well. Fill the bottles with clear water. Cover them to keep dirt and insects out.

Put the bottles in an open space where the sun can shine on them all day. Spread the containers to keep them from shading one another. The bottles should stay in the sun for at least five hours. If you need the water as soon as possible, a couple of hours in the mid day when the sun is strongest will be enough to make the water safe for drinking.

Remember - You cannot use this method on cloudy days.

Flies, dirty hands, dirt under nails, unclean utensils and baby bottles spread diarrhoea.

Diarrhoea can be prevented by breast-feeding, immunizing children against measles, by using latrines, keeping food and water clean, and by washing hands before touching food.

"Diarrhoea is very dangerous to both children and adults. Many children in our country die from diarrhoea because they lose too much liquid from their bodies. We call this "*drying up,*" my neighbour explained.

"What should we do when a child has diarrhoea?" we asked.

"Diarrhoea can cause death by draining liquid from a person's body. You must replace the fluids, energy and vitamins washed out of your child by the flood of diarrhoea," she explained. "It is very important to give plenty of liquids to a child with diarrhoea."

It is essential to prevent "*drying up*" by giving a sick child plenty of liquids and foods to eat.

There are many drinks which can prevent a child from getting dry inside.

A CHILD WITH DIARRHOEA NEEDS TO DRINK OFTEN AND EAT SOFT FOODS.

These are:

Breast milk - you must continue breast feeding when your baby has diarrhoea
Cooked cereal
Boiled cooled water
Soup
Rice water
Fresh fruit juice
Weak tea
Coconut milk
or other safe drinks.

"Children must eat many kinds of good foods to stay strong and healthy. Children who do not eat well are more likely to suffer from diarrhoea and other diseases," a woman explained.

"It is important to feed a sick child. Some mothers think that a child with diarrhoea needs to stop eating. This is not true. A sick child should be encouraged to drink clean water and other liquids and to eat nutritious food," she said, adding that solid food can help to stop diarrhoea. "The child may prefer soft foods when sick."

Gently persuade but never force the child to eat.

How much should the child drink?

The child should drink every time a watery stool is passed. Between a quarter and one half of a large cup for a child under 2 years.

Between a half and a whole cup for older children. These drinks should be given by cup or spoon-fed until the diarrhoea has stopped. This usually takes from three to five days.

Remember these rules:

Drink to put water back into the body.✔
Drink as soon as diarrhoea starts.✔
Drink frequently until diarrhoea stops.✔
Drink by the spoonful if there is vomiting.✔
Drink more than has been lost.✔
Continue to breast-feed babies.✔
Feed soft foods often.✔
If diarrhoea persists go to the health post or hospital.✔

A person with diarrhoea needs food. Food can help stop the diarrhoea. Children as well as adults should be given soft, well mashed mixtures of cereals, vegetables, fruits and other foods.

If milk powder or animal milk has to be used, give it to the child from a cup instead of a bottle.

Always use the cleanest water available. Water from open wells, springs and rivers should be brought to a boil or filtered and covered before use.

When a child recovers he or she will need extra food to regain lost weight. Feed your child extra meals for the next ten days.

Parents should seek the help of a health worker without delay if the child:

- Has sunken eyes, extreme thirst, or no tears when crying
- Has a fever
- Does not drink normally and vomits frequently
- Passes blood in the stools

GUINEA WORMS
(FOR PARTS OF AFRICA AND INDIA)

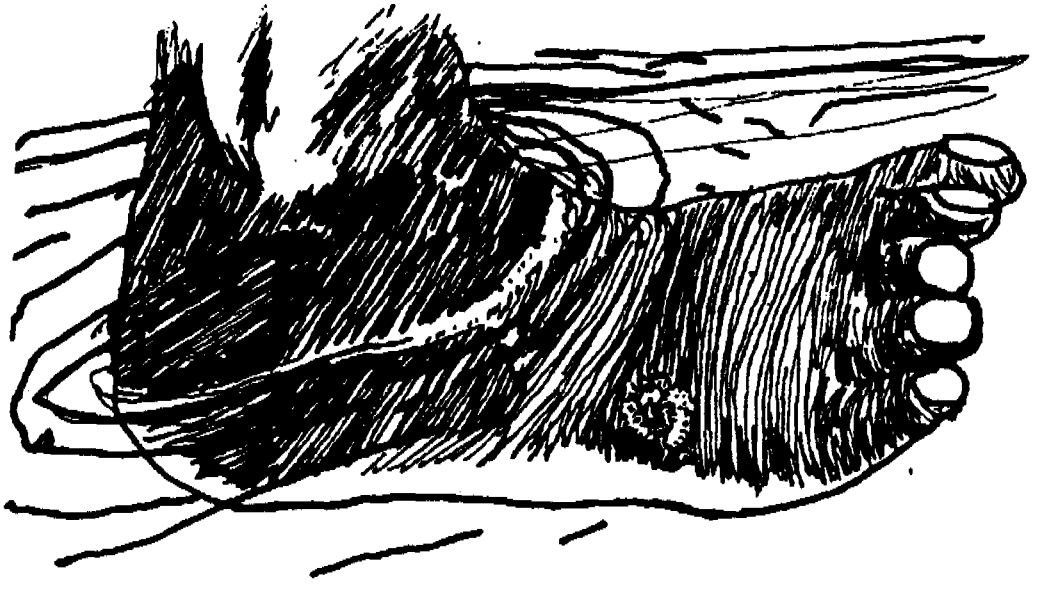
One of the favourite gathering places is a large, open well with steps. But drinking water from the well infected people with guinea worm. Others became sick by drinking out of ponds or puddles in the fields.

"No one will get guinea worm if we drink only water from protected wells and stand-pipes," the school teacher explained at a water committee meeting.

"Boiling water makes it safe from guinea worms. You can filter drinking water through a cloth to keep your water free from this disease," she explained.

Filtering through a cloth protects us from guinea worm, but not from other diseases, we were reminded. It is a good idea to boil impure water if we can.

THE WATER IN THIS STEP-WELL CARRIES TINY GUINEA WORMS. YOU CANNOT SEE THEM. WORMS ENTER THE WATER FROM INFECTED PEOPLE'S FEET.



Guinea worm eggs in the water are too small to be seen. When the eggs are swallowed they hatch inside the body and grow into large worms. These fester under the skin, causing so much discomfort that many are unable to plant or harvest crops or go to school.

A person with guinea worm suffers from itchy blisters which form after the worm has moved close to the surface of the skin. People with the disease put their feet in cold water for relief from the terrible itching caused by the guinea worm.

The guinea worm, however, also likes cold water. The worm pushes through the skin, hangs through the hole, and lays its eggs.

ONLY DRINK WATER FROM PROTECTED SOURCES, OR BOIL DRINKING WATER.

We marked on a map the places where people now make waste. Many men go close to the river early in the morning. Women usually go outside, behind vegetation, for privacy; some use homemade latrines. Children go all over the place!

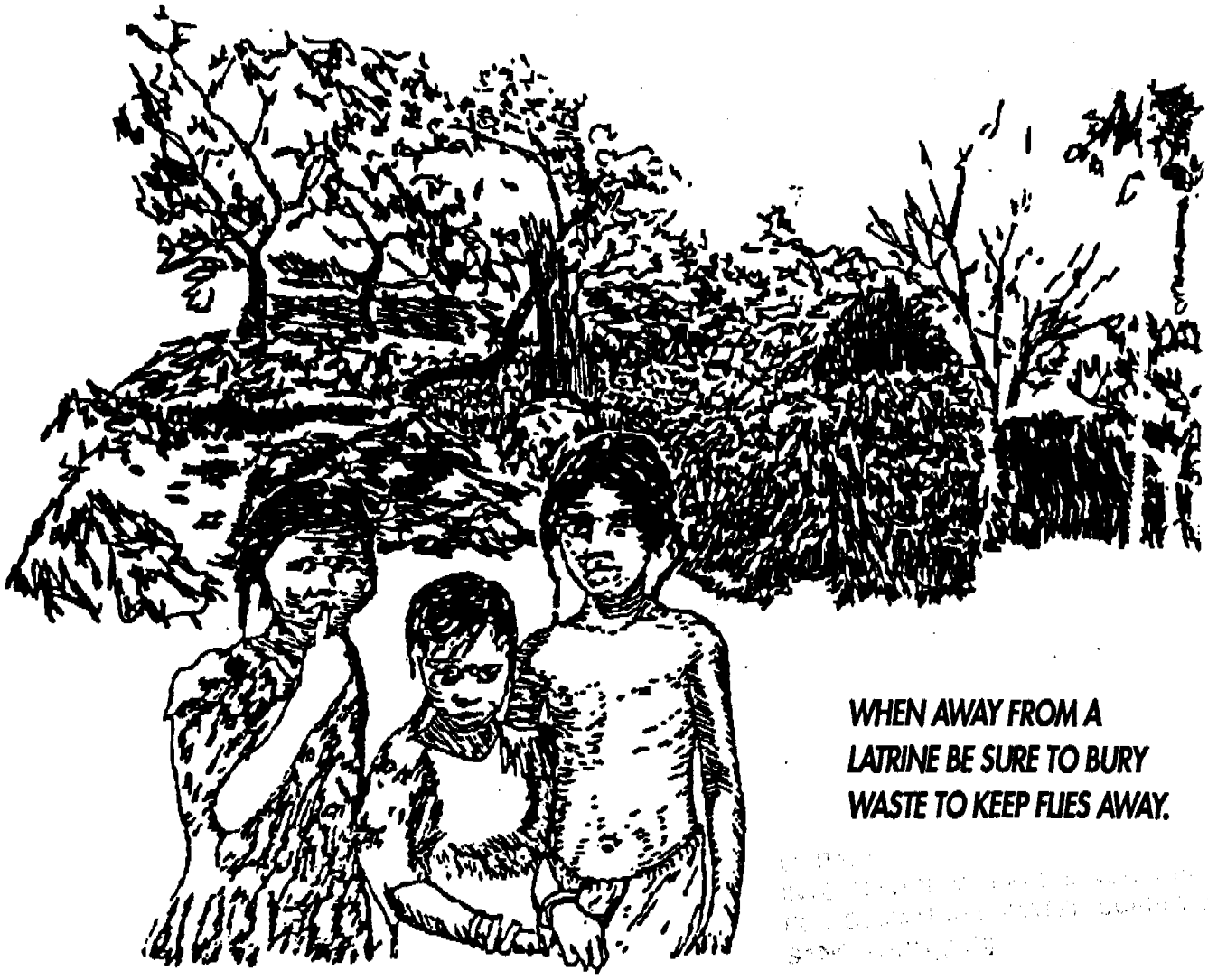
Flies feast on human waste and then land on our food.

We have to build latrines and use them properly to keep flies away from human waste. This will protect our drinking and bathing water from faeces causing diarrhoea, dysentery, worms, jaundice, cholera, typhoid, and bilharzia.

Always remember to wash hands with soap and water or ash after using a latrine.

Privacy is another important reason why people like latrines. When properly used latrines provide privacy and many health advantages.

We organized a meeting to discuss latrines.



WHEN AWAY FROM A LATRINE BE SURE TO BURY WASTE TO KEEP FLIES AWAY.

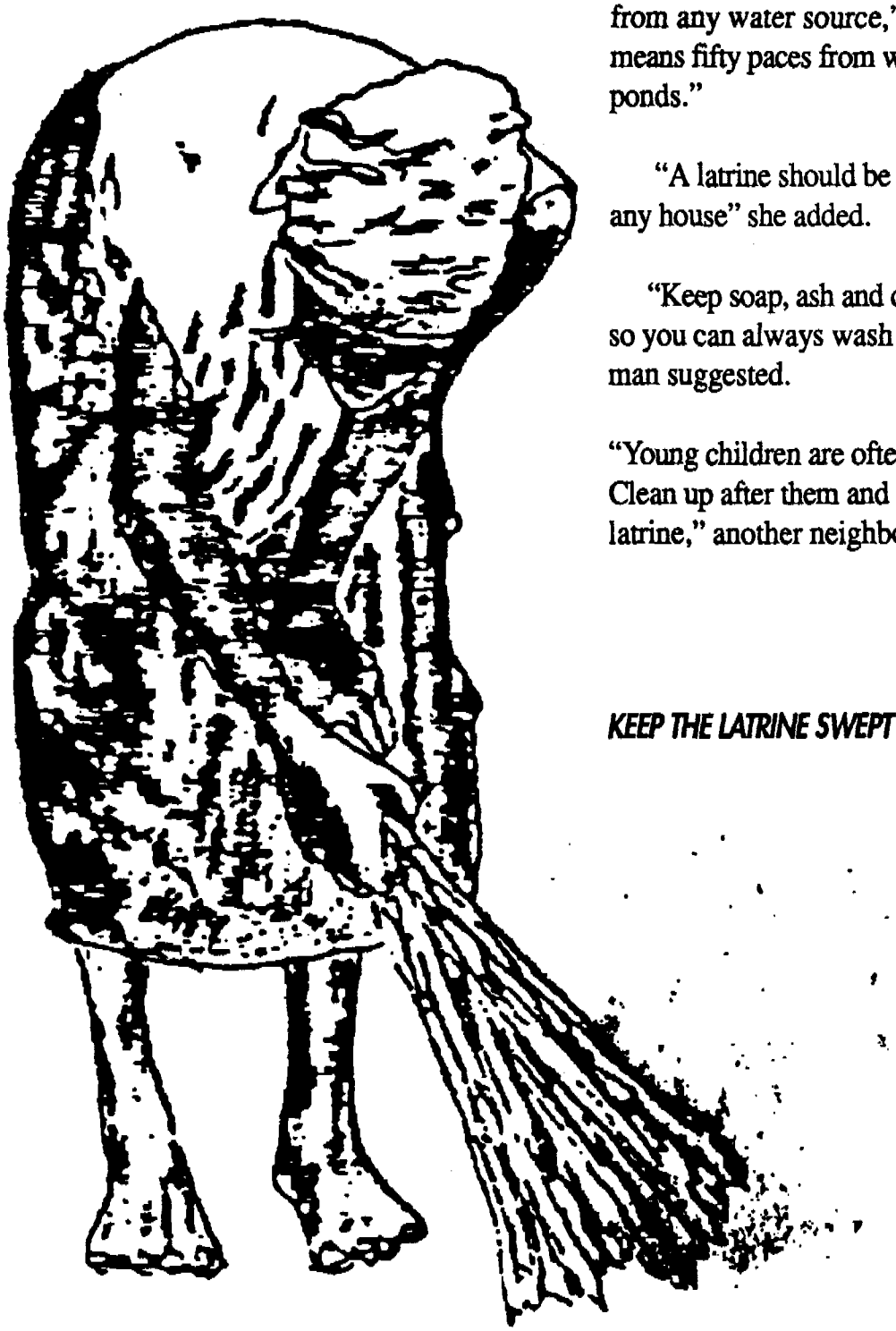
"Using latrines keeps the village clean and safe from many diseases. But if the latrine is close to wells or water sources it will pollute them," a neighbour explained.

"Be certain to build the latrines at least fifty paces from any water source," a woman said. "This means fifty paces from wells, from the river, or the ponds."

"A latrine should be at least twenty paces from any house" she added.

"Keep soap, ash and clean water near the latrine so you can always wash hands after use," a young man suggested.

"Young children are often afraid to use the latrine. Clean up after them and drop their faeces down the latrine," another neighbour reminded us.



KEEP THE LATRINE SWEPT AND CLEAN.

"I sweep the latrine every day," he continued. "Sweeping the latrine keeps flies away. I often sprinkle ash on the floor before sweeping to help pick up dirt and keep the latrine dry."

"I worked hard to dig and build the latrine. By keeping the latrine clean I know my family will use it," he said.

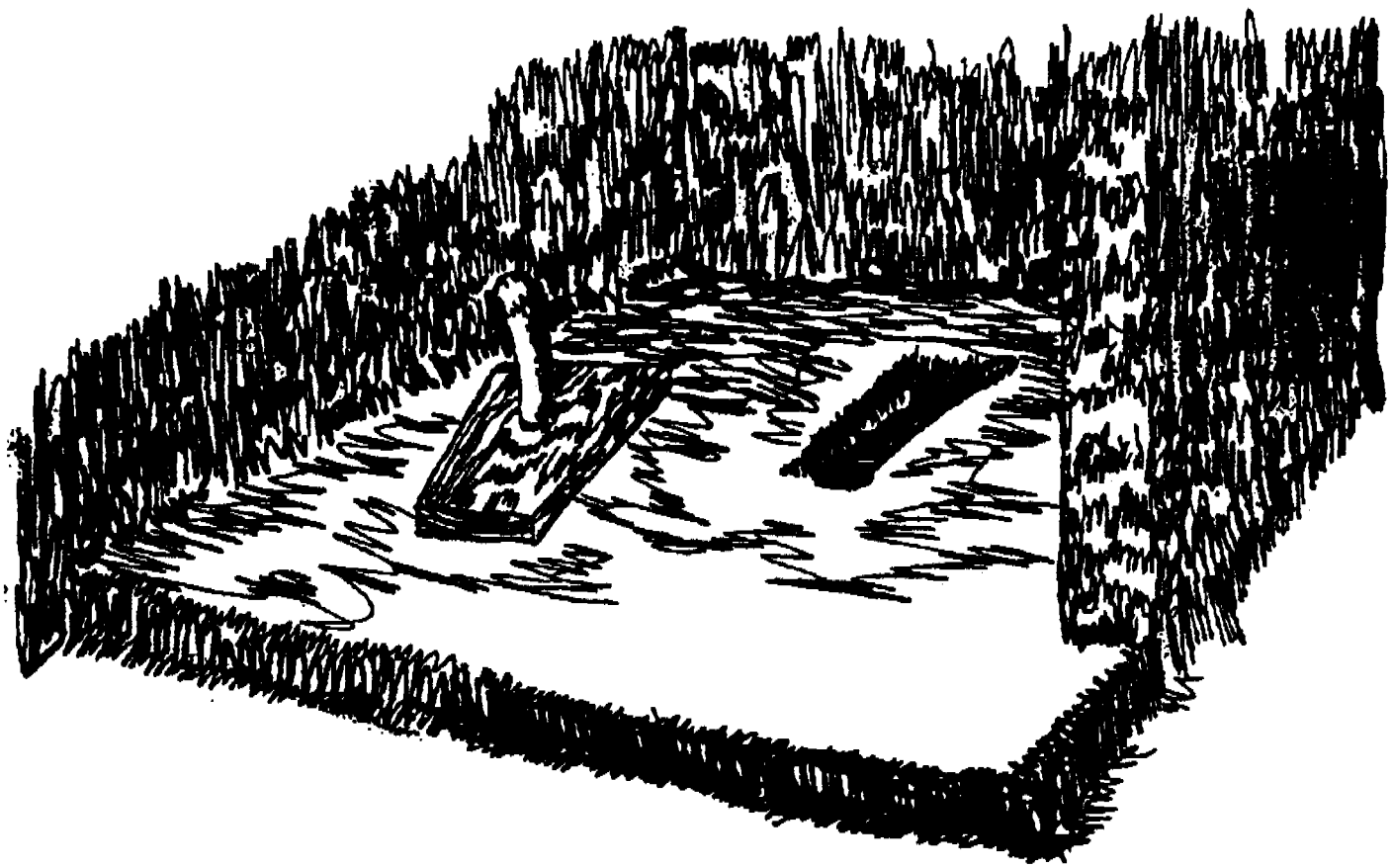
The man told us about a latrine with a pipe to remove bad odors.

