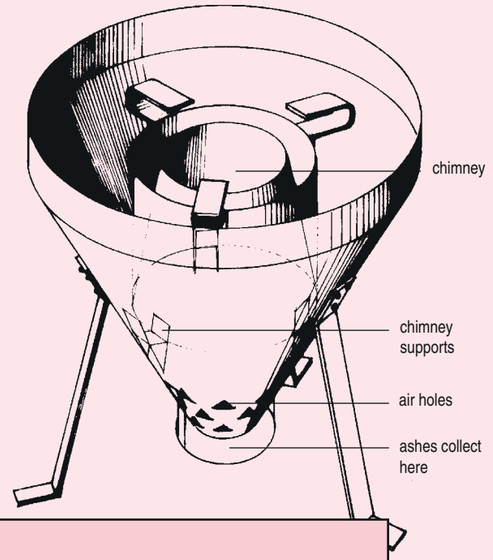
New ideas for cooking stoves

With thanks to…

- *Aprovecho Research Center, USA*
- *Anna Pearce, Box Aid SSS, UK*
- *Heifer Project Exchange*
- *FAO*
- *Jan Willem Dogger*

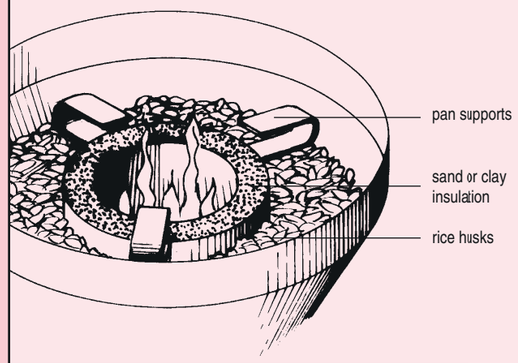


The 'Lo-Trau' – a rice husk burning stove

This idea, originally from Vietnam, has been developed in Senegal by FAO with Dutch funding. As yet there is little literature available. However, these drawings will give a goo idea of the design and may enable a good metal-worker to build the stove. It costs about $5 to make, stands 30 cm high, weighs 2.5 kg and burns rice husks with a clean, almost smokeless flame. Dried goat manure or coffee husks may also be used. To light the stove, crumpled paper or straw is placed at the base of the chimney before filling with husks.

This stove is highly efficient, burning less than 1.5 kg of husks per hour while providing plenty of heat. FAO are encouraging its use in West Africa. If widely adopted, the stove could reduce demand for fuelwood.

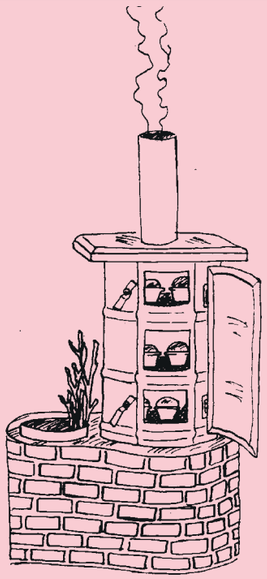
Interested readers can send comments or queries to Jan Willem Dogger, c/o *Footsteps*.

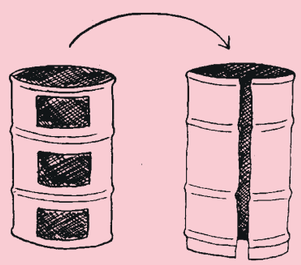


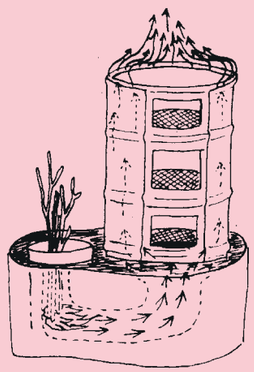
The 'Rocket' Bread Oven

This oven was designed by Larry Winiarski of Aprovecho Research Center. It heats up very quickly, uses little wood, doesn't smoke and bakes up to 20 loaves of bread at a time.

The oven is built out of two empty 55 gallon drums. The inner barrel is closed, except for the three doors cut out in front. The outer barrel is then wrapped around the inner barrel. Hot air rises up between the two barrels. The oven works well because the fire chamber is insulated, the air is pre-heated before joining the fire and the heat is in contact with the bottom, sides and top of the cooking area.

