

A HANDY AND INEXPENSIVE "CEYLON TYPE" KILN DRIER.

By E. Caulfield-Kelly.

Building.

Fifty-two feet long by 22 feet wide, of native material, with kunai or sac-sac roof, having a covered vent in the ridge, after the fashion of a "jack-roof". No flooring is necessary.

Fire-pit.

This may be dug as deep as 3 feet below ground level, or less, according to the nature of the ground and the height of the water-table, and should be 46 feet x 16 feet in dimensions, with a hard dry bottom of either cement or firebricks, or even tamped earth or coral. Its position in the building should be with one end against the back wall and one side along one of the side walls.

Drying-bed.

Forty-eight feet x 18 feet, made with timber and strong wire mesh—rabbit wiring is quite suitable—the frame to be strongly re-inforced to carry about 5 tons. This is supported immediately over the fire-pit on posts of mangrove or other native hardwood, so that the bottom of the tray is at least 7 feet above the floor of the fire-pit. The space from ground level above the pit to the level of the bed should be enclosed on three sides by galvanized iron nailed on to the inside of the supporting posts, so that the heat and gases ascend from the pit directly under the bed. The fourth side, which should be the end of the bed at the entrance end of the building, should be enclosed by sliding or hinged doors to provide an entrance to the pit to lay and tend the fires. The bed, being directly over the pit, will, of course, have one of its ends against the back wall of the building, and one of its sides along one of the side walls. This will allow an operating space of 4 feet at the entrance end of the building and 4 feet along the length of the drying-bed.

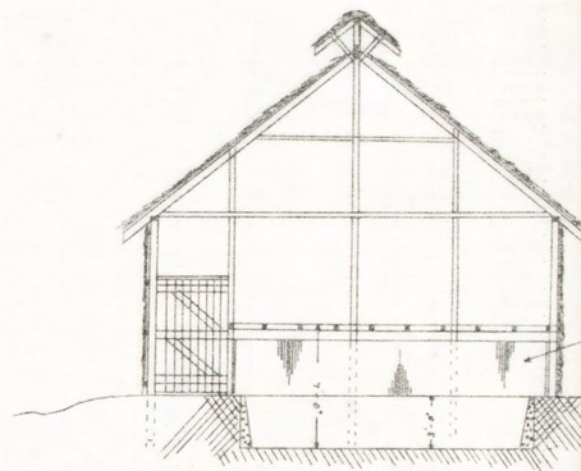
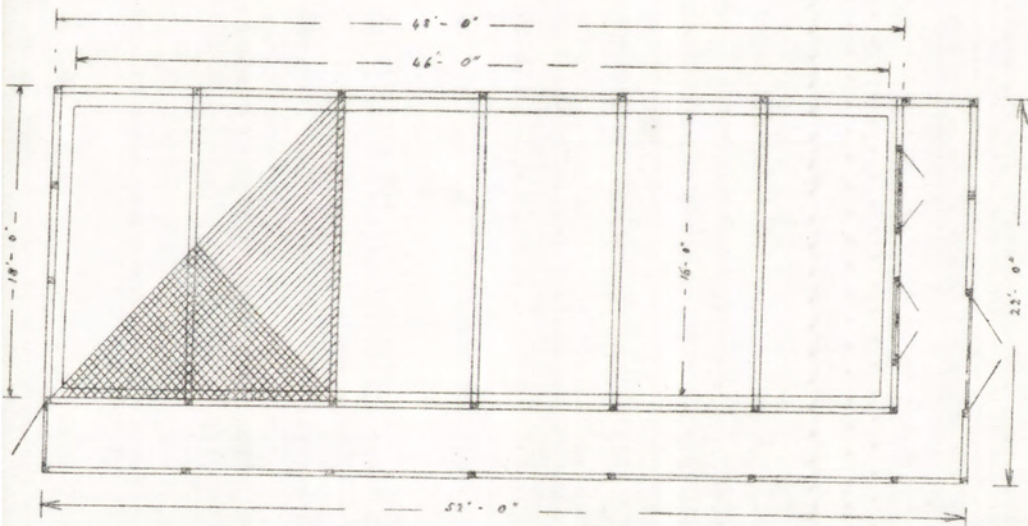
Firing.

Perfectly dry half-shells, quite free from husk, must always be used. Ten double lines of these, cupped into each other, should be laid down across the width of the fire-pit. These double lines should be 4 feet apart, and, leaving a space of 1 foot at each end, should therefore be 14 feet long. The double lines should be laid side by side and touching, but not over each other. Each line should be lit at the opposite end from the preceding line, i.e., each alternate double line is ignited at the same end. Ten of these double lines will be sufficient to fill the pit and will constitute one charge. Each line will burn for about four hours and fires must be kept well up for the first eighteen hours.

Process.

Seventeen thousand nuts are husked and placed convenient to the drier. Each nut is split in two and laid aside, concave side downwards, for an hour or so to thoroughly drain. If possible, the meat should then be sundried (concave side upwards) for the first day and drying then completed in the kiln for three further days. On the first day in the kiln, the half-nuts are either placed or "lined"

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concave side upwards and stacked to a height of 10 inches to 1 foot in such a manner that the heat and gases from the pit may circulate freely through them. On the second and third days in the kiln the half-nuts need not be so carefully placed, but may be thrown haphazardly on the bed, the lower nuts each day alternating with the upper ones. If sun drying on the first day is not possible owing to weather or other conditions, a further twelve hours in the kiln may be necessary to ensure full drying.

Notes.

Kilns of this type have been operated successfully on the Madang coast on a group of properties which turn out 1,000 tons of copra per annum.

Husking nuts is a task at which native labourers become quickly proficient and an average task for a day-unit is to collect and husk 500 nuts.

The most useful husking apparatus is a sharp-pointed piece of 1-in. flat iron, fixed in a plank, on which the labourer can sit to steady it, but a piece of pointed mangrove or hardwood driven into the ground is also quite effective.

Six half-shells cupped into each other will cover a foot of fire-line so that the shells of 960 nuts will be sufficient for a charge of ten lines. No knives or shovels are required in the drier as the meat will drop out of the shells, or can easily be removed by hand when quite dry, and the copra, being in large pieces, can be handled without shovels.

Wastage in copra cutting and loss of small pieces will be entirely eliminated.

No firewood gangs are necessary with this process as the shell from each batch of copra cured will be more than sufficient to dry the succeeding batch and, incidentally, will be quite dry.

Constant attention to every detail will be necessary for a month or so until the labourers thoroughly understand their tasks. This applies especially to the firemen, but the process will be found eventually to be more economical than ordinary hot, air drying, whilst a really first-class copra can be turned out with reasonable care.

The half-nut pieces of copra can be again halved or even quartered if desired when bagging in order to reduce the number of bags per ton required.

The proportions of the drier can be reduced or increased in proportion to the output of a property.

The shell fires will provide a smoke-free heat and hot gases only, provided that no husk is left adhering to the shell and that it is quite dry and free from dirt.

To obtain the first batch of good clean shell it would probably be worth while to dry the first 17,000 nuts by ordinary smoke fires and treat the first batch of copra cured as smoke dried.

A further advantage of this would be that the interior of the building, especially the roofing material, would be protected to a certain extent by the smoke against subsequent insect attack.

Until the labourers are quite proficient it may be necessary to pick over the first few batches of cured copra for smoke tainted or discoloured pieces and submit these as smoke-dried copra.