"For other types of latrines a cover will reduce smells and keep flies away," he explained.

"When we are working in the fields or away from home it is not always possible to use a latrine," the school teacher reminded us. "Please bury the faeces with soil to keep flies and animals away."

"Of course we follow the first golden rule," we all joined in. "Waste should not be left where it can wash into water."

A COVER LIKE THIS REDUCES ODOR AND KEEPS FLIES AWAY.



Latrines are simple to use, but take care of them so that they last a long time.✔

Always wash hands after using the latrine. Keep a pot of water, and soap, near the latrine at all times.✔

Keep the latrine clean.✔

Where possible build a (VIP) latrine with a pipe attached to remove bad smells which attract flies.✔

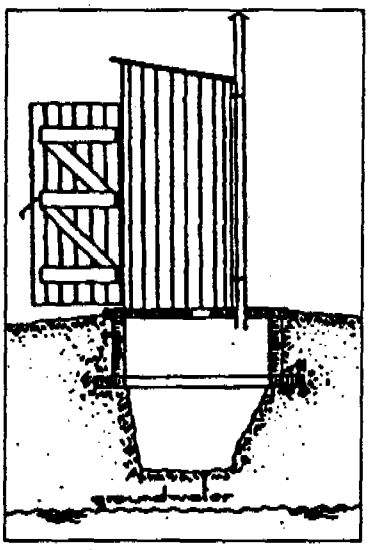
Suggestions

Use a map to show how far tubewells and latrines should be from each other.

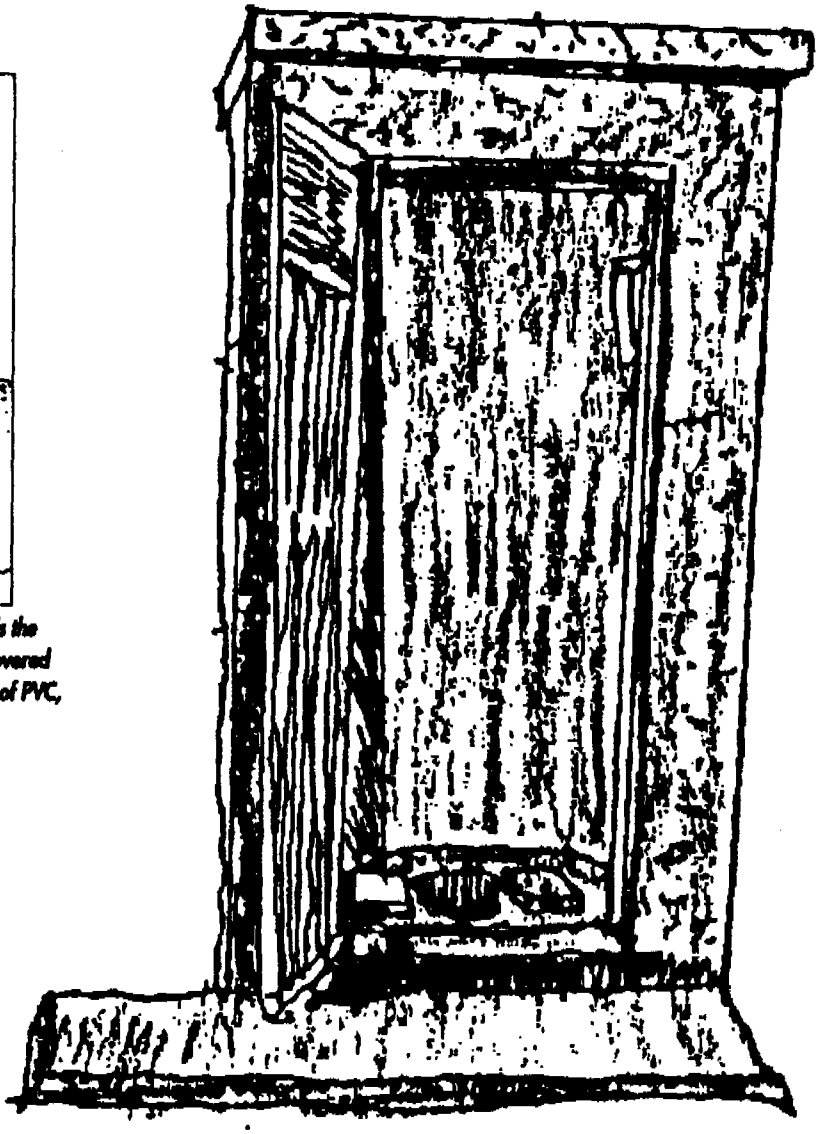
Discussions

Is human waste a problem in or near your home, school or where you work?

Why do people like or dislike latrines?
Are they too expensive to build?
Do they smell bad?
Are they dirty or dangerous?



Ventilated improved pit latrine, (VIP) ends the smell and nuisance of flies. The vent is covered with a fly screen. The pipe can be made of PVC, burnt clay ferrocement of bamboo. (Illustration Courtesy of IRC.)



"Bilharzia is a terrible illness caused by people who have the disease urinating or passing waste in water," the school teacher told us.

People with Bilharzia suffer from swollen bellies with pain in the abdomen. They will often have blood in their urine.

"This disease will disappear if no one urinates or passes waste in or near water. It is that simple," the teacher told us. " Bilharzia worm eggs are carried in urine and people's waste."

"That is easy to say, but how are we going to get children to follow this rule," said one mother.

"Mothers are the children's first and greatest teachers," a neighbour replied.

"Even the urine from young children can carry tiny worms which make others sick," the teacher explained. "Older children can see to it that younger ones urinate before playing or swimming in water. We have posters in school that children made about preventing the 'bloody urine disease'."

EVEN THE URINE FROM YOUNG CHILDREN CAN MAKE OTHERS VERY SICK. NEVER URINATE IN WATER.

"Did you hear the *Bilharzia Song* on radio," some boys shouted before singing:

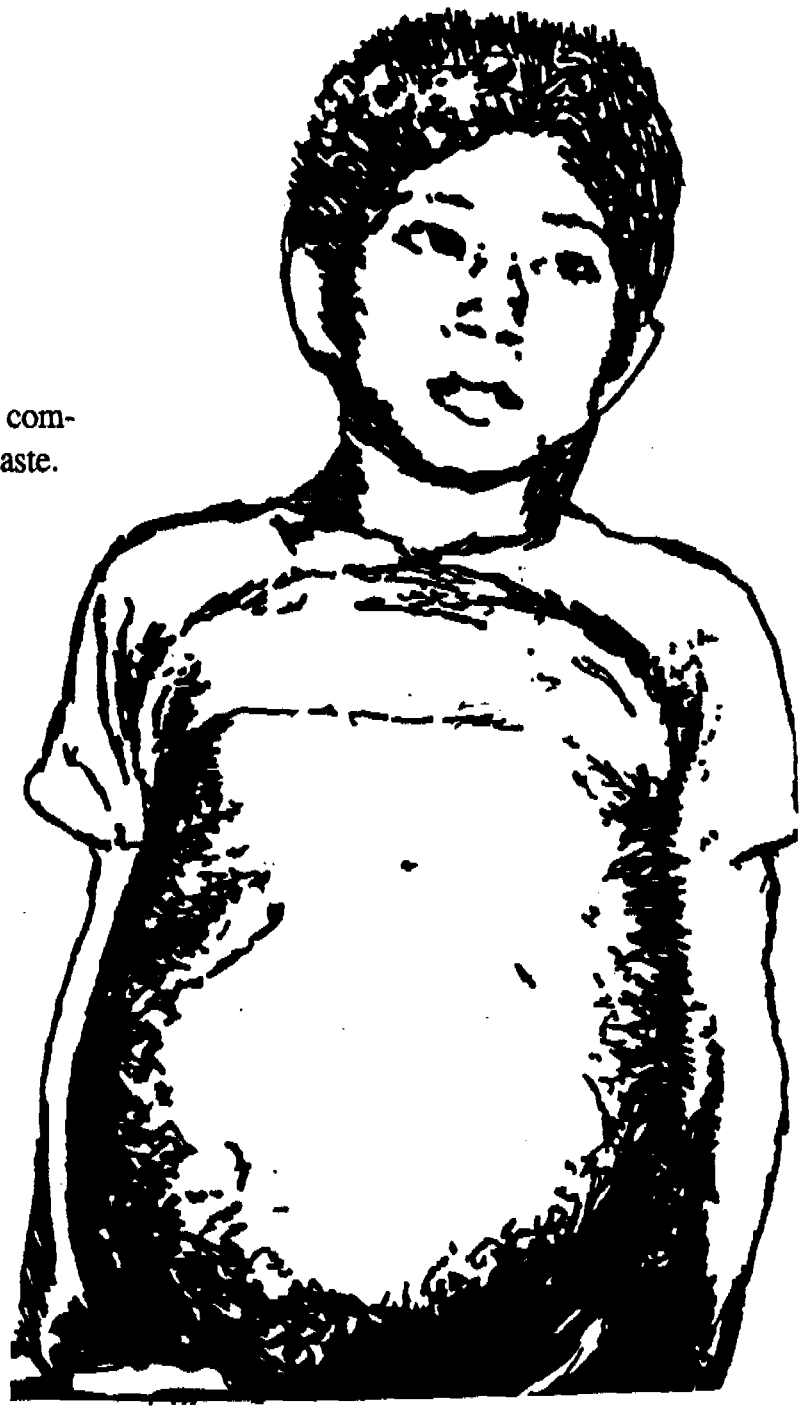
You can play and splash when
you take a bath,
but water can be mean.

If you have to pee
go behind a tree,
never in a river, swamp or stream.

For "one" and "two"
a latrine will defend you,
from bloated bellies
and the bloody urine disease.

Everyone agreed that we would be a happier community if no one dirties water with human waste.

THIS DISEASE WILL DISAPPEAR IF NO ONE URINATES OR PASSES WASTE IN OR NEAR THE WATER.



MOSQUITOES

In one of our water committee meetings we were all annoyed by buzzing and biting mosquitoes.

"They are not only annoying but they also carry malaria and other diseases," we commented. "How are we going to get rid of them? They are everywhere."

"But where do they come from?" asked a young man.

"I heard on the radio how mosquitoes can breed in less than a cup of water," a woman replied. "Puddles and garbage near our houses must be full of them."

"That means if we fill in puddles and clean up garbage we will be able to get rid of mosquitoes," the young man responded.

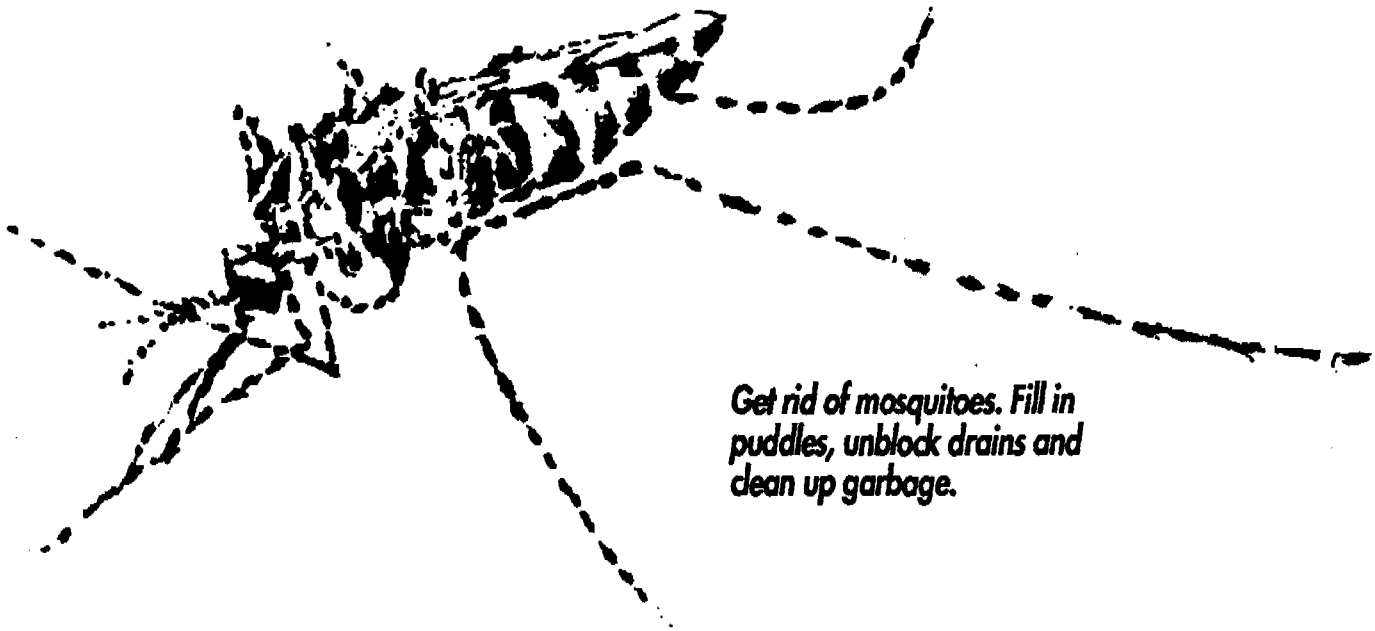
A health worker explained how people near her home filled in puddles. Some even turned them into beautiful gardens.

"Ponds can also be stocked with certain kinds of fish to eat baby mosquitoes called larvae," she continued.

"It would help to cut the grass around our houses because mosquitoes use tall grass to keep cool. Rats and snakes also hide in the grass.

One couple with several children told us they protected their family from mosquitoes by using bed nets. "We repair the nets regularly."

"That is a very good way to prevent mosquitoes from biting you," the health worker said. "You can also protect yourself by wearing clothing which covers your arms and legs, especially after dark."



Get rid of mosquitoes. Fill in puddles, unblock drains and clean up garbage.

"What if we take precautions and still get malaria?" a pregnant woman asked.

"If you have a high fever and think you may have malaria, go to the clinic or health practitioner," the visitor replied. "Usually malaria can be treated very effectively with chloroquine or other tablets."

"Or you could go to the injection doctor," said a man from the back of the room.

Before the health worker could reply, another man spoke out, "My young son had a fever. We took him to an untrained person who gave him an injection. He was given an injection, and developed a painful infection. He almost died."

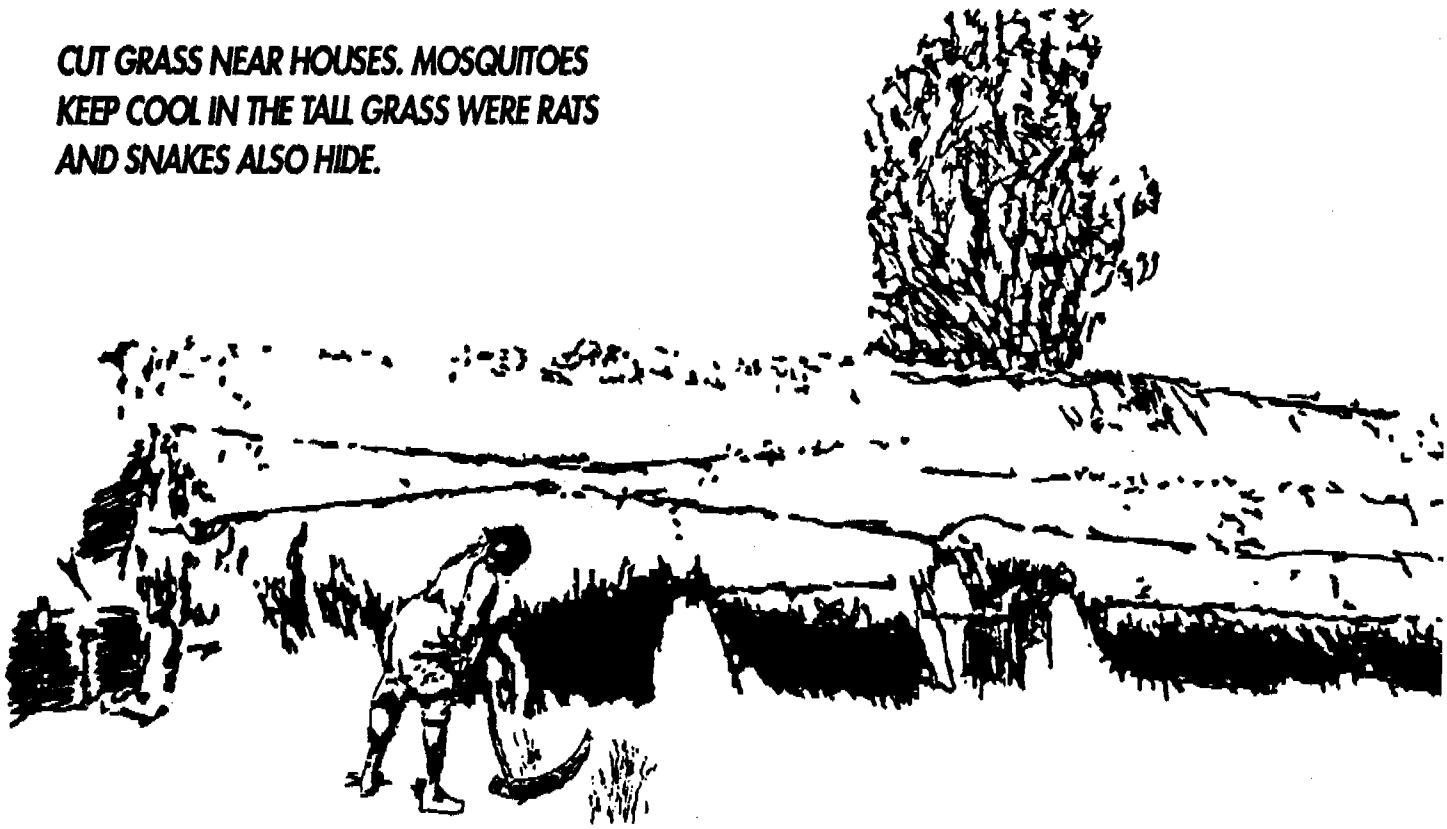
"Many people think that injections are better than tablets for Malaria. This is not so," the health worker said. "Injections of chloroquine are not better than tablets or syrups. They do not work more quickly."

She explained that injections should only be given by trained people who have properly sterilized the needle and syringe. Unsterile injections spread dangerous germs causing abscesses, jaundice and AIDS. Children can be crippled if the injection is not administered in the proper way.

Fortunately, this tragedy can be avoided in the treatment of malaria because the tablets or syrups are just as effective as injections, except when a child is unconscious or cannot swallow.

"I can see why it is a good idea to deal with our mosquitoe problem," an older woman said. "Fewer mosquitoes means less malaria!"

CUT GRASS NEAR HOUSES. MOSQUITOES KEEP COOL IN THE TALL GRASS WERE RATS AND SNAKES ALSO HIDE.



BRIGHT EYES, CLEAR SKIN, AND PEACE OF MIND

"That's a healthy child," my friend said.

"How can you tell?" we asked.

"The eyes show much about a person's health," she told us. "A child with bright, clear eyes is likely to be the one who eats good food and keeps clean."

"Our eyes are precious. Children can lose their sight too easily. Food and clean water are the best protection against blindness."

"Here are golden rules for protecting children's eyes."

- Breast-feed infants.
- Give children and mothers plenty of green, yellow and orange foods like pumpkins, yellow squash, sweet potato, carrots, papaya, orange, mango, and red banana.
- Protect children's eyes by washing their faces and keeping them free from flies.

"My boys can see during the day but are blind at night" a worried parent told the group.

