

# 1. Household water storage

## How much is needed

A family of six in the tropics needs about 30 litres a day of hygienically-safe water for drinking, tooth-cleaning, food preparation and cleaning cooking and eating utensils. Safe water must either be obtained from safe sources or treated.

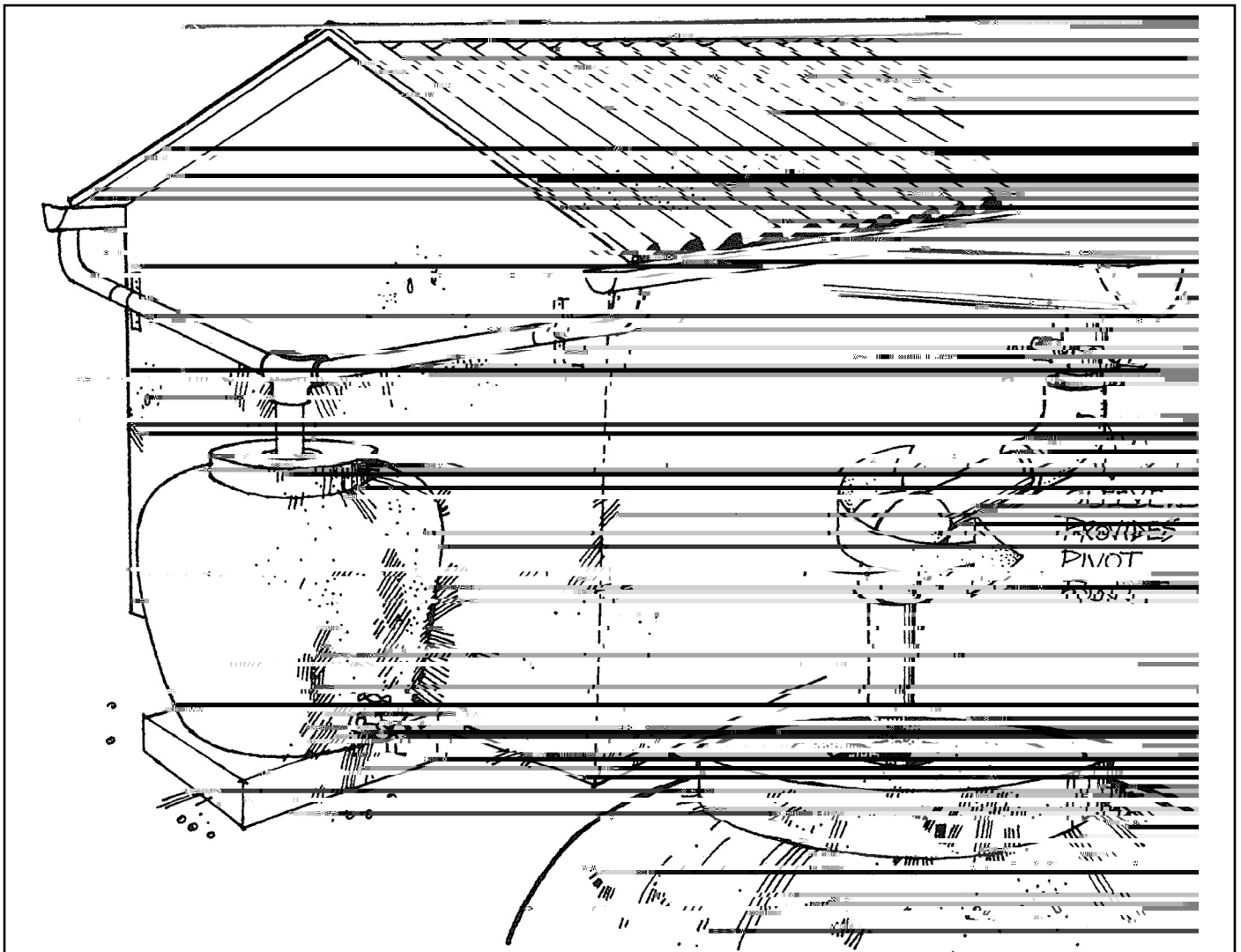
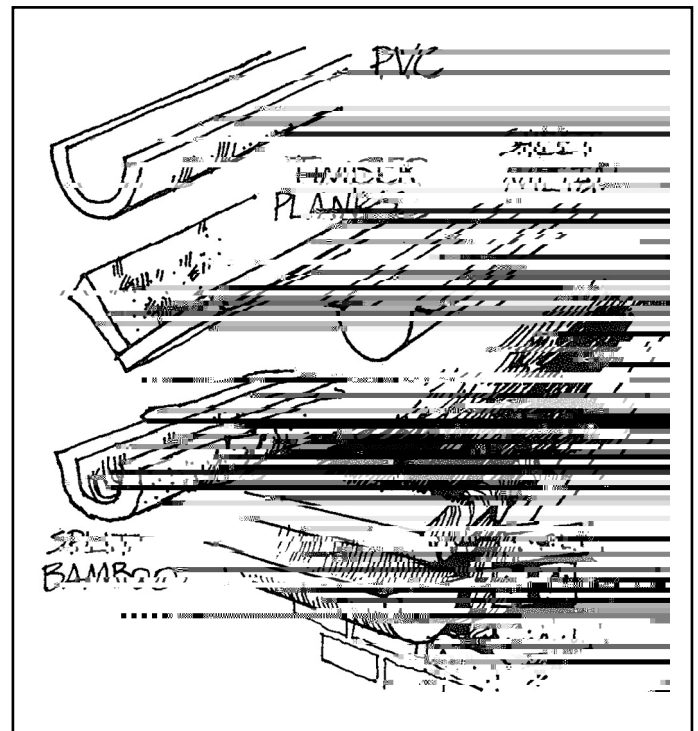
A 30-day dry period requires about 1,000 litres of stored water. Clean water that is not necessarily bacteriologically safe can be used for other purposes such as bathing, washing clothes and latrine cleaning.

