PREPARATION OF RATTAN CANE

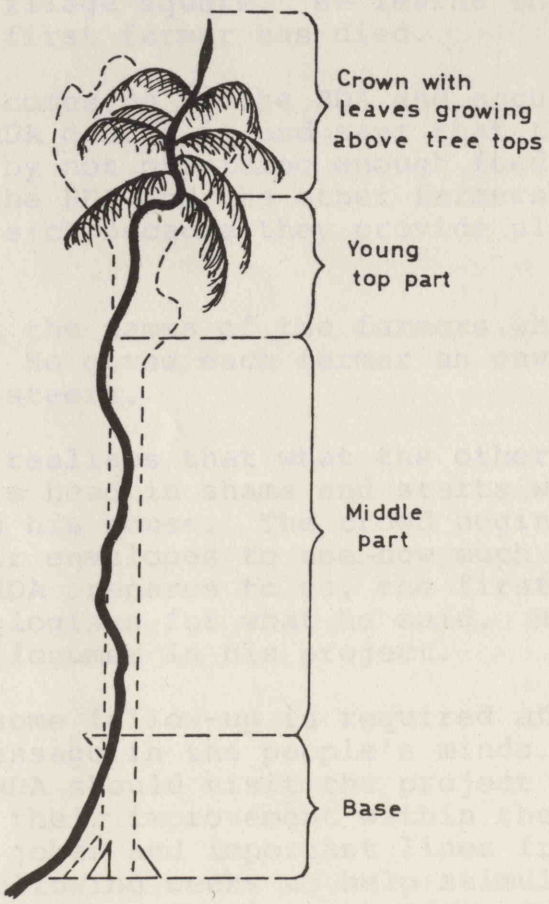
By J.F.U. Zieck
Forest Products Research Centre, Port Moresby

INTRODUCTION

Papua New Guinea has about 60 different species (types) of rattan cane. These plants belong to a family of palms all members of which have many spiny and thorny parts, which help them to climb forest trees. Most species are found on the mainland with fewer species occurring on the New Guinea Islands.

Rattans are found from coastal lowlands up to an altitude of 2 500 m The Papua New Guinea species differ greatly in size and other properties and are distinct from those occurring in the Philippines, Indonesia and Malaysia.

The smallest Papua New Guinea rattan palm measures 2 mm in diameter and 7 m in length and the biggest is more than 40 mm thick and 125 m long which makes it one of the longest plants in the world.



This is how rattan palms climb up forest trees

The most crowded stands of rattan are found in seasonally flooded lowlands such as Lakekamu, Sepik, Ramu, Purari, Kikori and Musa River flats. The big cane species grow in such areas while the small ones are generally found in rainforests at higher altitudes. Damage due to insects and fungi becomes less severe with increasing altitude. Less damage is also found in island areas compared to the mainland.

Strength, elasticity, flexibility and brittleness vary greatly between the different types of rattan. Usefulness for making baskets, furniture and artifacts, as building material, and as an export is mainly determined by these properties. Poor quality cane which is weak, brittle and easily breakable cannot be used for anything.

Other characteristics which lessen the usefulness and value of rattan for furniture making and export are: poor colour, short and/or irregular internodes, thick nodes and all kinds of insect and fungal defects.

Rattan species are usually divided into three classes depending on the thickness of the stem:

1. thick, 18 to 34 mm, for furniture frames;
2. medium, 12 to 18 mm, for splitting into skin and core for use as binding materials, for chair seats and backs, and in basketry;
3. small, 5 to 12 mm, for basketry, splitting, etc.

Although most of the rattan used in furniture belongs to the thick diameter class, some medium and small class rattan is needed as well.

HARVESTING

To harvest good quality cane, the harvester needs some years of forest experience so that he can choose the right species with the least natural (insect and fungus) defects. Care must also be taken not to damage or scratch the skin by dragging the cane over stones when taking it out of the forest.

Only the middle part of the plant is used for normal commercial rattan. The base section containing chemicals called tannins, has a light brownish colour and is heavier and less flexible than the middle section. Sometimes it is used to make walking sticks. The tender top part, including the crown, is immature giving a brittle, wrinkled, more fungus-susceptible, non-commercial type of cane. Generally this part is discarded.