"Children who suffer from night blindness," my

THIS CHILD CANNOT SEE AT NIGHT. HE NEEDS FRUITS AND VEGETABLES OR HE WILL GO BLIND.

neighbour replied, "may loose their sight completely." "Young children who cannot see at night or who have spots in their eyes should get vitamin A capsules from a health centre."

"Eating greens or orange or yellow fruits and vegetables prevents blindness," my neighbour told us. "But it's important to remember not to fry these foods too long as this destroys the eye-protecting colouring in the food called vitamin A. Just cook vegetables lightly after careful washing."

Eating these foods is also good for you and for your children's skin. White crusting at the elbows often means that your skin is hungry for greens, yellow vegetables and, fruits.

Preventing diarrhoea is also important. Many children become blind following diarrhoea. It is important to see that children get enough food and liquids when they are sick. Everyday they should eat an extra meal with nourishing food for at least two weeks after illness.

GREENS, ORANGE FRUITS AND VEGETABLES PREVENT BLINDNESS

These are the life-long steps for protecting children's eyes:

Protect our children's eyes from birth by breast-feeding. Breast milk also has vitamin A and helps prevent diarrhoea.✔

Feed green and yellow vegetables and fruits to babies by six months of age.✔

Use clean safe water to prevent eye damage from diarrhoea.✔

Wash food and mucus off children's faces so flies won't feed on them.✔

"A dirty face is also dangerous," my neighbour explained."

"Flies are attracted to food on the face, or mucus from dripping noses. These flies also touch the eyes and spread disease."

Many women walk a long way to get water. This is why many women say they can't keep children's faces clean.

Do you need a lot of water to wash a face?

You only need about three handfuls of water to wash food and mucus off a child's face. One handful to wash the sleep from the eyes. One to clean mucus from around the nose and mouth. One handful over the rest of the face.

Follow this advice and enjoy the peace of looking into your children's healthy eyes.

The health worker pointed out that many women and children often feel weak due to lack of iron. "You can add iron to your diet by eating these green leafy vegetables!" she said. "Pregnant women especially need a good amount of nutritious food."

IT IS IMPORTANT TO SEE THAT WE GET THE BEST FOOD WE CAN AFFORD. THE BEST FOOD IS NOT THE MOST EXPENSIVE. WE CULTIVATE A GARDEN TO BE SURE THAT WE HAVE THE RIGHT FOOD TO EAT.

A young woman with several small children asked which other foods they could grow and eat in order to feel stronger.

"You can increase your energy by eating such foods as corn and potatoes," someone replied. "Rice and wheat are also good energy foods. Rice or wheat with beans, will strengthen your body much in the same way as expensive meats or fish, from the market, and for less money."

WASH VEGETABLES CAREFULLY TO PREVENT WORMS.

We also need fats and oils from peanuts, avocados, and soy beans.

"Many of these nutritious foods are fairly easy to grow," one of our visitors said. "In addition to

HOW YOU PREPARE VEGETABLES AFFECTS YOUR HEALTH. COOK VEGETABLES FOR ONLY A FEW MINUTES.

providing good nutrition which helps your bodies fight disease, planting gardens will help make your village look beautiful!"

Flies carry germs from waste to food. Keep food in clean covered containers to keep flies, dust, and animals out. A closet with a fly screen can help protect food and water.

A CLOSET WITH A SCREEN KEEPS FLIES AND ANIMALS OUT.

Covered containers
(Illustration Courtesy RC)

"I feel so tired and weak," a woman, pregnant with her first child, complained. "I don't sleep any less yet I feel as though I have no energy!"

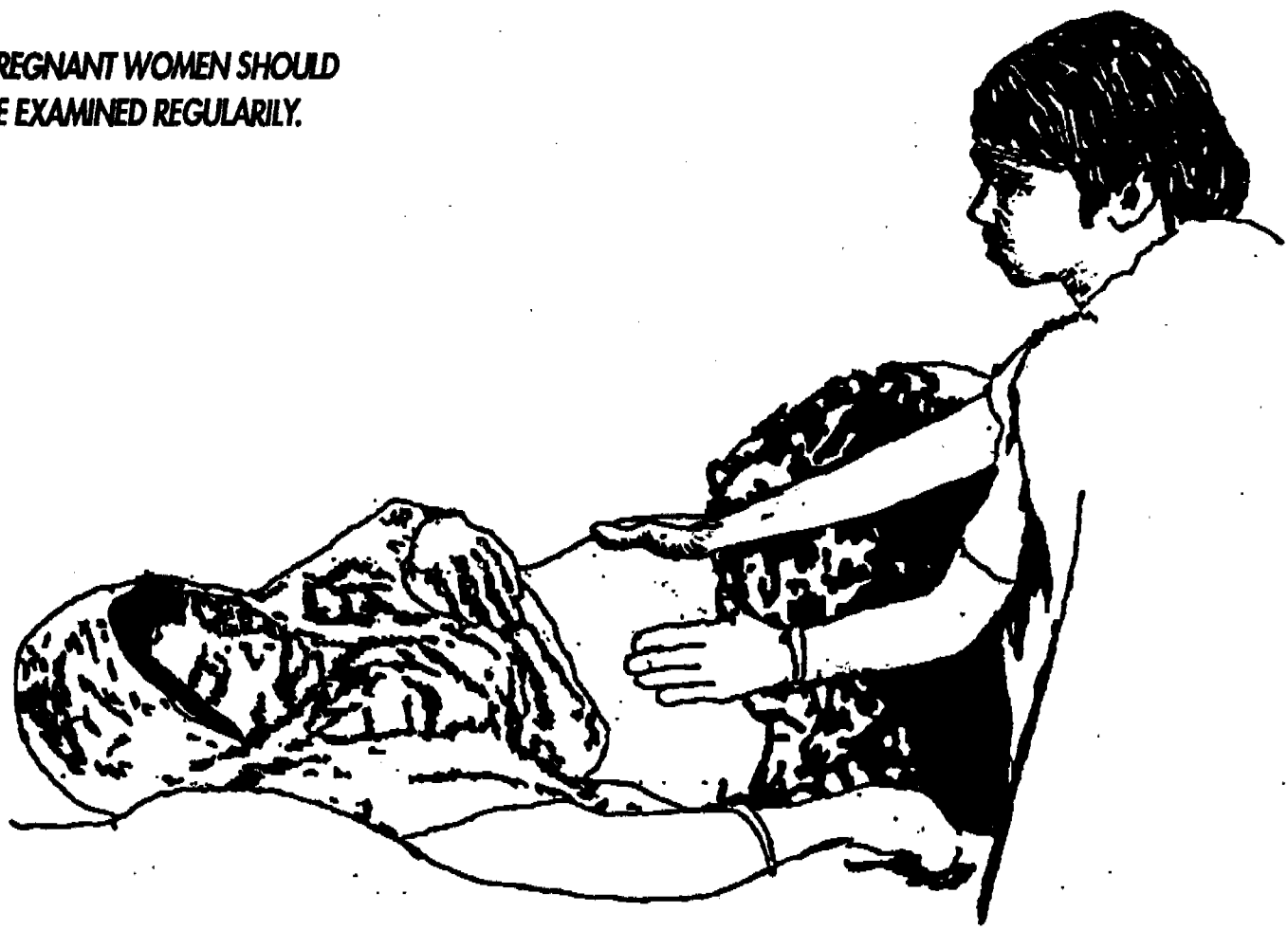
"You need extra rest when you are pregnant," an older women told her. "You will feel better if you rest once or twice a day. Continue work during pregnancy but heavy lifting or strenuous effort should be avoided."

"You need to eat very well," another women added.

A midwife explained how babies grow very quickly inside their mothers. "This is one reason why pregnant women need to eat well. You are feeding yourself and your baby," she reminded the woman.

"Maybe that's why I always feel hungry," another pregnant women said. "I'm not eating enough for me and my baby."

PREGNANT WOMEN SHOULD BE EXAMINED REGULARILY.



"It's important to eat enough, but you also need to eat the right kinds of food." the midwife said. "Greens, vegetables, beans and other foods make your blood strong and your baby healthy."

"You will feel weak if you're not eating the right kind of food. You can add iron to your diet by eating greens," the midwife said. "It is good to eat greens." She added that taking iron tablets is another way to strengthen the blood.

GREENS, VEGETABLES, BEANS, AND OTHER FOOD ENRICH YOUR BLOOD AND GIVE STRENGTH TO YOUR BABY.

A woman with three children said, "When I was pregnant with my first child, I felt tired and weak. My lips and tongue turned very pale. I didn't think I was going to have enough strength to give birth or take care of my baby"

"My sisters began giving me greens from their gardens because I lacked iron. In a short time I became much stronger."

"A woman who takes good care of herself during pregnancy is taking good care of her baby!" stressed the midwife.

"What medicines should we take to protect ourselves and our babies?" a woman asked. She, too, was pregnant for the first time and looked a bit nervous.

"Medicines can be harmful to the unborn child. Avoid medications unless prescribed at the health centre."

Another young woman complained of swollen feet. "This is my second baby," she said, pointing to her large belly. "I had the same problem during my first pregnancy."

"Swollen feet during pregnancy are common. Cut back on salt and put your feet up several times a day. If the swelling continues go to the clinic."

"If your legs are swollen the problem is more serious and requires medical attention," the midwife warned.

She urged all mothers to visit the clinic or see a midwife by the third month of pregnancy. "This is especially true for first-time mothers and for women who have had many children."

Problems you can help at home.

- Sickness and vomiting during early pregnancy.✔
- Indigestion.✔
- Swollen feet.✔
- Lower back pain.✔
- Weakness and tiredness.✔

Pregnancy danger signs requiring help from health workers.

- Vomiting a lot and often.✔
- Bleeding from the vagina.✔
- Colored discharge from the vagina.✔
- Tiredness which does not get better with eating green vegetables or iron tablets.✔
- Swelling of legs.✔
- Headache and difficulty in seeing.✔
- Hard or painful abdomen.✔

Warning signals

"There are some clear warning signals," she added. "If you have any of these symptoms, you should definitely go to the clinic."

1. Loss of even one drop of blood is a danger sign. A woman should definitely go to the clinic if the bleeding has not stopped after half a day's rest.

2. You need to go to the clinic if you have a terrible headache, difficulty in seeing, or swollen legs.

You should also go to the clinic or check with your midwife if you experience any of the symptoms we've talked about today—vomiting, tiredness, or swollen feet—and these do not improve with the proper diet or recommended rest.

The midwife reminded the women that a good diet and adequate rest will help prevent or remedy many complaints and ensure a problem-free pregnancy and a healthy baby.

Home Birth or Hospital

Many women give birth at home. Sometimes it is better for a woman to go to a hospital or maternity centre to have her baby. How do you know when it is important to go to a hospital or clinic?

Mothers with birth problems should be sent to the dispensary on a stretcher when any of these problems occur.

- When a lot of blood comes from the birth opening:

  Be sure to give her lots of liquid to drink.

- When the mother has many strong pains for a long time, but the baby's head does not come out.

BREAST-FEEDING

One of the women at the meeting was nursing her newly born child.

"Continue eating well now that your baby is born," the midwife reminded the group.

"This is especially important to aid in successful breast-feeding."

"Breast-feeding!" one young woman exclaimed. "My cousin says that breast-feeding is old-fashioned and that I won't be able to produce enough milk to feed my hungry baby! She says I should use formula, like she does!"

BREAST MILK IS BEST FOR YOUR BABY.

"Your cousin is wrong," a woman said with a quiet, firm voice. "Breast milk is a baby's best food. It is the only food the baby needs for the first four to six months. Almost all women can breast-feed," she added.

"Formula is not as good as mother's milk," one of the mothers said. "Formula feeding is dangerous. Many children get diarrhoea from bottle feeding because the water used is unclean or there are flies on the bottle."

"Bottle feeding is too much work," she continued. "Bottles and teats are very difficult to clean. Formula has to be mixed exactly, using boiled water."

BREAST-FEED FROM BIRTH. THE FIRST MILK, THICK AND YELLOW, PROTECTS YOUR NEW BABY FROM ILLNESS.

"Bottle-feeding is expensive," remarked a young mother who was breast-feeding a healthy looking baby. "This way is easier and cheaper."

"You can see that the real experts on this subject are mothers," the midwife said with a smile. "They know even better than health workers or others who have not breast-fed."

"Begin breast-feeding right away. If possible, put your newborn to the breast even before the cord is cut," the midwife said.

The first milk, a thick, yellow liquid, is natural medicine. Do not harm the baby by throwing it away.

"But what if I don't produce milk right away?" asked one pregnant woman.

"You should still put your baby to your breast as often as possible." a nursing mother replied.

ALMOST ALL WOMEN CAN BREAST-FEED. THE MORE THE BABY SUCKS, THE MORE MILK THE MOTHER HAS.

"The more the baby sucks, the more milk is made," said one mother.

"Sometimes breasts may become swollen and painful. If this happens, fold a cloth several times to make a compress, and dip the compress into hot water. Hold the wrung-out compress against the painful breast for about ten minutes. Do this four times a day. Feed your baby from this breast as soon as the pain is bearable."the midwife explained.

Many mothers start feeding solid food to their babies too soon because they feel their breast milk is not enough. They think their babies need more food or liquid.

"Remember that your breast milk will provide your baby with all the necessary foods for the first six months of life," the midwife said. "It is good to begin introducing solid food at four or five months so your baby will be used to it by the time he or she is six months old, when the baby will definitely need extra food, but you must also continue to breast-feed!"

There are three problems with feeding a baby solid food before four months:

1. The baby can get diarrhoea from the food or water used to prepare the food.
2. The baby may also not digest or absorb the food.
3. The supply of breast milk lessens because the baby is less hungry and sucks less.

Suggestions

Calculate how much it costs to feed formula to a baby for six months.

Make a list of things you could buy with that money.

Discussion

Why don't all mothers in your area breast-feed?

How can we help and encourage more others to breast-feed their babies?

"What is the best way to begin feeding solid food to a baby?" one nursing mother asked.

"I start giving small amounts of food when the baby is four or five months old," a mother told the group. "A baby of that age has a very small stomach, so it is best to feed a little at a time, several times a day." She reminded the women to breast-feed at each meal before and after giving the child solid food.

KEEP A SEPARATE CUP AND SPOON FOR BABY. WASH IN HOT BOILED WATER BEFORE USING.

"What kind of food should I start with?" asked a young woman who looked six or seven months pregnant.

"Start with a soft, thick porridge," one mother said. She was known for her wisdom about babies and her advice was sought by many young mothers.

THIS BABY IS VERY SICK BECAUSE SHE LACKS BREAST MILK AND BODY- BUILDING FOOD. A CHILD FED ONLY RICE PAP OR BARLEY POWDER WITH NOTHING ADDED WILL HAVE VERY THIN LEGS AND ARMS. THE CHILD IS UNHAPPY AND NEEDS MORE FOOD.

"Porridge can be made from foods like rice, or maize flour, sorghum, millet, beans, or peas." She described how several foods can be mixed together. "Fresh fruit can be mashed and added to the porridge." She advised the young mother not to add sugar or salt to the porridge.

"How do you feed such a young child?" asked one young woman nervously.

"It is important to feed the baby slowly, and in very small amounts," answered the older mother. "Put a little porridge on a clean spoon and feed the baby. If you use your finger for feeding make sure your hands are clean. The baby should then breast-feed after a small meal of solid food," she added.

"Forget bottles —they are too difficult to get really clean. Make sure you wash the baby's cup and spoon with clean, hot water before and after each meal." she said.

"Cover the baby's eating utensils to keep away flies and animals. You can use a rack to keep the dishes off the ground when drying," a neighbour added.

MASH FRESH FOOD WITH A CLEAN SPOON FOR THE BABY.

Mix small amounts of peas and beans with the staple porridge.

Fruits, like bananas, and mangos are clean and good for the baby too. Remember, introduce them slowly, and always following mother's milk.

Remember the baby's stomach is small, so only feed a little at a time, many times a day. Always prepare fresh foods, or re-heat before serving to make it safe.

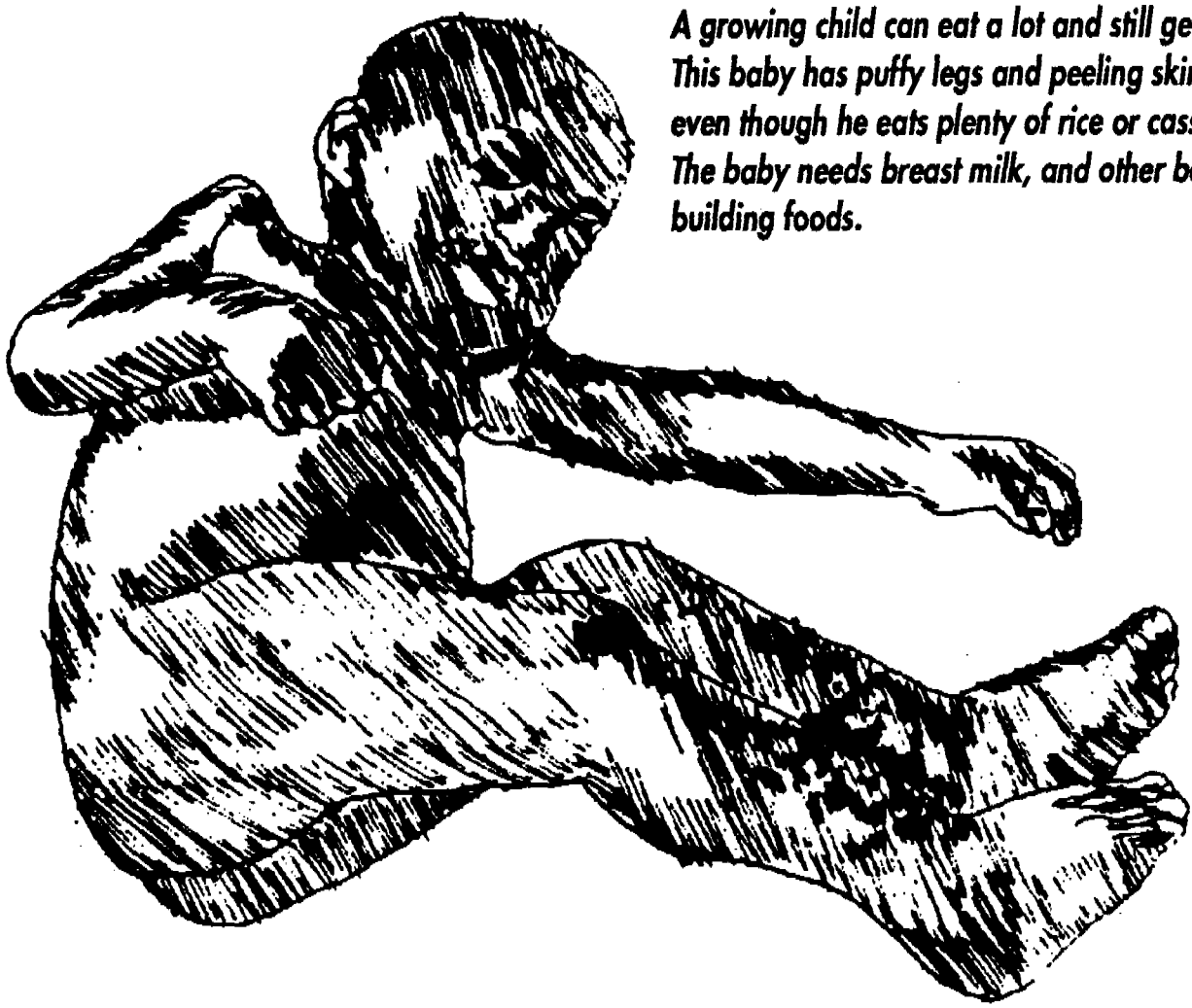
A woman with a young baby checked to see if he was sleeping and said quietly, "I tried giving him solid food and it gave him gas."