## Rain is the safest source

Rainwater can be collected from roofs in gutters made from wood or metal. Divert the first few minutes of flow to a drain, as it will carry the dust and debris that have accumulated on the roof since the last rain. Allow the main flow to pass through a cloth or wire screen.

Store water in clean vessels fitted with covers.

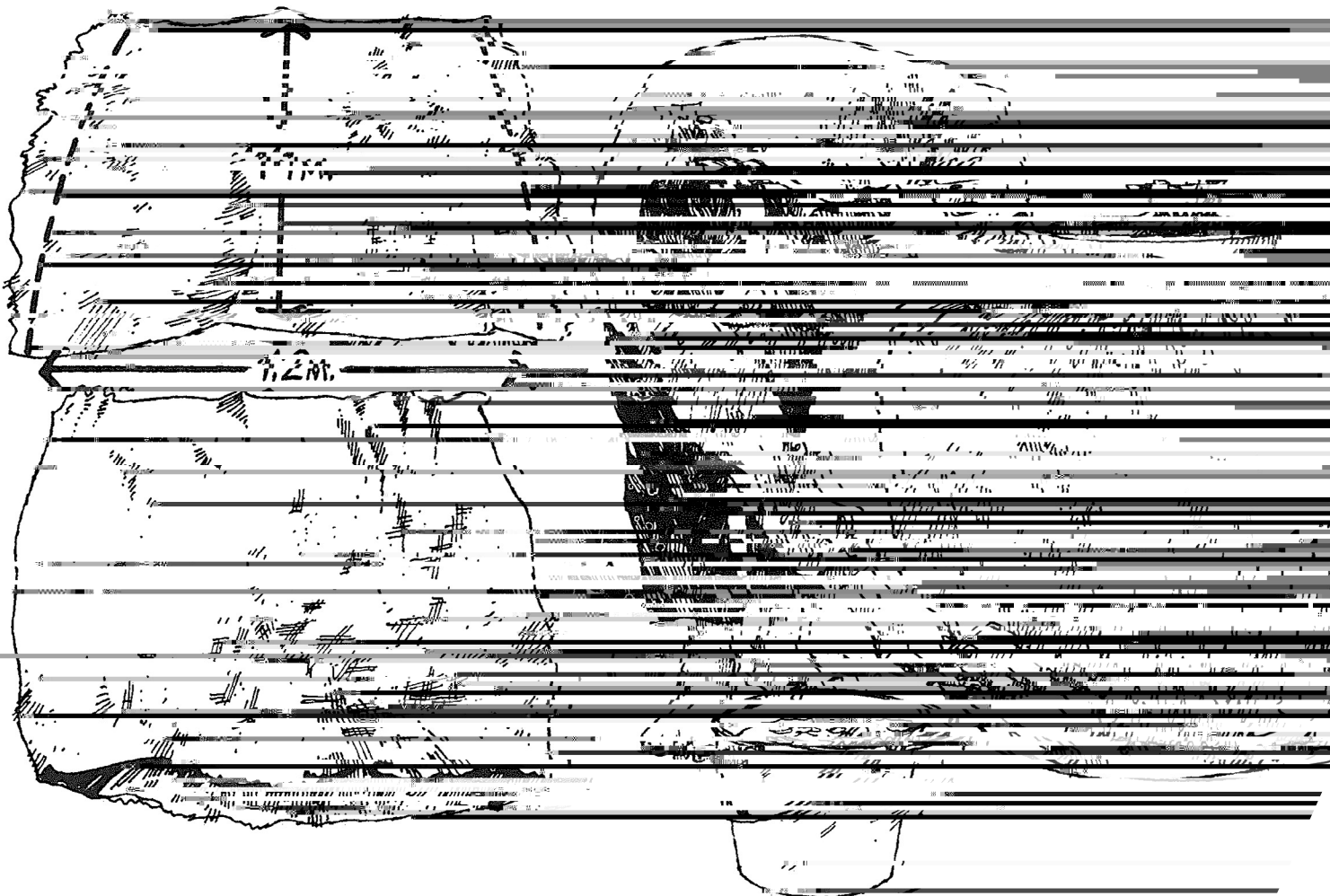
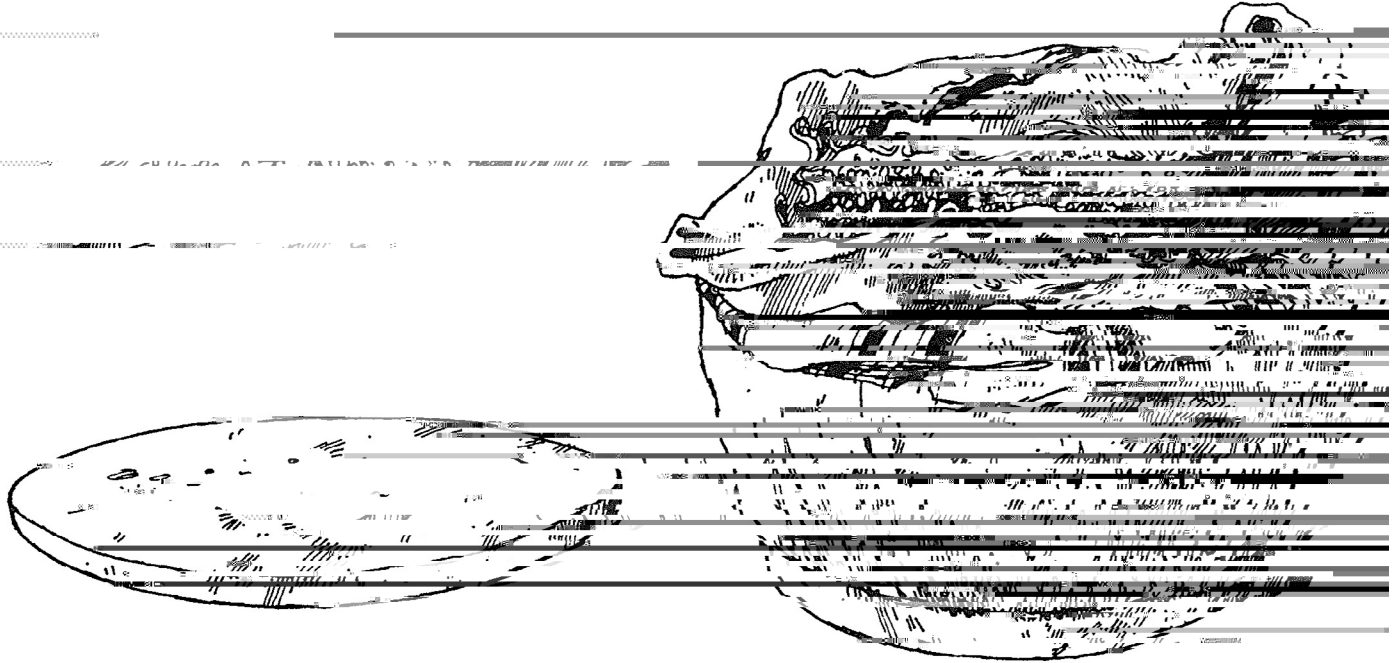
Take water from the storage vessels with a tap if possible. If a dipper is used, keep the dipper clean. Store it inside the vessel if possible.