The thick green canes are usually cut in pieces of about 4 m length and the thin canes into 7 to 8 m lengths. The pieces are than carried out of the forest in single-species bundles of approximately 25 kg.

Although there are a few fairly similar furniture canes, the most popular in Papua New Guinea is *Calamus hollrungii* (Papuan white). This cane is comparable with the Indonesian "Tahiti" and has a very wide

distribution over the mainland, all the islands and even northern Queensland. It grows mostly in the lowlands but is also found up to 300 m above sea level. *Calamus warburgii* (Papuan brown) is found throughout the lowlands of Papua New Guinea. This cane has a light brown colour after processing and although it is similar in strength and diameter class to Papuan white, it is less valuable on the export market because of its less popular colour.

PROCESSING AND TREATMENT

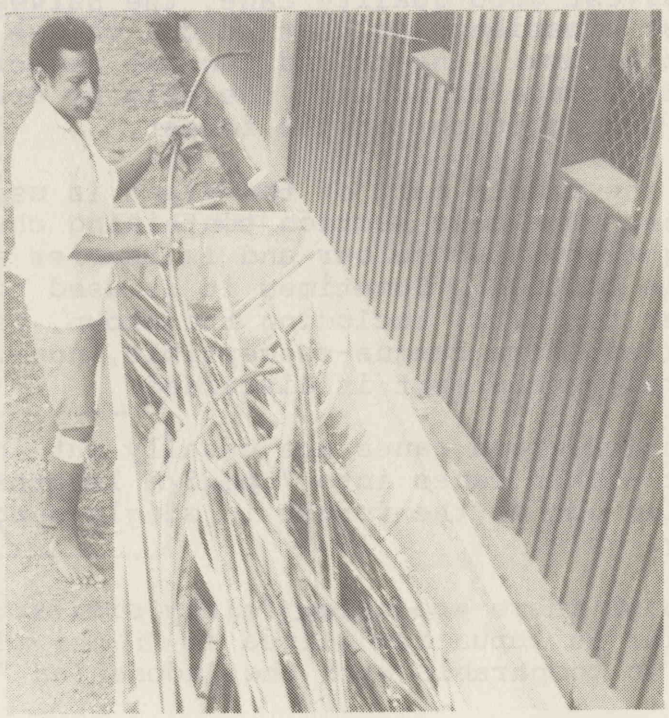
After harvesting, the rattan has to be processed and treated.

This consists of:-

1. cleaning in water;
2. rubbing with kerosene and water;
3. preservative treatment;
4. bleaching and drying in the sun;
5. grading into quality classes;
6. trimming of nodes;
7. dry storage.

1. Cleaning

Although rattan can be stored under running creek water for a longer time, the actual cleaning has to be done within 48 hours after harvesting. Cleaning takes place in clean running water (creek or river), in a trough (as shown in the photo) or in sea water near a sandy beach. The sticks are rubbed with fine steel wool, hessian or coconut husk to remove all dust, mud, mosses, lichen, etc. Defects in the shining green or yellowish skin can then be seen more easily, and the cane can be graded into quality classes.

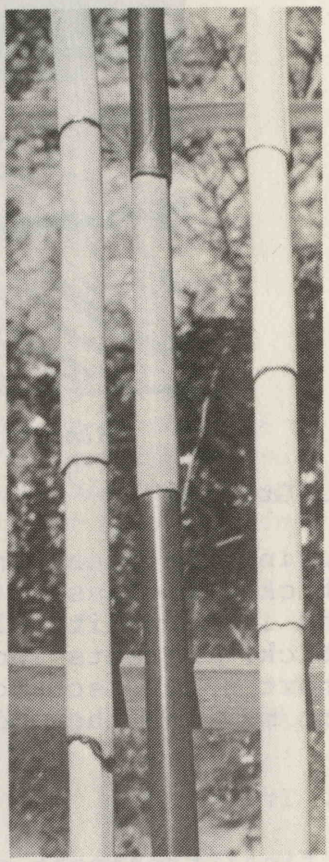


Cleaning rattan in a trough

2. Rubbing

After letting the water drip out of the very porous cane sticks following cleaning, the surface is thoroughly rubbed with fine steel wool and kerosene. This can be done in a trough using plastic gauntlets (gloves) to protect the skin against kerosene burns.

Rubbing removes the waxy layer which covers the skin and greatly shortens drying and bleaching time.