"That is because the solid food is new to his stomach," another woman explained. "If this happens, wait a couple of days and try again."

"As your baby gets used to the soft, thick porridge, you can begin to introduce other solid foods," she said. "Remember to breast-feed before and after each feeding, and add these new foods slowly."

"Be sure to feed your baby freshly made food. If you must serve leftovers, re-heat them thoroughly to kill germs, which cause infection."

BABIES NEED BREAST MILK AND EXTRA FOOD SUCH AS GROUND NUTS, MASHED BANANAS, SKINNED AND POUNDED BEANS OR FISH.



A growing child can eat a lot and still get sick. This baby has puffy legs and peeling skin even though he eats plenty of rice or cassava. The baby needs breast milk, and other body-building foods.

One mother reminded the others that the skins of beans are also hard to digest. Beans should be soaked and cooked until soft, and then broken up to remove skins.

"If you give your baby only rice pap or barley flour with nothing added, you will soon see a baby with thin arms and legs," another woman warned.

"But a baby who is fed good foods as well as mother's milk will look very healthy," she added holding up a smiling, chubby one-year-old. "I get fresh vegetables from the kitchen garden to feed my little one."

Discussion

Besides mother's milk, what are the other foods we should give a growing child after the first 4-6 months?

ASK A HEALTH WORKER TO WEIGH YOUR BABY. THE CHILD SHOULD BE BIGGER AND HEAVIER EVERY MONTH.

One evening we were discussing why it is important for water to drain quickly away from the well.

"Speaking of drainage, we can use our precious water twice," my neighbour said.

"We could grow gardens!" said a young woman who filled a bucket to collect water for her kitchen garden.

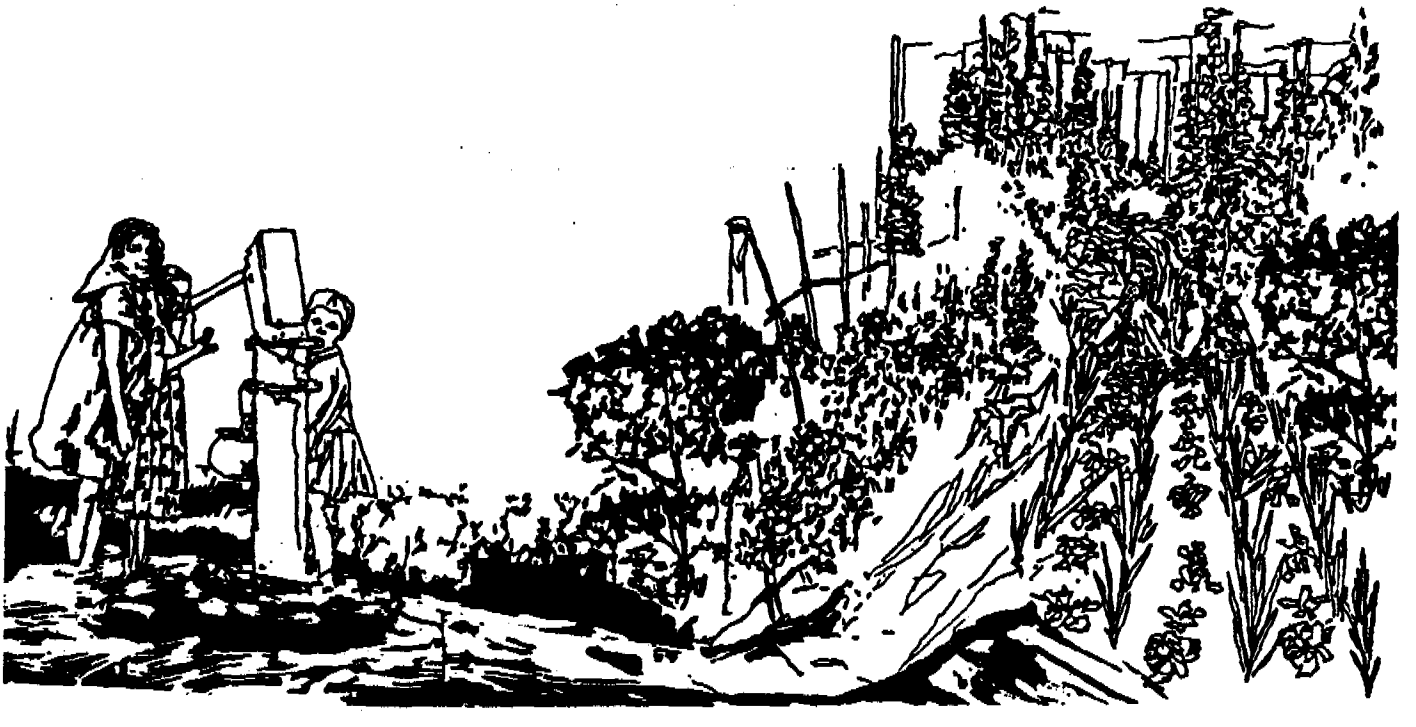
"Why grow a garden?" someone asked. "I can get perfectly good food at the market. Besides," she added with a scowl, "gardens just sound like more hard work to me!"

"Growing gardens doesn't have to be hard work," a woman replied.

"It's cheaper, too," another added. "Many of these nutritious foods are fairly easy to grow," one of our visitors said.

She explained to us how to grow a "mixed garden."

YOU CAN CARRY WATER TO THE GARDEN OR DRAIN IT DIRECTLY FROM THE WELL



"We grow many plants in a small space by mixing vegetables and fruit trees with trellises for climbing beans, pumpkins, and gourds." Trellises are poles and anything for plants to climb. Other plants can grow in the space below.

"We grow green leafy vegetables, of course, as well as fruit trees. Our mixed garden has banana and papaya", her husband added. Bigger trees planted a short distance from the garden will provide fruits and wood for many years.

Starting a Garden

"It sounds complicated to me," someone said. "How do you start such a garden?"

"Start simple," urged a visitor from a nearby village. "Clear all debris and weeds from a space chosen for gardening." She explained that weeds are unwanted plants stealing water, nutrients, and sunlight. "Weeds also shelter pests."

THE VEGETABLES AND FRUITS IN OUR GARDEN NOURISH MY FAMILY AND SAVE TIME AND MONEY

"Get rid of weeds while they are small," she continued. "They can become a big problem, especially during the rainy season."

She told us how to decide where to plant different crops, "Sunlight is an important thing to consider," she said. "Greens and beans like some shade, so you can plant them near the house. Fruit producing plants do well in full sun."

"Beans and greens are easy to grow. Beans put fertilizer into the soil as they grow," someone said.

Our visitor suggested planting crops like bananas, papaya, and avocado close to the water source. "These plants need a lot of water," she explained. "But there are other foods like mangos and grapes that don't need so much water."

"You will need to feed your growing plants in much the same way as you feed growing bodies," she said, gesturing toward a group of young children playing.

EVERY DAY PUT WASTE, GRASS, FRUIT SKINS, AND ANIMAL MANURE ON THE PILE. COVER IT WITH DIRT OR ASH.

"How do you feed a plant?" asked a child who had been drawing a picture of a garden. He looked very puzzled.

Our visitor smiled. "You feed a plant with compost" she answered, explaining that composting is a way of turning grass, weeds, and vegetable waste into rich soil.

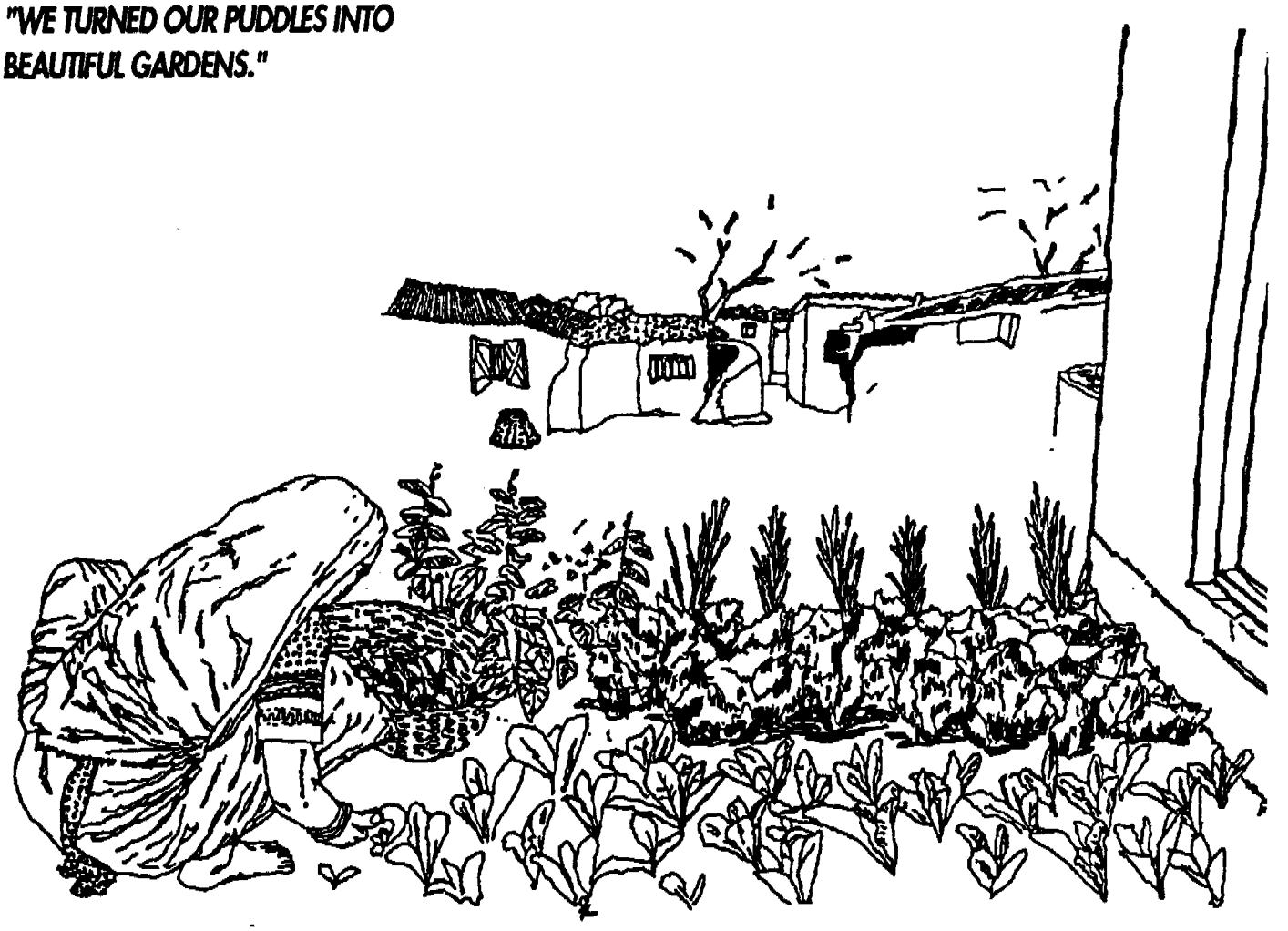
"Do we just throw the kitchen scraps right in the garden?" questioned a young woman.

"No, that would attract flies and other insects or rats and cause plant diseases," the visitor answered.

"Do you just throw the scraps and clippings into a pile on the ground?" another child asked.

"It is usually better to put up a fence to prevent animals or children from scattering the compost. You can also dig a hole. The compost should be about 50 steps from the kitchen."

"WE TURNED OUR PUDDLES INTO BEAUTIFUL GARDENS."



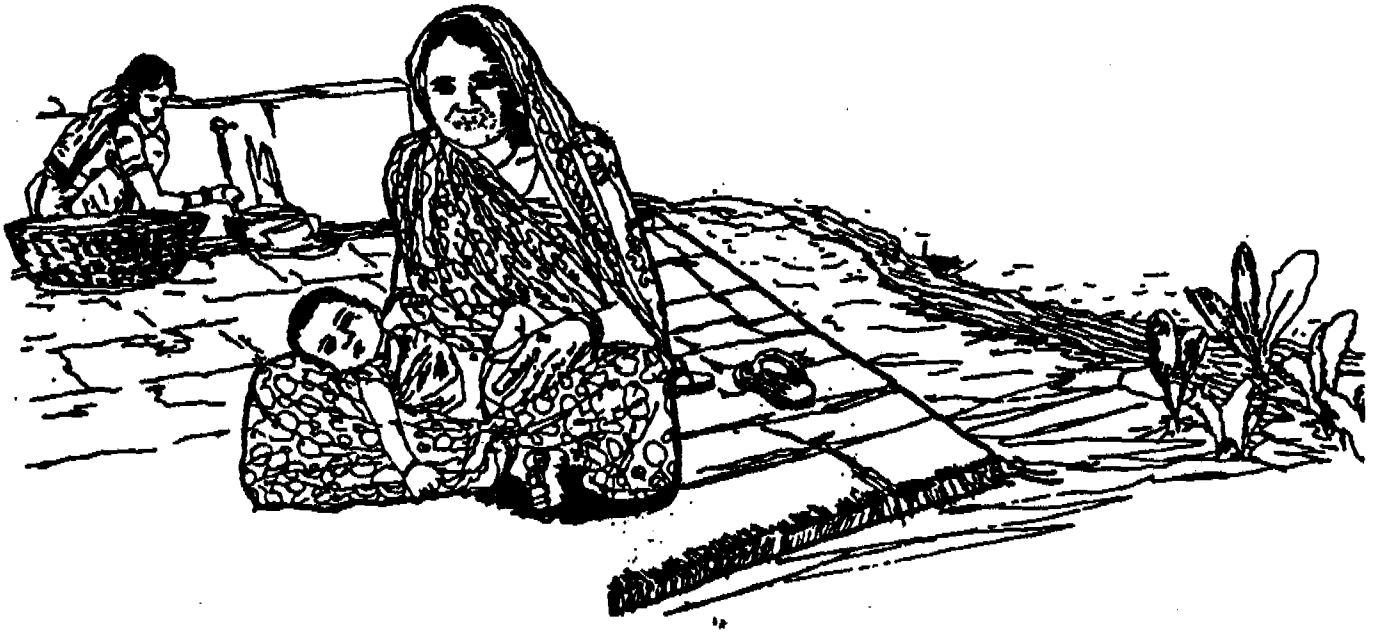
"You can add to your compost bin every day," she said. "It is good to put something like dried, crushed leaves in first."

Compost piles need air just as we do, she told us. "Mix the compost every week using a shovel or the pole in the middle of the pile." She added that it may be necessary to wet the compost especially during the dry season.

Use a layer of ash or soil to cover the pile at the end of each day, she said. "This will reduce odours."

"When the pile gets about as high as your knees, start another. Your compost is ready for use in your garden when it has turned a rich, dark brown colour. Mix the compost into the soil and spread it around the plants. This will help your garden hold moisture," she explained. "It will also keep weeds down."

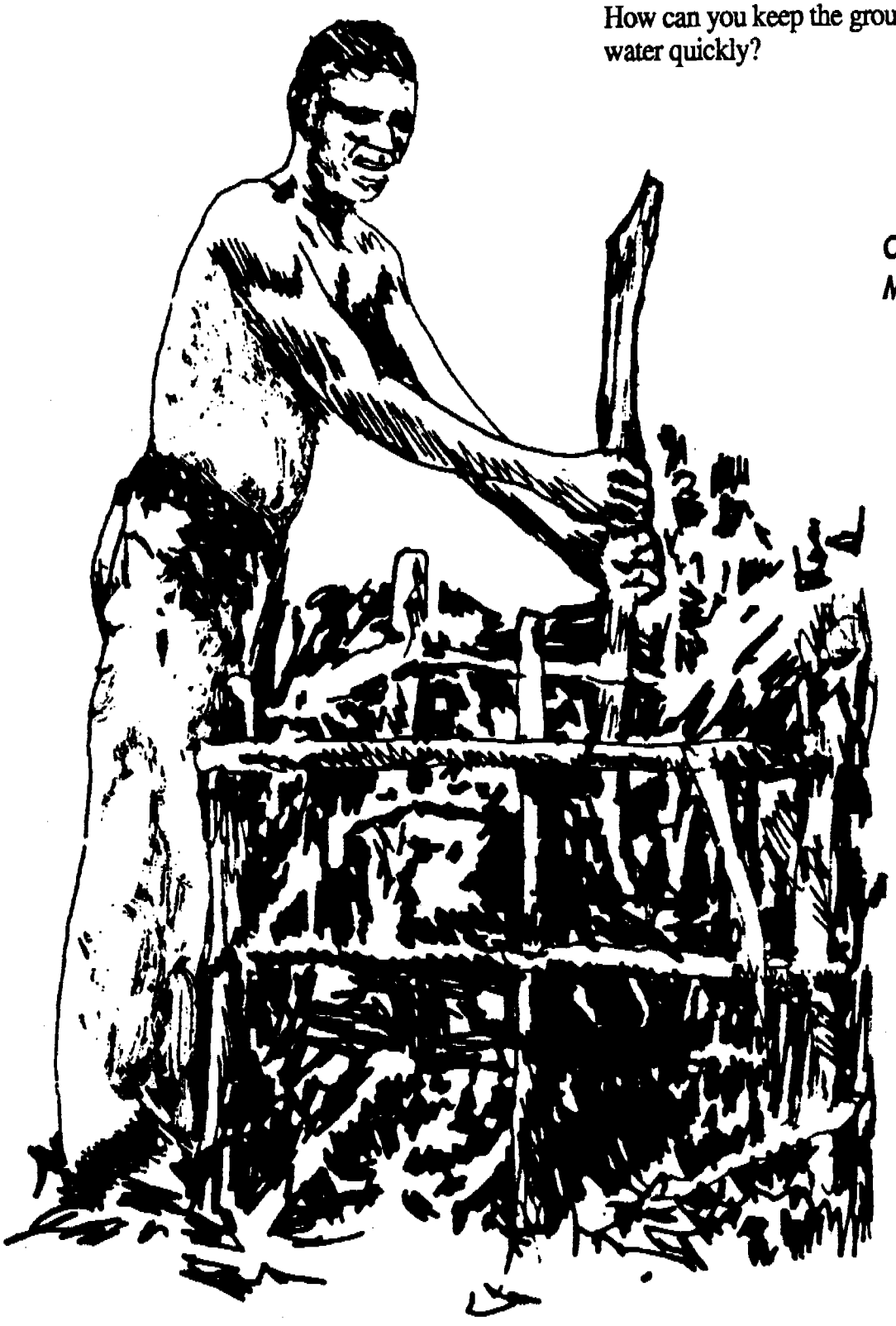
WE PLANT AND HARVEST VEGETABLES EVERY MONTH.



Discussion

Is there enough water in your community to grow gardens?

How can you keep the ground from losing water quickly?



COMPOST NEEDS AIR. MIX EVERY WEEK.

Everyone is enthusiastic about the tree project. At first people planted trees near their homes and as part of their gardens. Planting trees made us think about the future.

Someone starting singing

Shade us oh tree in our old age
Shade our daughters and sons
on their wedding days.

Flowers and fruits
mark the changes of seasons
children grow
while your roots keep the soil moist and protect
our land.

Birds sing from your strong limbs.
friends sit under your branches
or gather fallen leaves
for goats, compost and gardens.

The young trees we care for now will help our community for generations. That is why we planted "insurance" and "promise" trees.