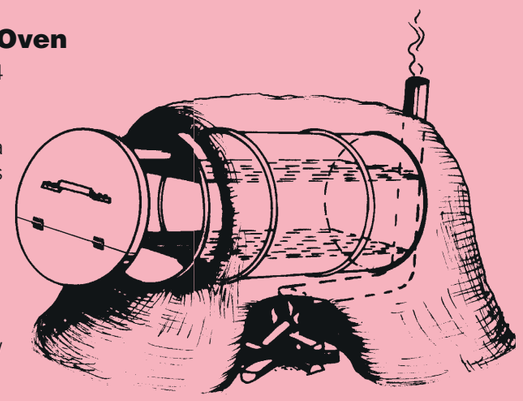






Insulated Bread Oven

This oven uses one empty 44 or 55 gallon drum, raised off the ground on stone supports, allowing room for a fire and chimney pipe to pass underneath. The whole drum is then covered with a thick layer of mud, ferro or fibre-cement which provides good heat insulation. Shelves are fitted for cooking and the lid is hinged one third of the way up and fixed to the base.



The 'Wonderbox Debe' – a multipurpose solar cooker

This solar cooker makes use of the sun, but has the great advantage that if the sun goes in or a meal needs warming up in the evening, there is no need to light a fire. This cooker also works well over a candle or a small paraffin burner for heat.

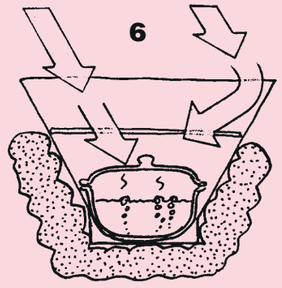
You will need to make some insulating cushions to keep in the heat as the food cooks. All kinds of material can be used to provide insulation – polystyrene granules, waste cloth, dried grass, wood chippings, foam rubber or crumpled paper. A cover of tough cloth is sewn together and filled with insulating materials.

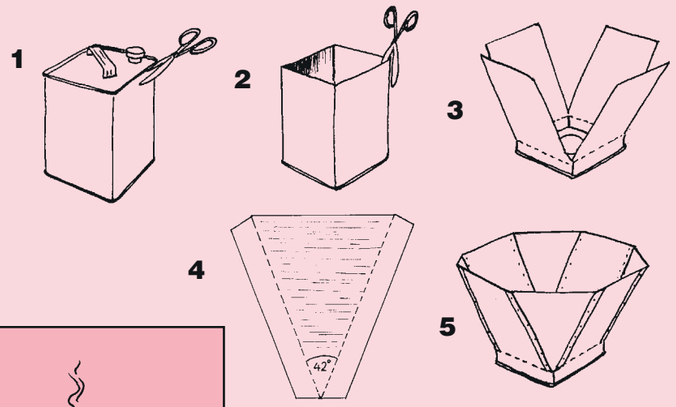
You will need a square tin – ideally a paraffin tin (debe) with a large round opening. If there is no opening you can make one. Cut off the top of the tin with a tin opener or shears (**1**).

Cut down the four corners of the tin to about the width of a ruler from the bottom (**2**). Gently bend the sides of the tin outwards, above the ruler, till they are like the petals of a flower (**3**). Cut out corner pieces (**4**) which have sides the same length as the 'petals', allowing a small overlap. Using this overlap, attach the pieces to the 'petals' with nuts and bolts or rivets (**5**).

For solar cooking (**6**), place insulation under the base of the debe cooker. The pot you use should have either a black or clear glass top. Cut the food up into small pieces and allow more time for cooking than on a conventional stove. If the sun goes in, surround the pot with cushions to keep the food hot.

For cooking inside or re-heating meals (**7**), support the cooker (which has a round opening at its base) over a small heat source such as a candle or small paraffin burner. A metal dish makes a good support. Cover the top of the pan with a cushion.





Nearly right!

This stove was introduced to the Maasai in Kenya. It had the advantage that it could cook more than one pot at a time and it meant that children were no longer at risk of falling into the traditional open fire with three stones.

However, although it worked well it was later destroyed. Why? Because it didn't produce enough heat or light in the home – very important at night to the Maasai.

A helpful reminder of the importance of working together to develop technology which not only works well but is appropriate.