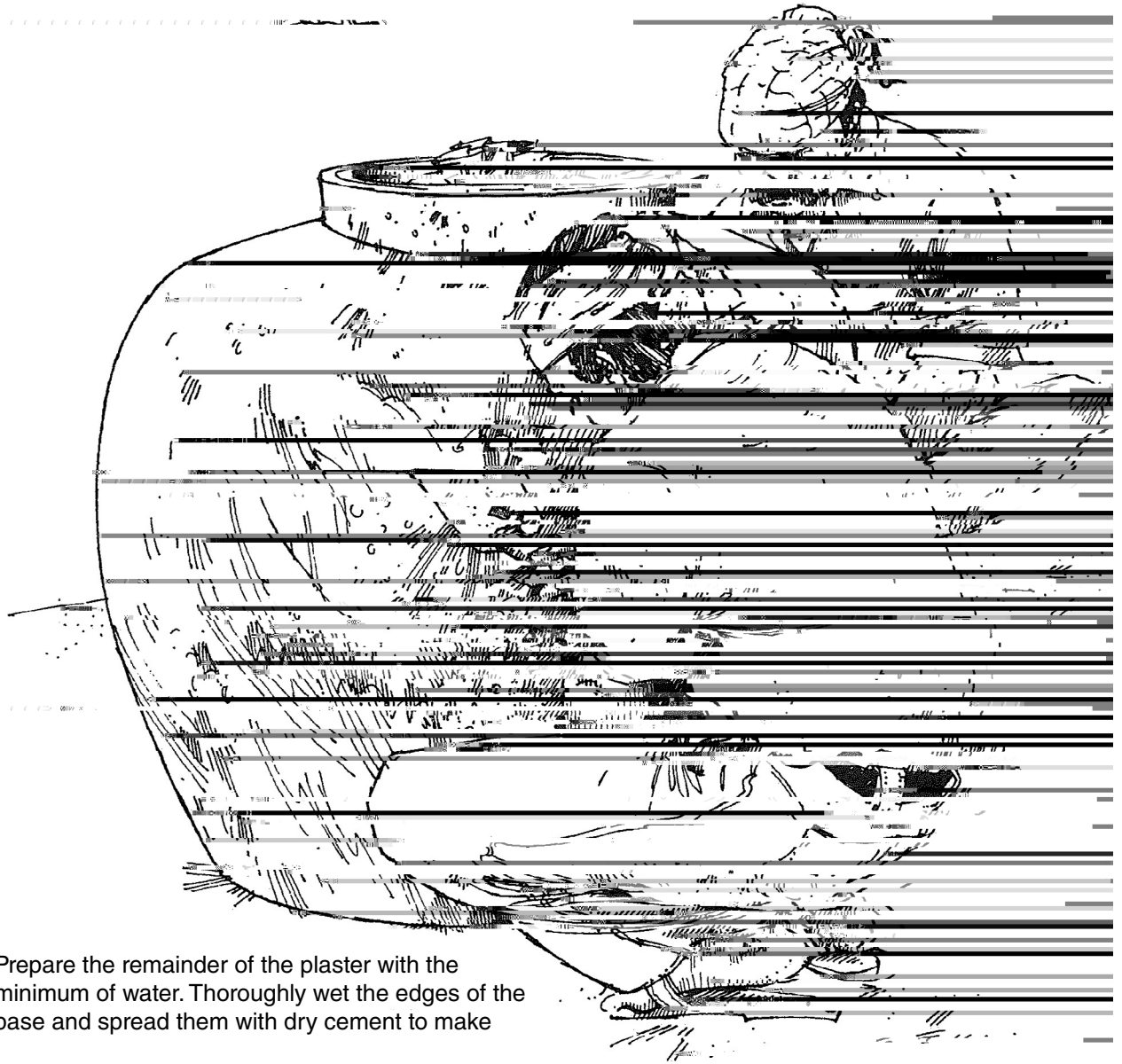


## Building un-reinforced mortar jars

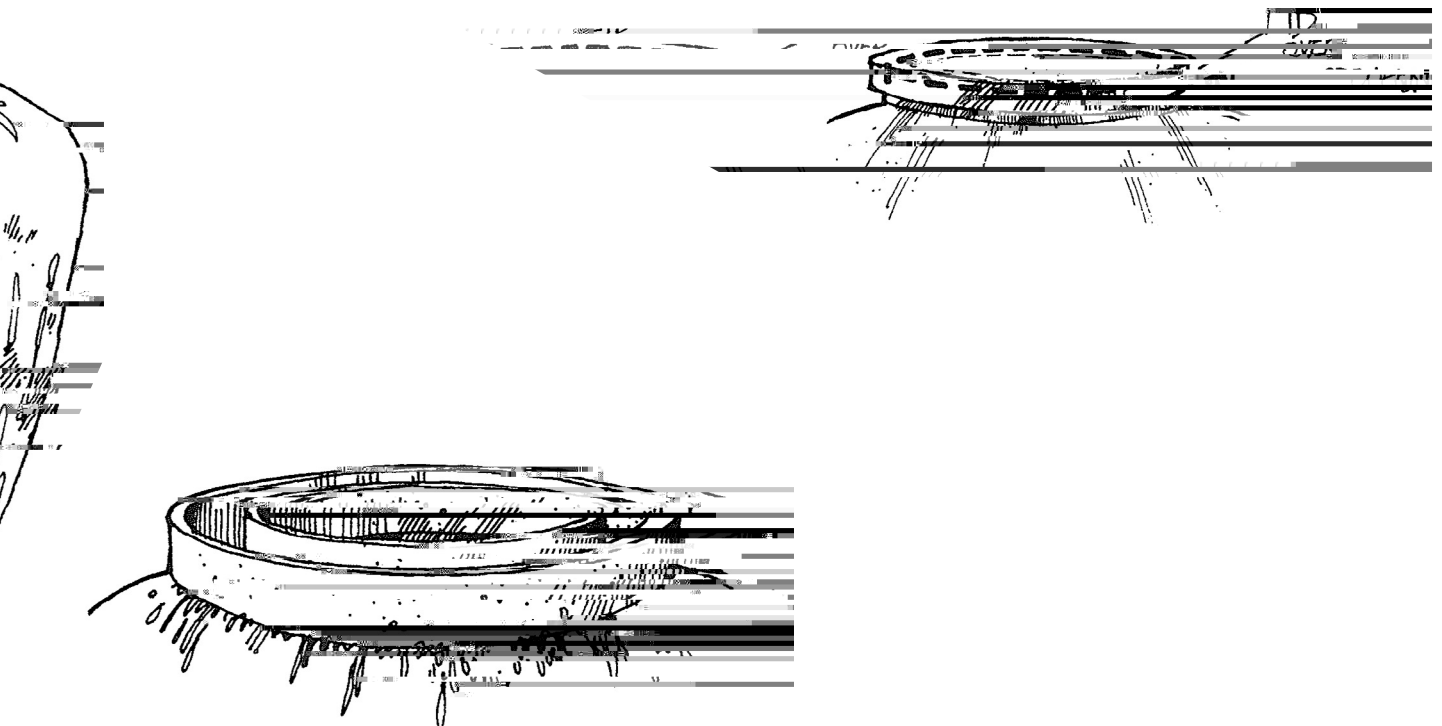
1. For a 250 litre jar obtain 1 bag (50kg) sharp sand,  $\frac{1}{2}$  a bag (25kg) cement, and water.

When mixing the plaster use as little water as





6. Prepare the remainder of the plaster with the minimum of water. Thoroughly wet the edges of the base and spread them with dry cement to make



## Improving water quality by filtration

River water may be the only source available at times, but it is often dirty and not hygienically safe. A simple treatment system to supply up to eight families can be built using four covered jars, four valves, plastic tubing, sand (0.5-3mm and 0.5mm grade) and gravel, as follows.

The tubes can be fitted to jars either by making holes in the walls when the mortar is still soft or by cutting holes with a small hammer and a chisel (made from a sharpened screwdriver). Tubes can then be sealed in with cement mortar.

**Jar 1** is for the storage and settlement of the untreated water and should be as large as possible. Valve A is fitted at the bottom and is used for cleaning out the jar. Valve B is fitted about 100mm above A and controls the flow of water to jar 2. Jar 1 is raised above the other jars in the system to provide pressure to push water through.

**Jar 2** is an upward flow filter which will remove much of the coarse dirt. A 250 litre jar can treat 20 litres of water an hour. Back-wash the filter weekly by closing valve B and opening valve C to drain the jar. Clean, but not hygienically safe, water can be drawn from valve D.

**Jar 3** is a downward flow filter. A 250 litre jar can treat 20 litres an hour.

It is cleaned by draining the standing water off the top and scraping the top 20mm of sand away every two or three months.

**Jar 4** is the container for safe drinking water.

- Tests in Thailand show that the treated water can be free of faecal bacteria for prolonged periods of use.
- Information supplied by S. B. Watt (UK), H. Mann (UK), Mr O'as (Siam Cement Co, Bangkok, Thailand), Professor R. Suwanik (Siriraj Hospital, Bangkok, Thailand).