Insurance trees are grown by families to harvest for emergencies or to get cash. You know wood is very expensive.

(Courtesy of Save the Children Fund)

What are promise trees, you ask?

Promise trees are best of all, come with me and see. Each child from the age of six gets to plant and nurture 10 trees in a special community garden . The children guard and protect the trees the way they would cattle and goats. They are "promised" trees when they get married or have to go away for studies or get older. Before that they can enjoy fruits and sell them too. You will always find children in the promise tree park..

The Care and Planting of Trees.

Dig a hole deep enough to hide half of an adult's forearm or all of a child's arm from the elbow to the fingers. The width of the hole should be at least as wide as two extended hands.

If the seedling (baby tree) is in a bag remove bottom and place into a hole, then remove the remainder of the bag.

Fill the hole, making sure all the roots are covered. All of the stem must remain above ground or the tree will be vulnerable to disease.

Water the seedling with about 5 litres of water. It is often best to plant during the rainy season for you will have water regularly.

Place a protective fence around young trees to keep goats and other animals from eating them.

(Courtesy of Save the Children Fund)

"Life here has really changed " we agreed while sharing papayas before loading baskets of fruit to sell in the market.

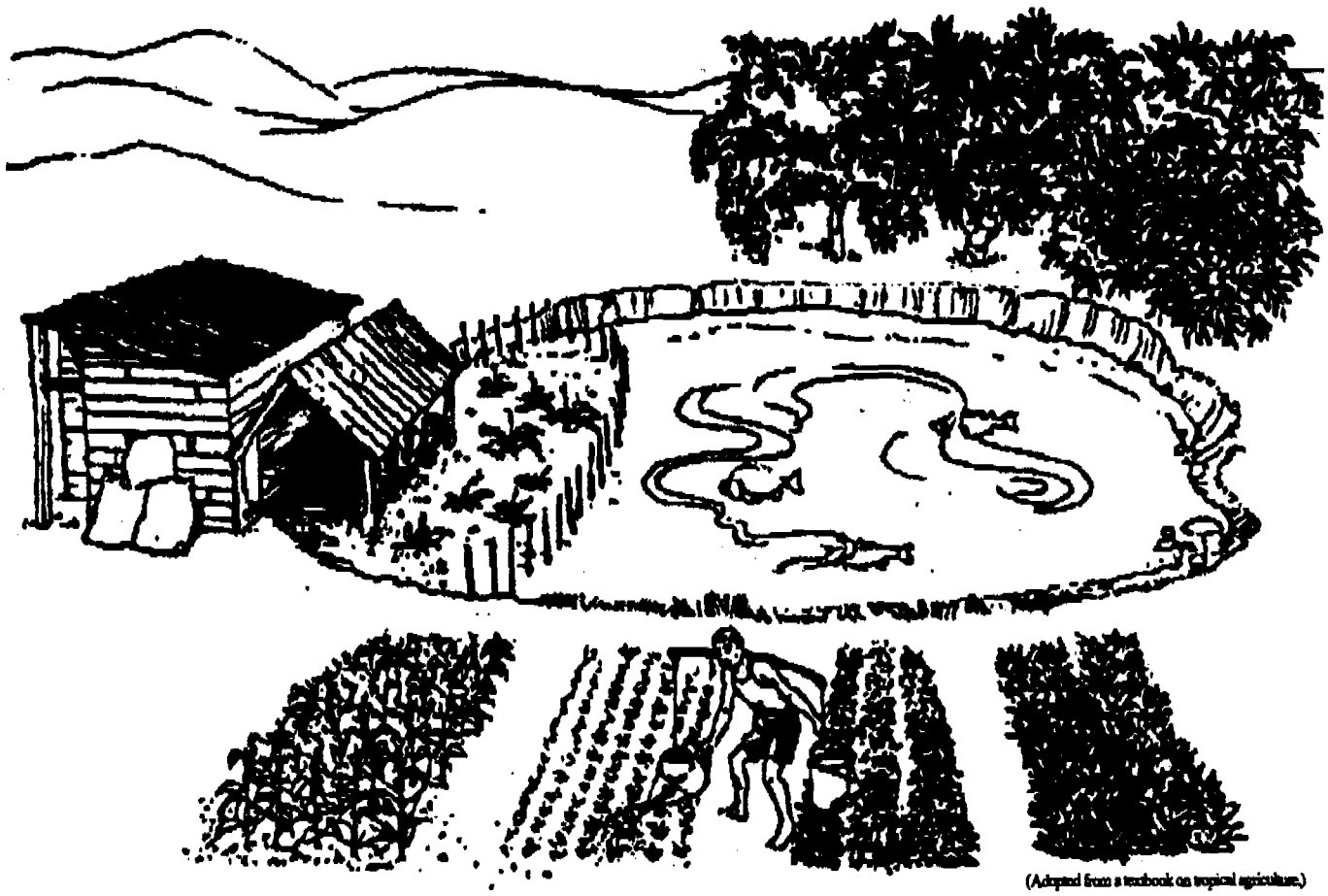
Suddenly we all had a big laugh. " Remember when we couldn't sit near the school in the evening without slapping our ankles or waving mosquitoes away from our faces. "

"Where have all the mosquitoes gone now that we changed the mosquito heaven into a fish pond? " we joked.

The fish pond by the school was an amazing sight. The sides, of the pond are covered with papaya, banana and other fruit trees. Between the trees you will find many kinds of vegetables growing. Next to the fish pond is a duck house where we get eggs. The manure from the ducks helps fertilize the pond.

People often stop to look at the pond on their way to and from the market. We are growing fast-breeding fish called Tilapia so we have to be very careful to see that we both feed and harvest them.

WE CAN HELP FISH GROW BY FEEDING THEM WELL.



(Adapted from a textbook on tropical agriculture.)

" The secret to growing Tilapia or any other pond fish is to feed them with the husks or rice or other grains, and to be sure that the water is fertilized. You may have to drain the pond before stocking fish to remove other fish that will eat your fish fry (baby fish). You can keep the small fry protected by nets until they are about a finger length in size. "After the Tilapia start breeding it is helpful to catch fish every week or the pond will become too crowded and the fish can die or remain very small. It is important to harvest fish of different sizes not only the big ones. This way the pond will be more productive." explained a friend who went for training on fish culture.

"And never dig a pond too deep or the fish will dive under you nets and you will never catch them," she advised.

You can also grow Tilapia in small ponds or ditches close to home. If you feed or care for the fish, they will grow and you can harvest them after six months if you do not have water all year round. These and other fish, also help control mosquitoes by eating their larva and the weeds that shade them.

We now have a map showing all the places where we planted trees, and the location of wells and latrines. Join us for a water-watching walk and see how our community has changed.

Beautiful trees and flowers grow near our kitchen gardens which are protected by fences. You will always see children at the "promise tree" park or at the school ponds and gardens. They make us all feel proud. Our compost piles are neat, and we are sure to feed the soil, and to use mulch to keep moisture in the ground.

You may see attendants clearing drains, repairing or cleaning the site around the well or talking with people gathering water. On clear days you will see bottles of water being cleaned by the rays of the sun. Nearby mothers are nursing their children or gathering eye-protecting vegetables to add to the babies' porridge. Instead of unsafe infant feeding bottles you will see mothers using cups and spoons to nourish older babies after breast-feeding.

All our mothers visited the clinic while they were pregnant, and made sure to eat plenty of vegetables and other foods to protect themselves and their babies. Everyone understands when to get help for problems during pregnancy.

Our community is healthier now and everyone, including children, have learned never to pass urine or to defecate in or near the water. Both adults and children use latrines and keep them clean. You will notice people washing their hands after use. They have jars with dippers designed to keep hands out of drinking water. We know this will help protect all of us from diarrhoea. When someone does get sick we are sure to give liquids and food.

All for Health - A Resource Book for Facts for Life - Available from UNICEF

AHRTAG, Appropriate Health Resources & Technologies Action Group Ltd. 1 Bridge Street, London, U.K..

Better Care for Diarrhoea - Voluntary Health Association of India, 40 Institutional Area, South of I.I.T., New Delhi -110016 INDIA

Community Health Workers Manual, Elizabeth Wood, published by African Medical and Research Foundation, P O Box 30125, Nairobi, Kenya

Community Self-Improvement in Water Supply and Sanitation, IRC, International Water and Sanitation Centre, P.O. Box 93190, 2509 AD The Hague, The Netherlands.

Creciendo Sano - Manual Para El Control Del Crecimiento Y Desarrollo Del Niño - Instituto de Investigación Nutricional, Av. La Universidad 5ta Cdra. La Molina, Apartado postal 18-0191 Lima PERU

Developing Countries Farm Radio Network provides radio scripts on health, nutrition, hygiene, gardens and food production. Address 595 Bay Street, Suite 9, Toronto, Ontario M5G 2C3, CANADA

Developing and Using Audio-Visual Materials in Water Supply and Sanitation Programmes - WASH Technical Report No. 30.
WASH 1611 N. Kent Street, Room 1001, Arlington VA 22209 -2111 USA.

Dialogue on Diarrhoea - The international newsletter on the control of diarrhoeal disease. AHRTAG, 1 Bridge Street , London, U.K..
(Free to readers in developing countries. US$20 for others.)

Facts for Life - A Communication Challenge, Available from UNICEF.

From Handpumps to Health - The Evolution of Water and Sanitation Programmes in Bangladesh, India and Nigeria, by Maggie Black, available from UNICEF.

My Name is Today - An illustrated discussion of child, health, society and poverty in less developed countries. David Morley and Hermione Lovel, available through TALC: Box 49 St. Albans, Herts, AL1 4AX., U. K.

Partners in Evaluation - Evaluating Development and Community Programmes with Participants, Marie-Thérèse Feuerstein, available through TALC.

Participatory Evaluation - Tools for Managing Change in Water and Sanitation, Deepa Narayan Parker. Issued by PROWWESS/UNDP.

Planning for Agroforestry - Susan Huke and June Plecan. Save the Children Fund, 54 Wilton Road, Westport, Conn. 06880 U.S.A.

Pretesting and Revising Instructional Materials for Water Supply and Sanitation Programs - WASH Technical Report No. 24.

Rural Sanitation in Lesotho - From Pilot Project to National Program. A Joint Publication of the UNDP/World Bank Water and Sanitation Program and PROWWESS/UNDP.

Rural Water Supply and Sanitation - A Text from Zimbabwe's Blair Research Laboratory. Peter Morgan, Macmillan Education Ltd..

TALC - Teaching Aids at Low Cost. For complete list of books and teaching material, write to: TALC.

Teaching Health Care Workers - A Practical Guide. Fred Abbatt and Rosemary McMahon, Macmillan Education Ltd., available through TALC.

Tools for Community Participation - A Manual for Training in Participatory Techniques by Lyra Srinivasan - PROWWESS/UNDP. Technical Series distributed by PAC, Inc 777 U.N PLaza, New York, New York 10017.

Where There Is No Doctor, by David Warner. Available from the Hesperian Foundation, P.O. Box 1692, Palo Alto, California 94302-1690 USA or from TALC.

Note: Technical information on the design of wells, boreholes, handpumps, standposts, improved latrines, slow sand filtration, urban sanitation, may be obtained from government ministries as well as from UNDP, UNICEF, WHO, the UNDP/World Bank Water and Sanitation Programme, and non-governmental organizations.

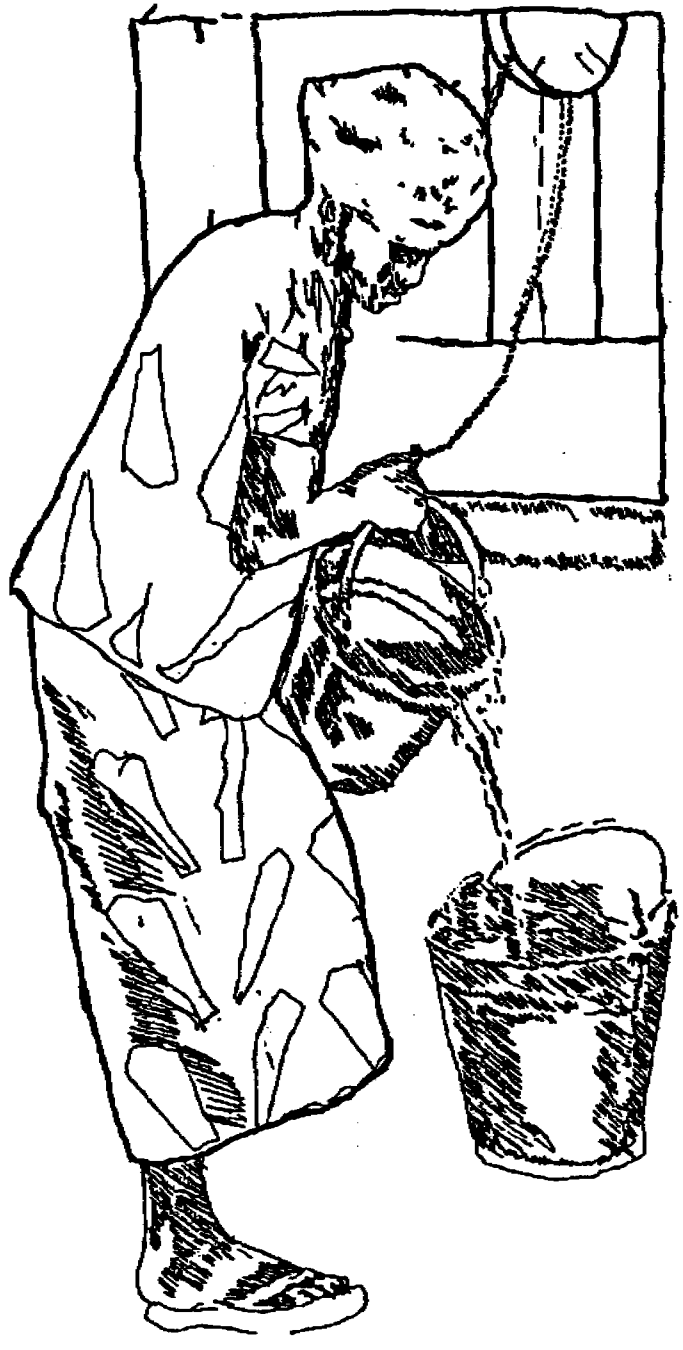
POSTERS

Posters can be designed in many ways ranging from detailed drawings to rough sketches. Each community or individual can decide which is preferred.

"A WATER-WATCHING WALK."

PUDDLES AND WATER COLLECTING IN RUBBISH BREED ANNOYING MOSQUITOES WHICH CAUSE MALARIA AND OTHER DISEASES.

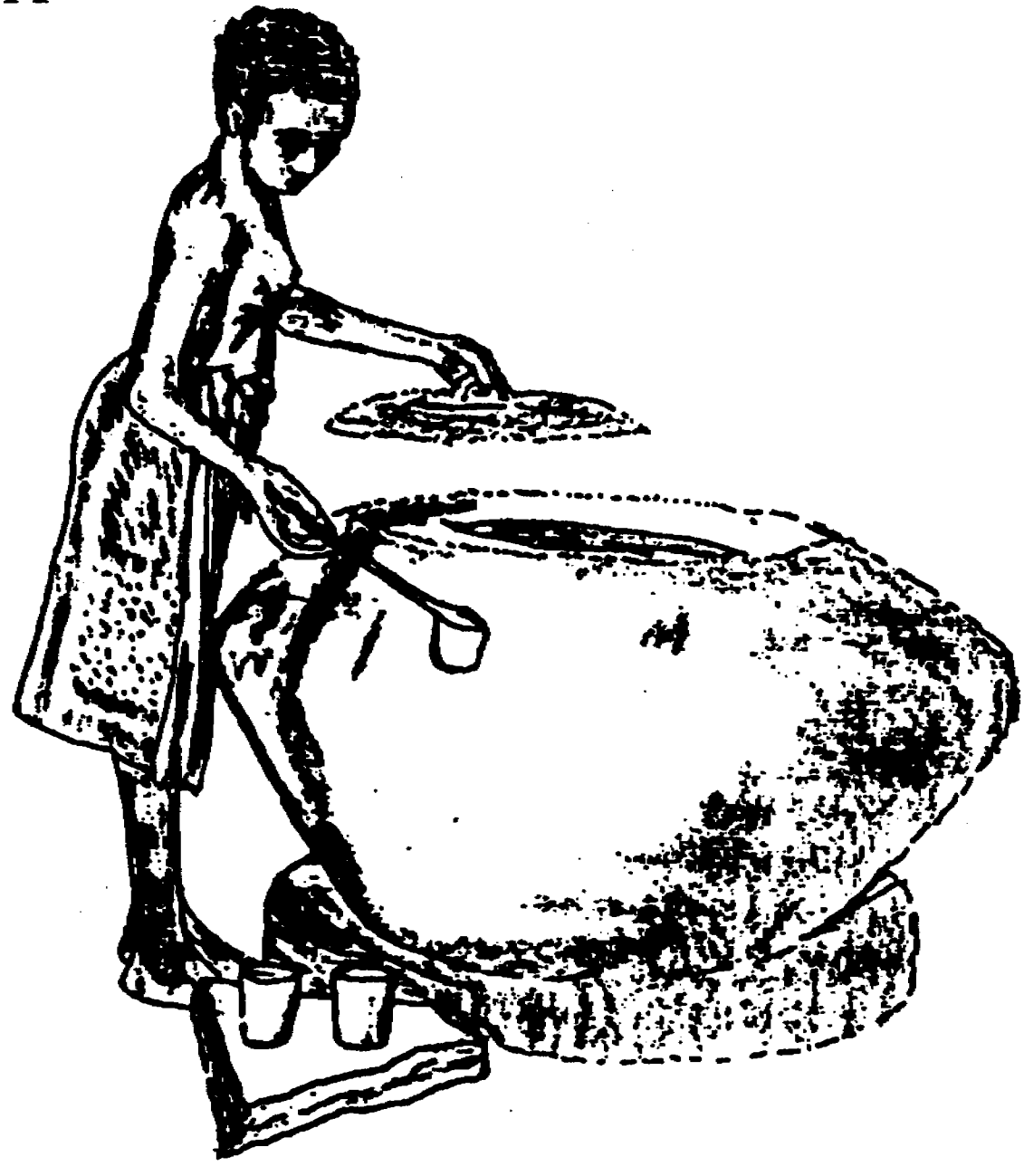
WISE WOMEN IN A COMMUNITY

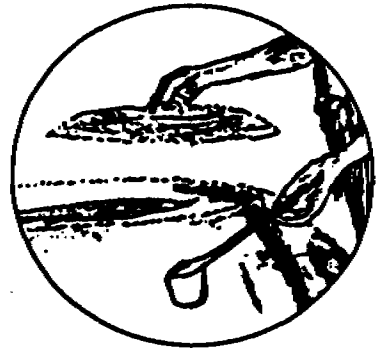


THE BEST WATER IS FROM A PROTECTED SOURCE

Lifting, pumping, and carrying water is hard work. After so much effort, take simple steps to keep water safe and pure.

WISE WOMEN IN A COMMUNITY

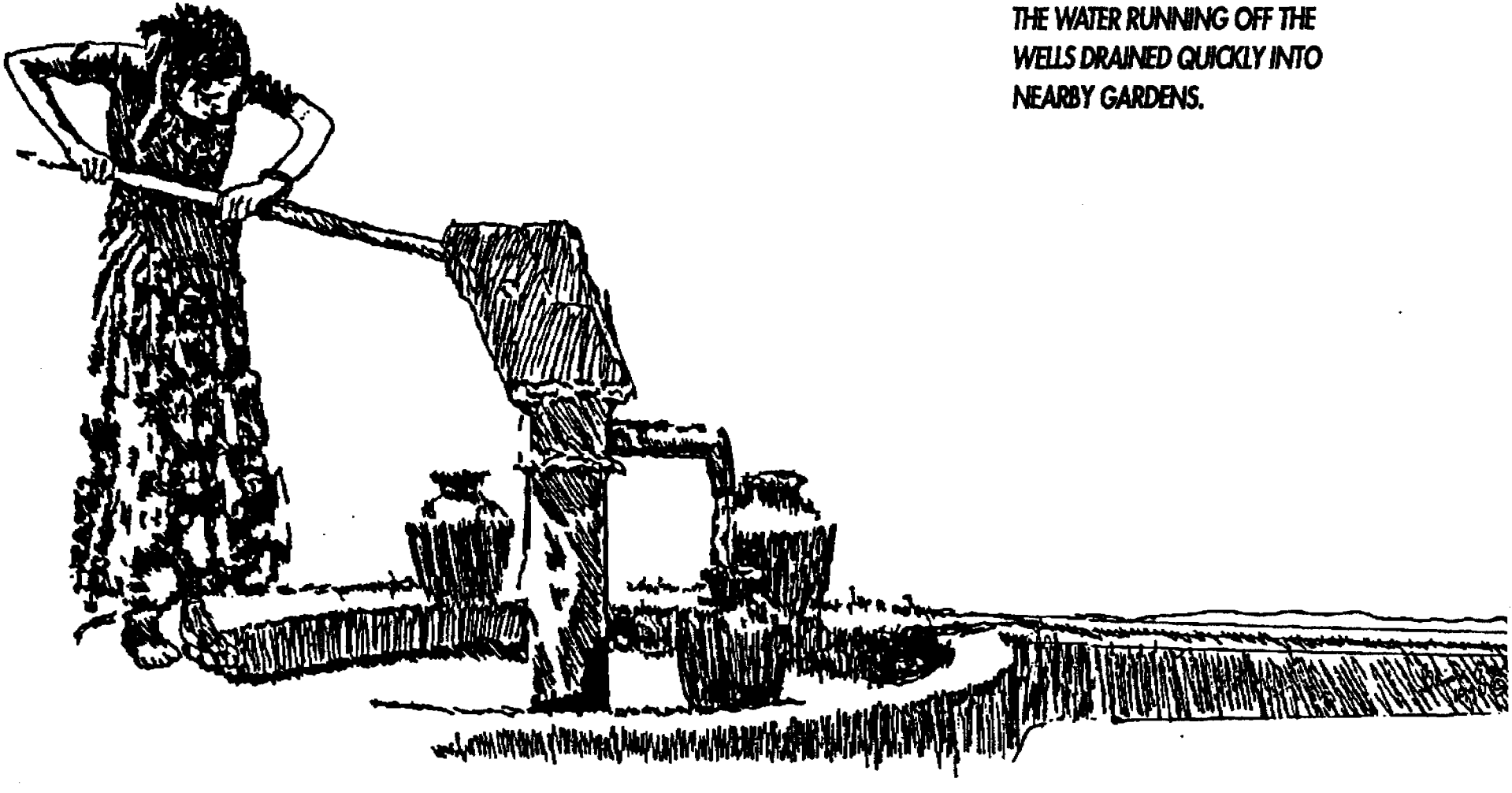




KEEP HANDS OUT OF DRINKING WATER. USE A DIPPER TO KEEP WATER CLEAN.

WISE WOMEN IN A COMMUNITY

WATER FROM OPEN SOURCES MAY LOOK CLEAN AND STILL CARRY HIDDEN DISEASES FROM HUMAN FAECES AND ANIMALS.



THE WATER RUNNING OFF THE WELLS DRAINED QUICKLY INTO NEARBY GARDENS.

COMMUNITY SELF-IMPROVEMENT

WHEN PEOPLE URINATE OR DEFECATE NEAR WATER SUPPLIES, OTHERS MAY GET SICK. NO ONE SHOULD EVER URINATE OR DEFECATE IN PONDS, RIVERS, OR STREAMS.

THE WATER COMMITTEE

THE ATTENDANTS ARE TRAINED TO MAINTAIN AND REPLACE ALL PARTS OF THE PUMP.

THE WATER COMMITTEE

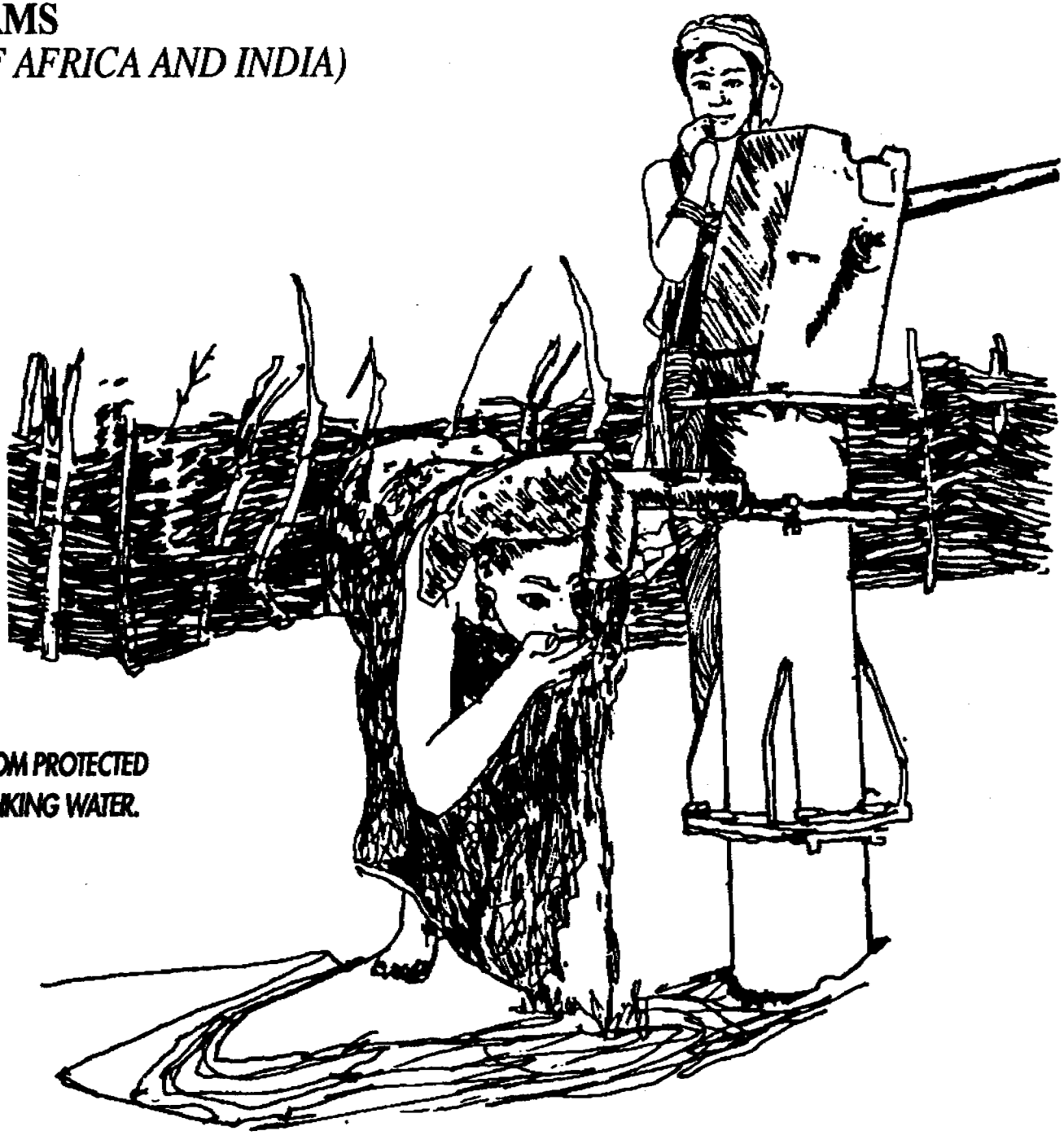
PUMP ATTENDANTS REPLACE THE PINS HOLDING THE PUMP HANDLE.

The attendants check the wells every day.

They must:

1. *Remove mud and rubbish from around the well.*
2. *Check to see that water easily drains away.*
3. *Check the fences around the well to keep animals away.*
4. *They also know how to repair pumps and report serious problems.*

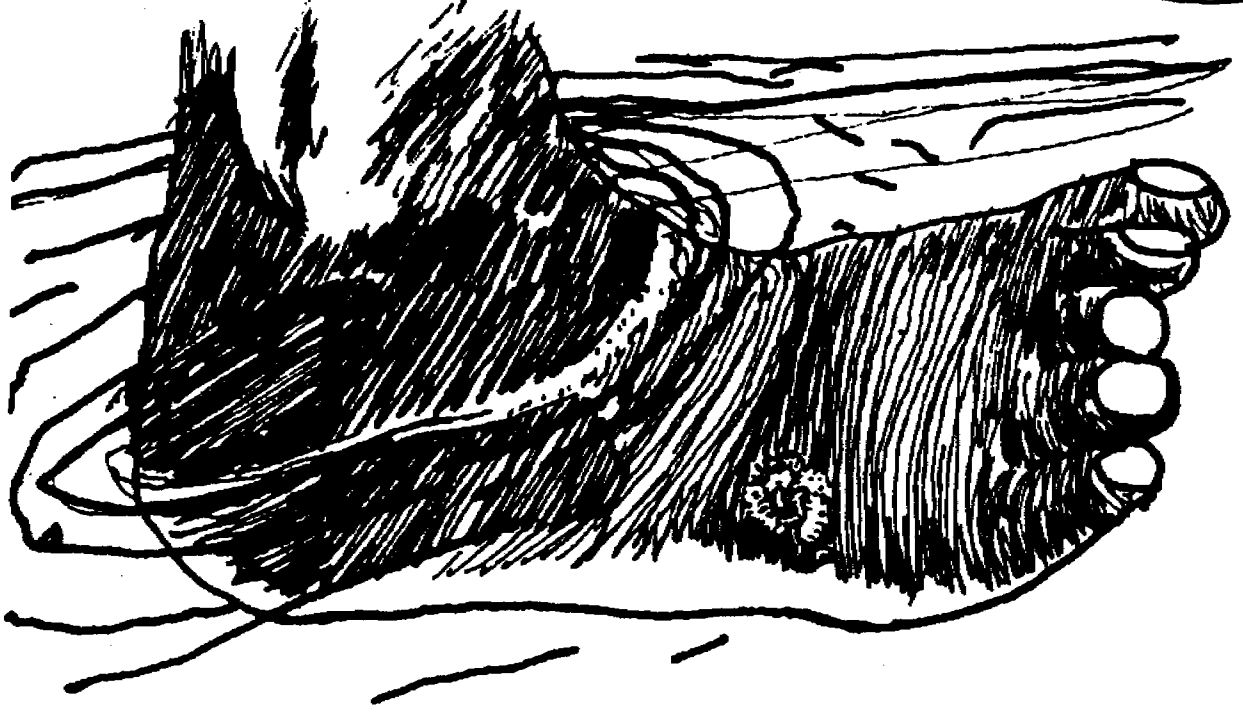
GUINEA WORMS
(FOR PARTS OF AFRICA AND INDIA)



ONLY DRINK WATER FROM PROTECTED SOURCES, OR BOIL DRINKING WATER.

GUINEA WORMS
(FOR PARTS OF AFRICA AND INDIA)

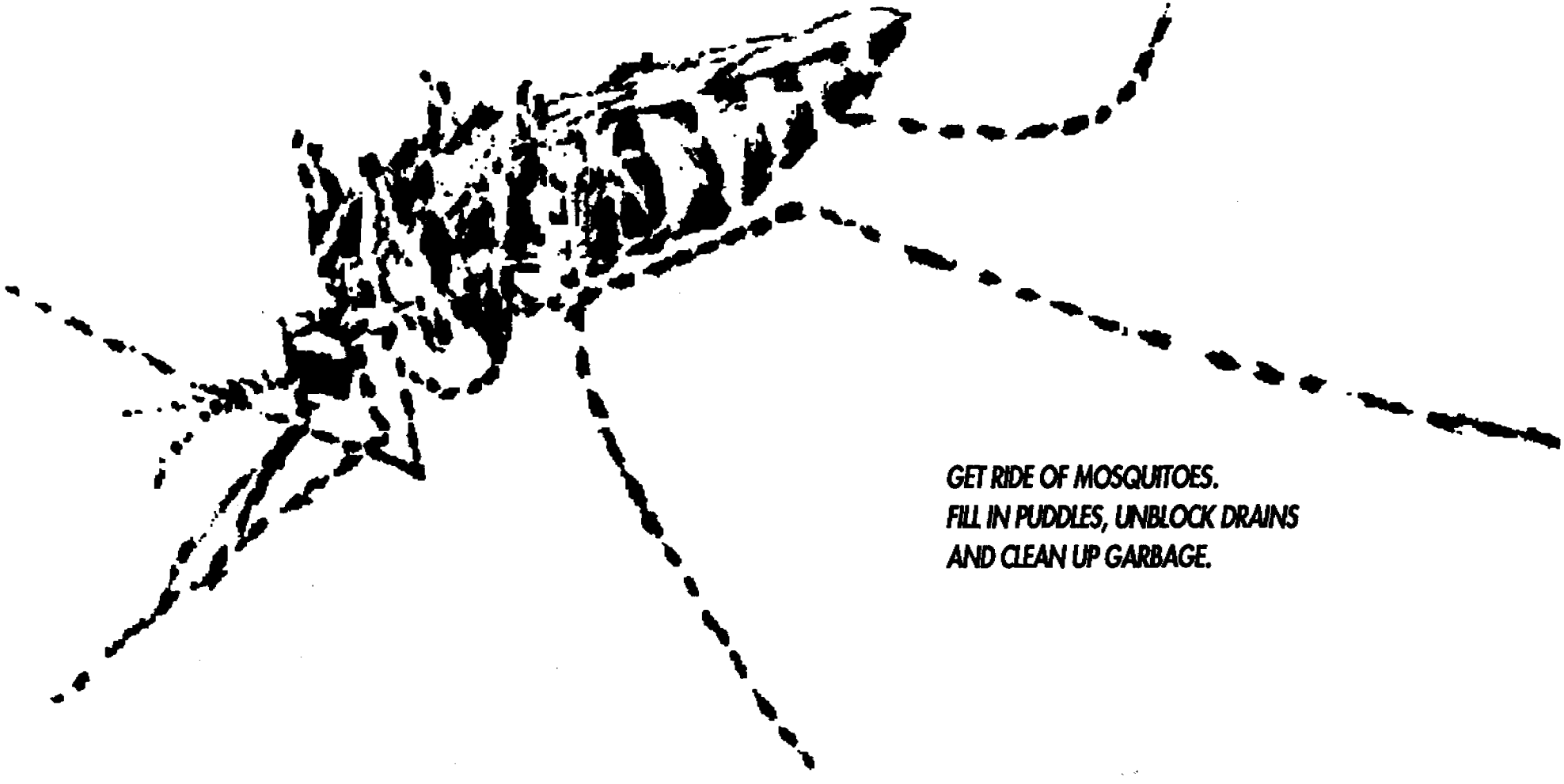
THE WATER IN THIS STEP-WELL CARRIES TINY GUINEA-WORMS. YOU CANNOT SEE THEM. WORMS ENTER THE WATER FROM INFECTED PEOPLE'S FEET.



IS BOILING DRINKING WATER TOO MUCH TROUBLE?

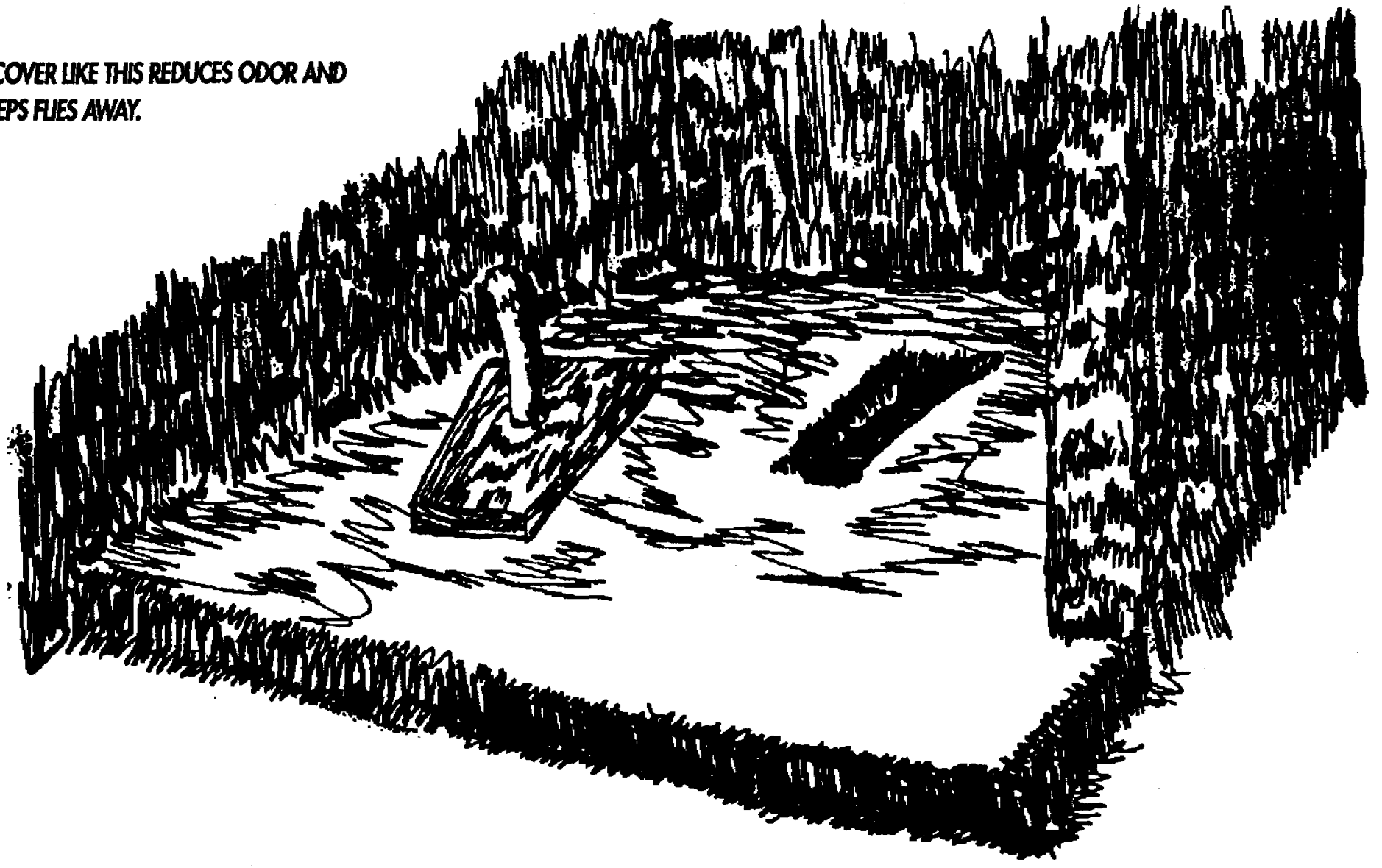
BOIL WATER TO PROTECT AGAINST DIARRHOEA, DYSENTRY, TYPHOID, HEPATITIS, AND CHOLERA.

MOSQUITOES



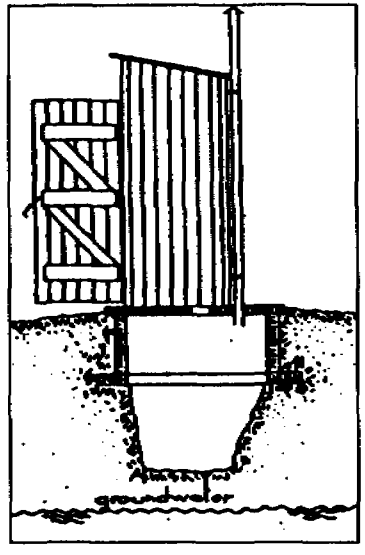
GET RIDE OF MOSQUITOES.
FILL IN PUDDLES, UNBLOCK DRAINS
AND CLEAN UP GARBAGE.

LATRINES

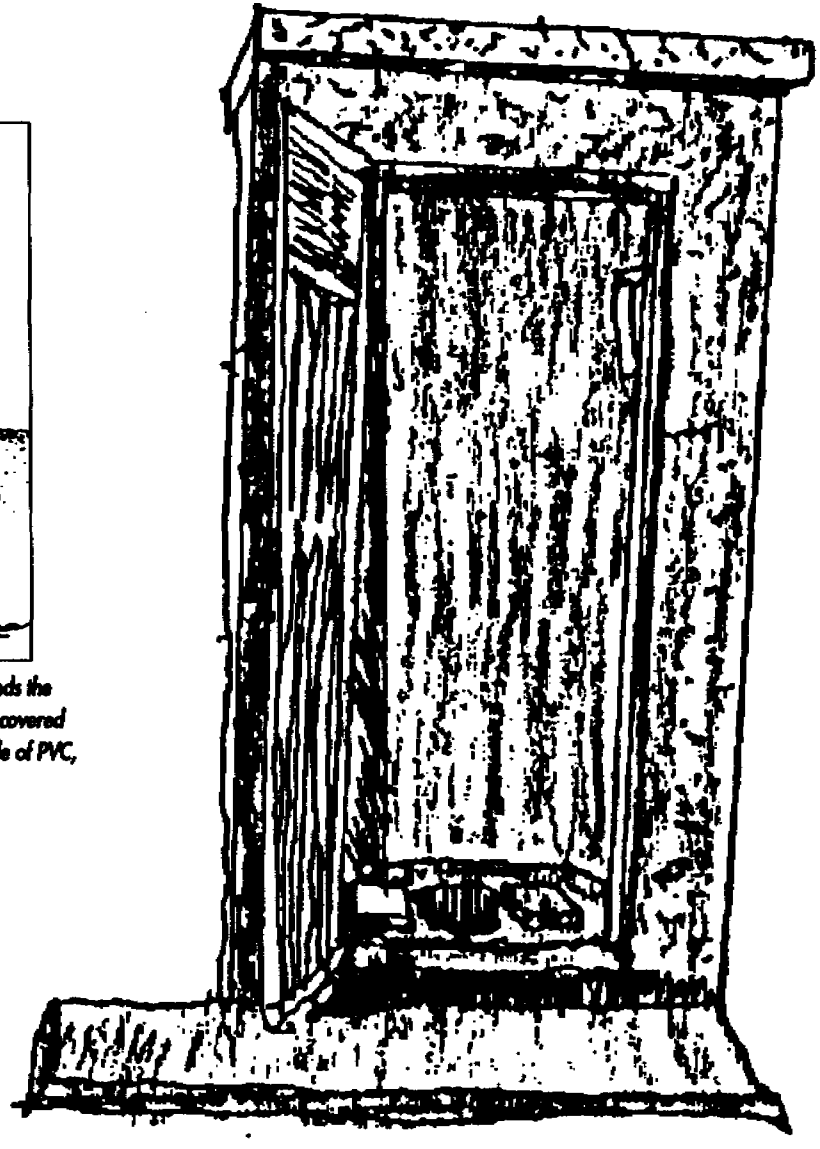


A COVER LIKE THIS REDUCES ODOR AND KEEPS FLIES AWAY.

LATRINES



Ventilated improved pit latrine, (VIP) ends the smell and nuisance of flies. The vent is covered with a fly screen. The pipe can be made of PVC, burnt clay ferrocement of bamboo.
(Illustration Courtesy of IRC.)



BILHARZIA

THIS DISEASE WILL DISAPPEAR IF NO ONE URINATES OR PASSES WASTE IN OR NEAR THE WATER.

MOSQUITOES

CUT GRASS NEAR HOUSES. MOSQUITOES KEEP COOL IN THE TALL GRASS AND RATS AND SNAKES HIDE IN IT.

DIARRHOEA

A CHILD WITH DIARRHOEA NEEDS TO DRINK OFTEN AND EAT SOFT FOODS.

BILHARZIA

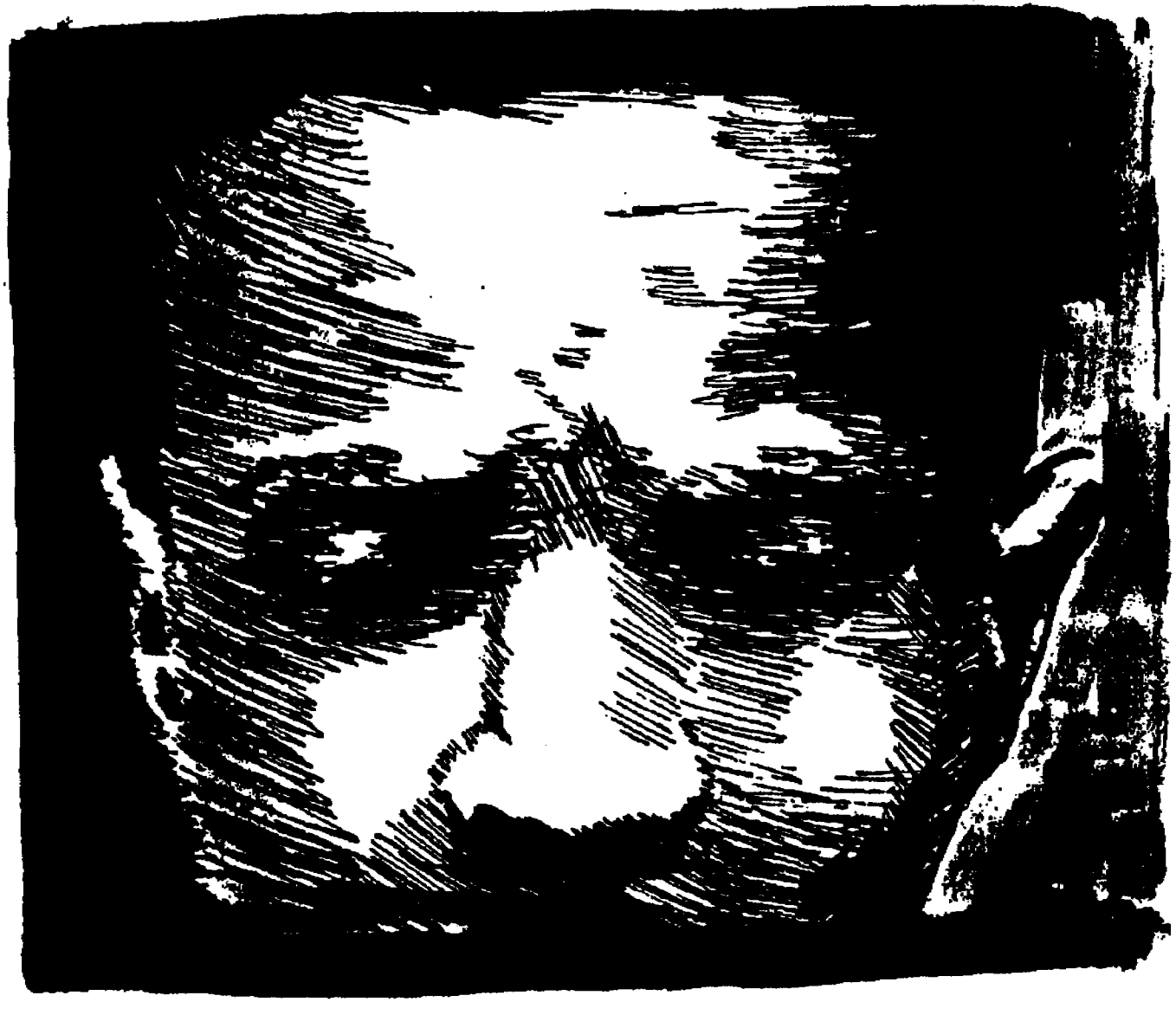
EVEN THE URINE OF YOUNG CHILDREN CAN MAKE OTHERS VERY SICK. NEVER URINE IN WATER.

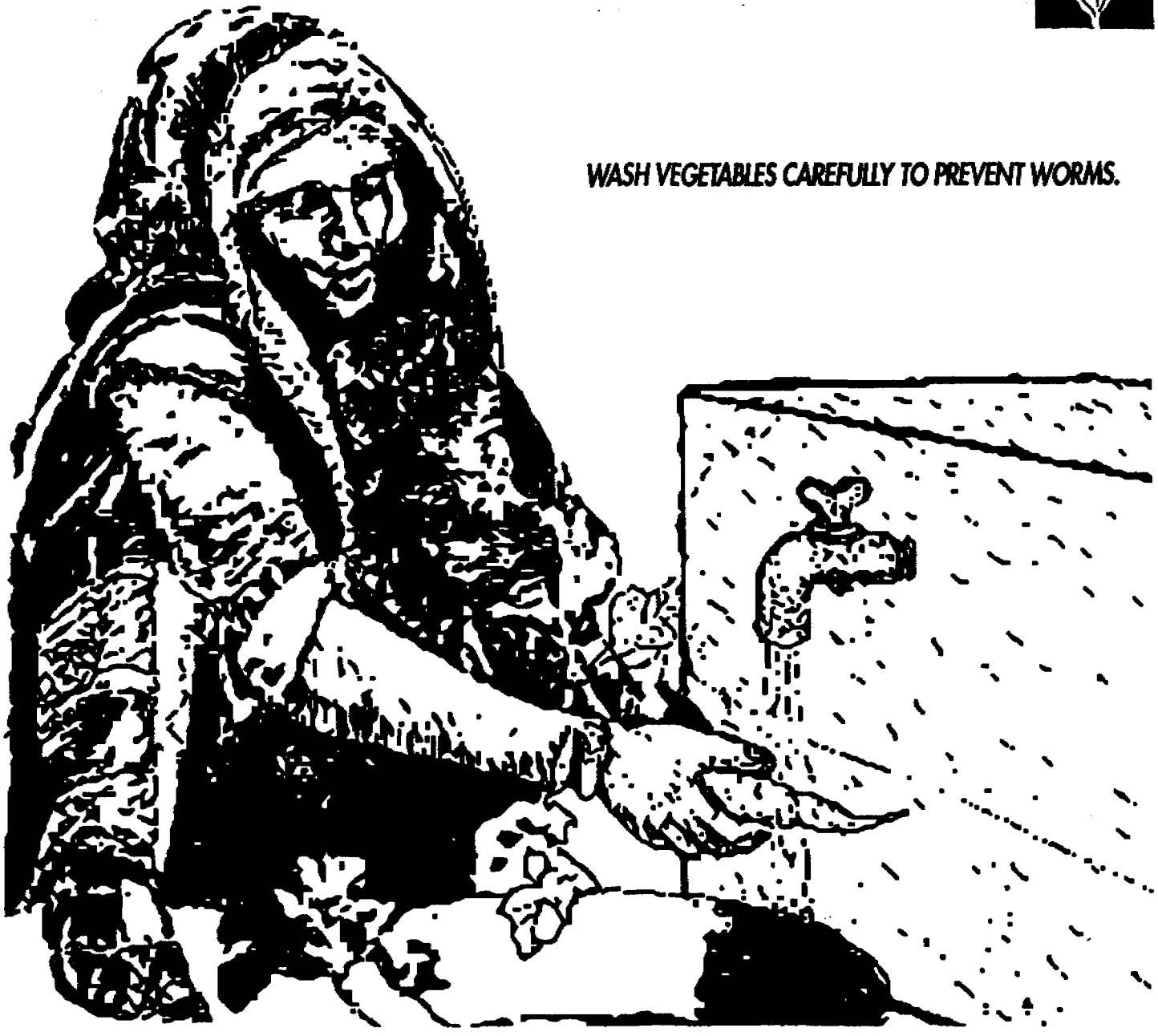
BRIGHT EYES, CLEAR SKIN AND PEACE OF MIND

GREENS, ORANGE FRUITS AND VEGETABLES PREVENT BLINDNESS.

BRIGHT EYES, CLEAR SKIN AND PEACE OF MIND

THIS CHILD CANNOT SEE AT NIGHT. HE NEEDS FRUITS AND VEGETABLES OR HE WILL GO BLIND.

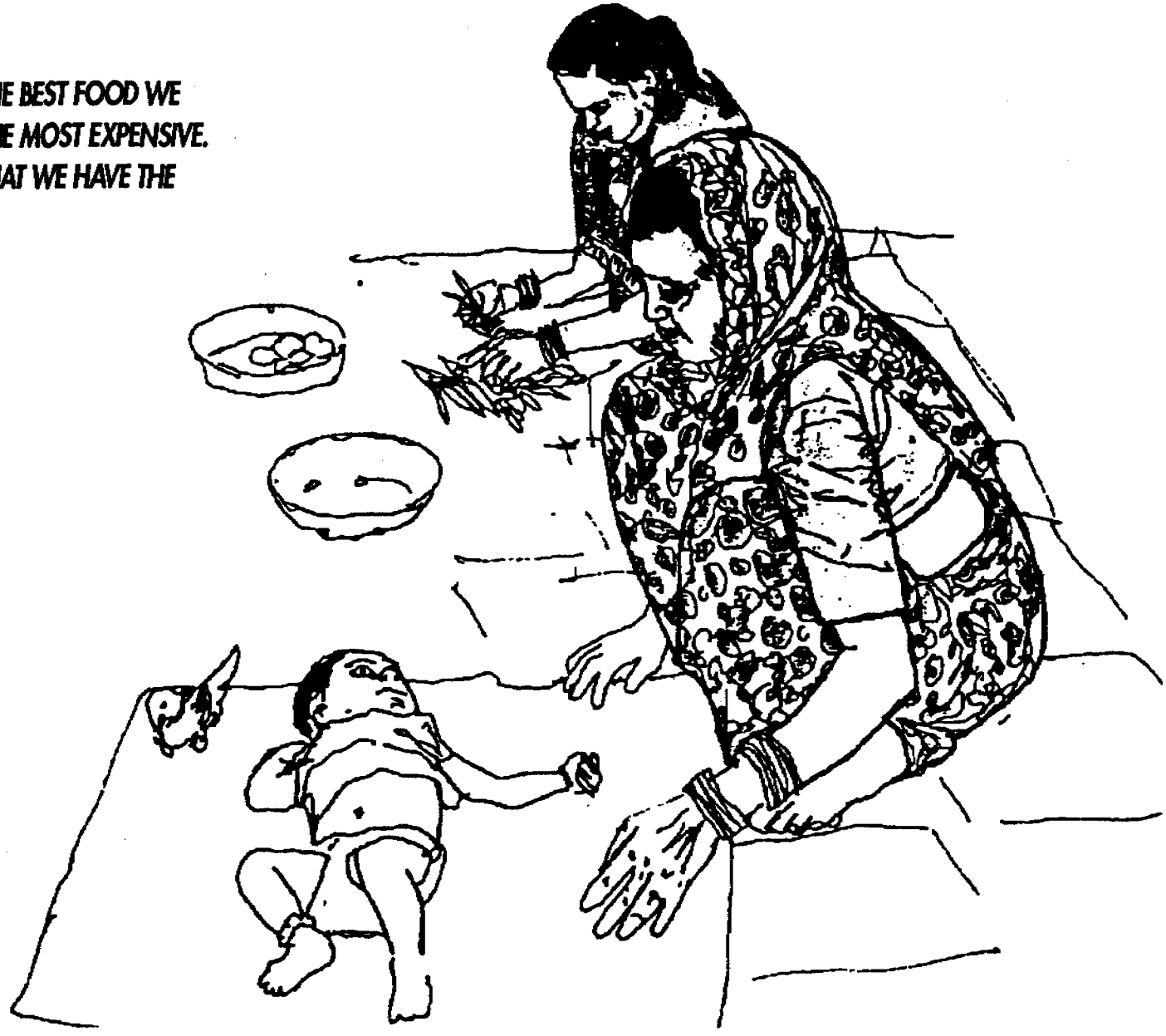




WASH VEGETABLES CAREFULLY TO PREVENT WORMS.

FOOD

IT IS IMPORTANT TO SEE THAT WE GET THE BEST FOOD WE CAN AFFORD. THE BEST FOOD IS NOT THE MOST EXPENSIVE. WE CULTIVATE A GARDEN TO BE SURE THAT WE HAVE THE RIGHT FOOD TO EAT.



A CLOSET WITH A SCREEN KEEPS FLIES AND ANIMALS AWAY.

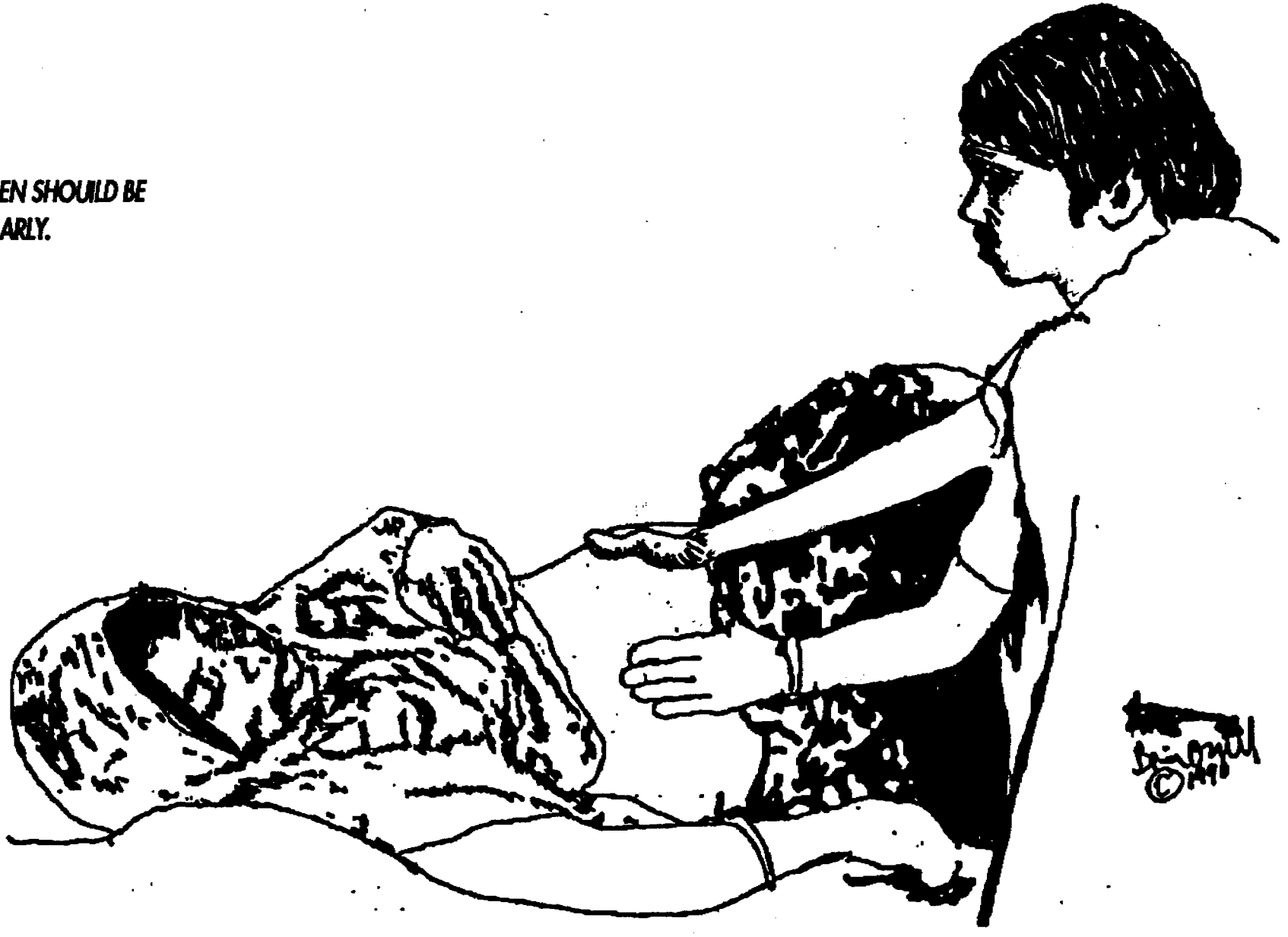
COVERED CONTAINERS
(ILLUSTRATION COURTESY IRC)

PREGNANCY

GREENS, VEGETABLES, BEANS AND OTHER NUTRITIOUS FOOD ENRICH YOUR BLOOD AND GIVE STRENGTH TO YOUR BABY.

PREGNANCY

PREGNANT WOMEN SHOULD BE EXAMINED REGULARLY.



BREAST-FEEDING

BREAST-FEED FROM BIRTH. THE FIRST MILK, THICK AND YELLOW PROTECTS YOUR NEW BABY FROM ILLNESS.

BREAST-FEEDING

BREAST MILK IS BEST FOR YOUR BABY.

BREAST-FEEDING

ALMOST ALL WOMEN CAN BREAST-FEED. THE MORE THE BABY SUCKS, THE MORE MILK THE MOTHER HAS.

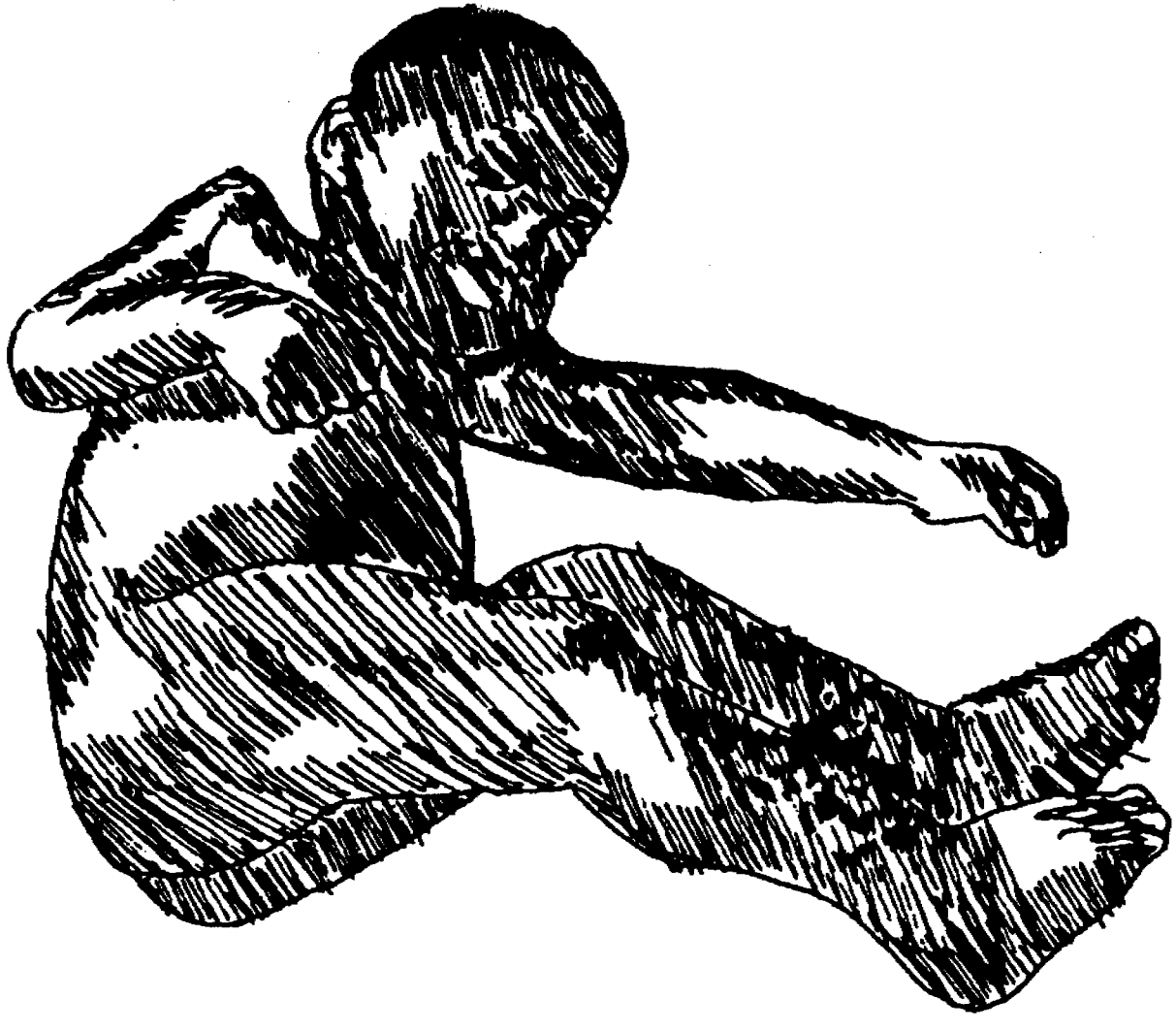
WEANING

THIS BABY IS VERY SICK BECAUSE SHE LACKS BREAST MILK AND BODY BUILDING FOOD. A CHILD FED ONLY RICE PAP OR BARLEY POWDER WITH NOTHING ADDED WILL HAVE VERY THIN LEGS AND ARMS. THE CHILD IS UNHAPPY AND NEEDS NUTRITIOUS FOOD.

WEANING

KEEP A SEPARATE CUP AND SPOON FOR THE BABY. WASH IN HOT BOILED WATER BEFORE USING.

WEANING

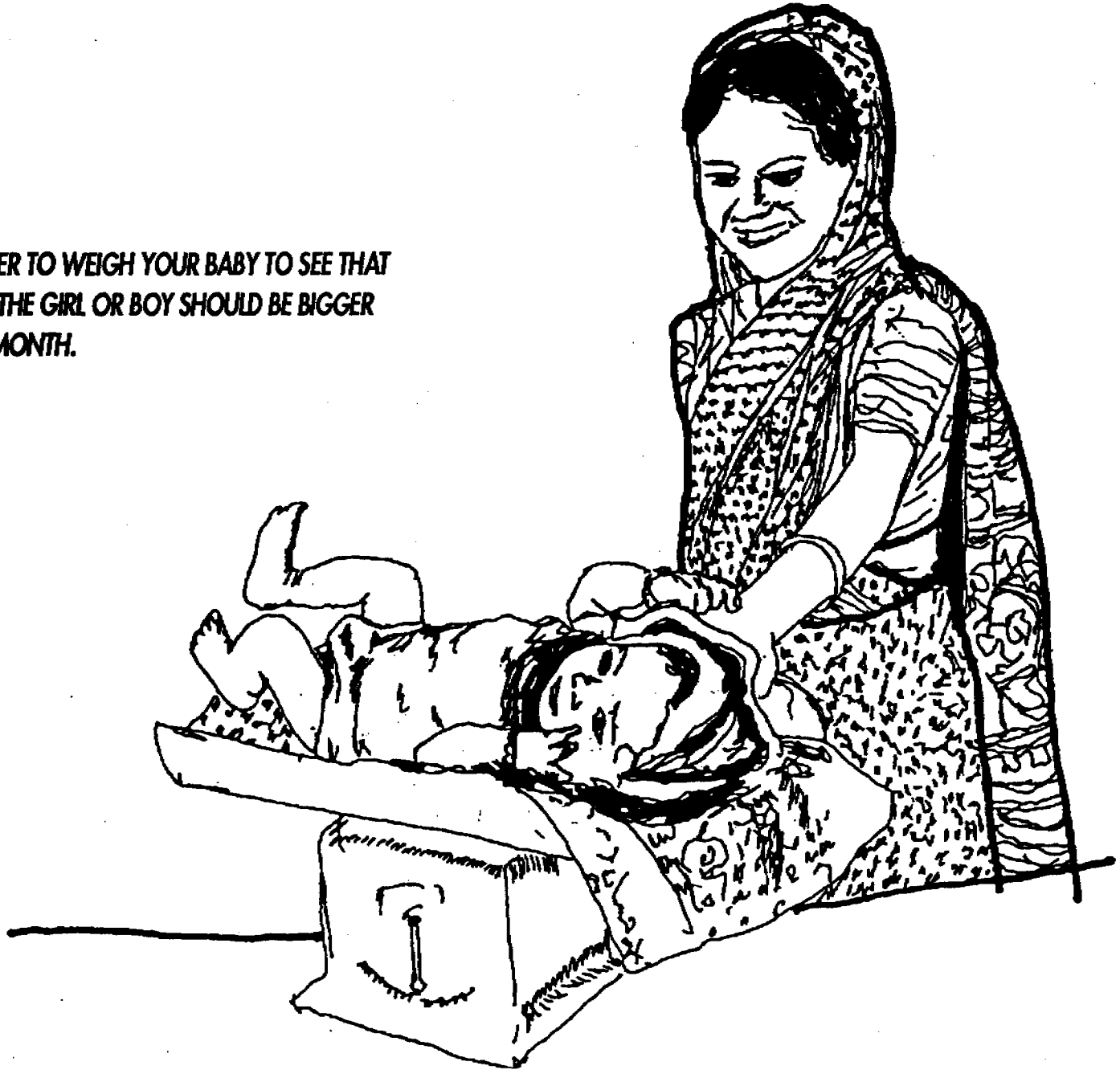


BABIES NEED BREAST MILK AND EXTRA FOOD SUCH AS GROUND NUTS, MASHED BANANAS, SKINNED AND POUNDED BEANS OR FISH.

A growing child can eat a lot and still get sick. This baby has puffy legs and peeling skin even though he eats plenty of rice or cassava. The baby needs breast milk, and other body building foods.

WEANING

ASK A HEALTH WORKER TO WEIGH YOUR BABY TO SEE THAT IT IS GROWING WELL.THE GIRL OR BOY SHOULD BE BIGGER AND HEAVIER EVERY MONTH.



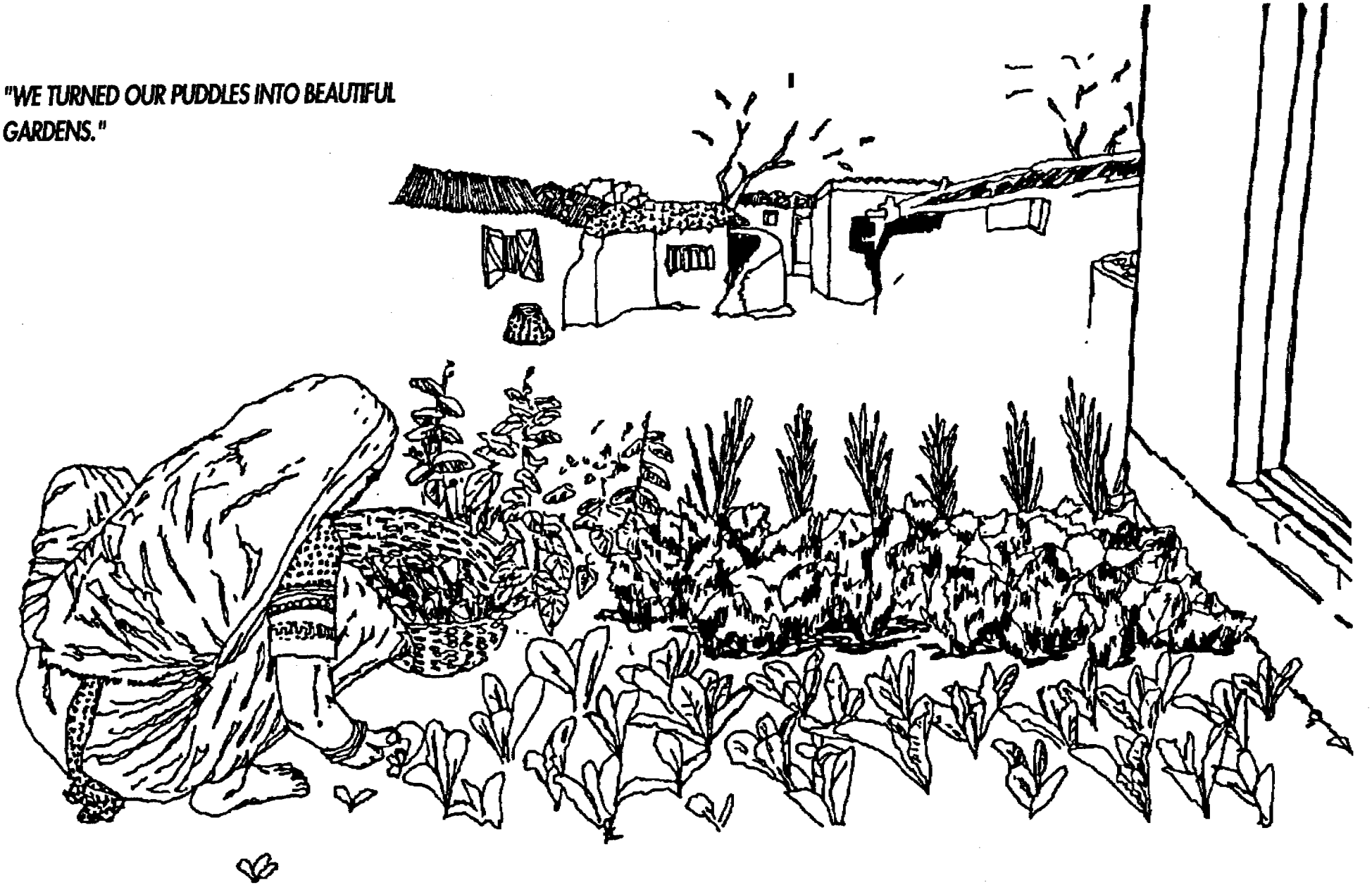
WEANING

THIS SIX-MONTH OLD HAS BREAST-FED SINCE BIRTH. SHE NEEDS AS MUCH MOTHER'S MILK AS ALWAYS. SHE ALSO NEEDS EXTRA FOOD.

FEED THE EXTRA FOOD WITH A CUP AND SPOON, NEVER WITH A BOTTLE.

GARDENS

"WE TURNED OUR PUDDLES INTO BEAUTIFUL GARDENS."



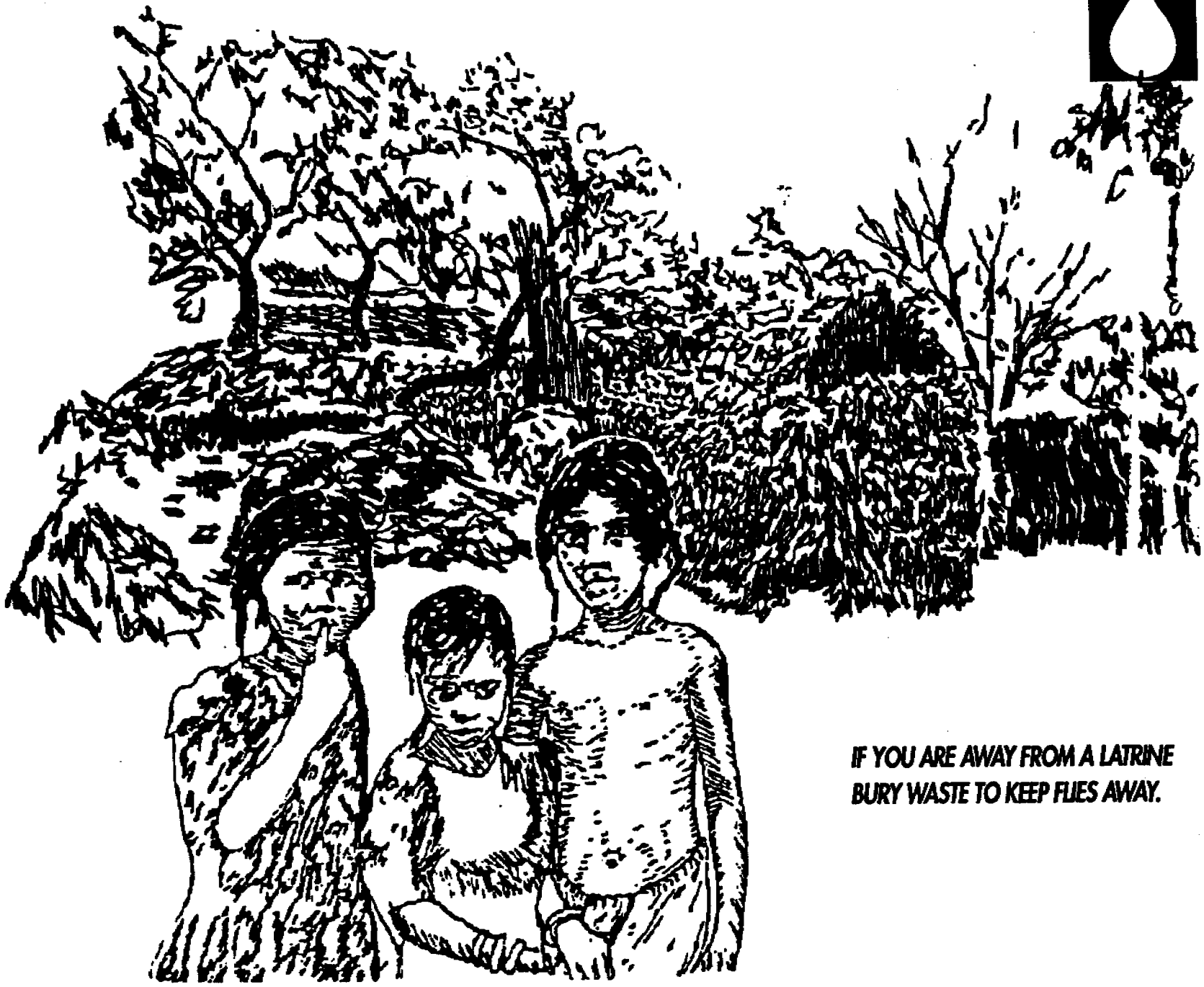
GARDENS

THE VEGETABLES AND FRUITS IN OUR GARDEN NOURISH MY FAMILY AND SAVE TIME AND MONEY.

GARDENS

YOU CAN CARRY WATER TO THE GARDEN OR DRAIN IT DIRECTLY FROM THE WELL

LATRINES



IF YOU ARE AWAY FROM A LATRINE BURY WASTE TO KEEP FLIES AWAY.

LATRINES

KEEP THE LATRINE SWEPT AND CLEAN.