The rattan stick in the middle shows two dark (green) internodes at top and bottom. These places were not rubbed with steel wool and kerosene to remove the waxy layer on the skin. These two internodes only bleach to a creamy, light colour after 3 to 5 weeks in the sun. The light internodes were rubbed with steel wool and kerosene and will bleach in 3 to 5 fully sunny days

3. Preservative Treatment

Treatment is carried out between the rubbing stage and the bleaching and drying stage of processing. This cane is soaked in a solution of 20% octabor plus 0.5% captafol wettable powder. The first product protects against insects, the second against fungi.

4. Bleaching and drying

The cane is laid on wooden racks about 1 metre above the ground or grass growth and away from shading trees or shrubs.

Bleaching in the sun turns the green cane into creamy coloured sticks. Regularly turning the sticks on the racks guarantees an even creamy colour all round.

The purpose of sun-drying is to reduce the moisture content of 90 to 120% in green cane to about 15 to 20% after 3 to 4 weeks. Most fungus growth (mould, blue stain, black rot) cannot develop under conditions of low moisture content and thus loss of quality is prevented. During this drying period the cane must not come into contact with water, wet grass or muddy soil. Before rainfall and

during the night, the rattan has to be moved from the drying racks and stored in an open-sided airy shed.

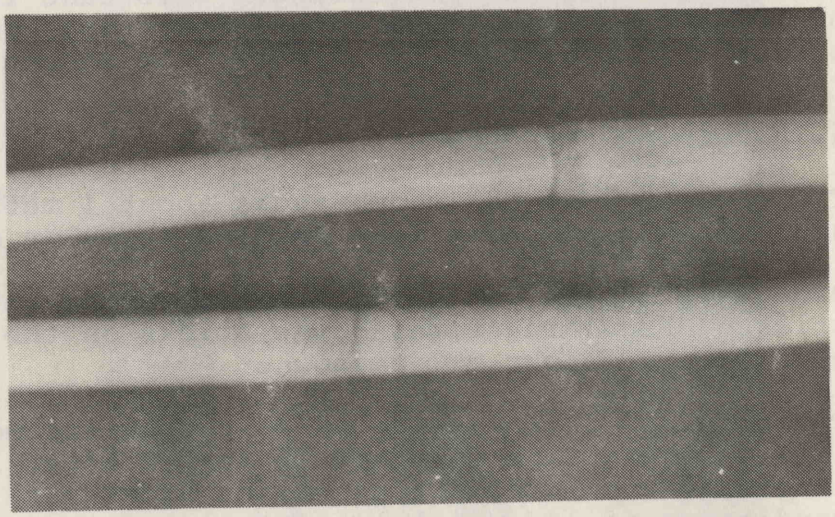
Bleaching and drying rattan on racks in the sun

5. Grading

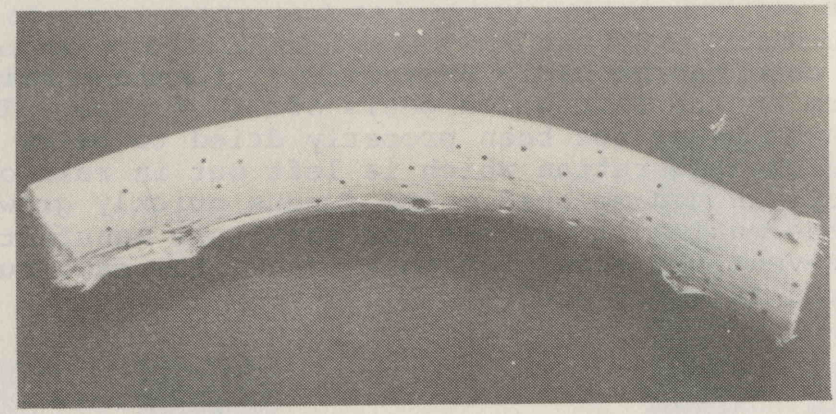
During the bleaching and drying period the cane is sorted into thickness classes (e.g. 12-15 mm, 16-20 mm, 21-28 mm, 29-32 mm etc.), and into quality classes according to the number of defects per stick. Defects include insect or fungus damage, wrinkles, softness, short nodes, scratches, high backs and mackerel marks. Sticks with too many of these defects are rejected.

6. Trimming

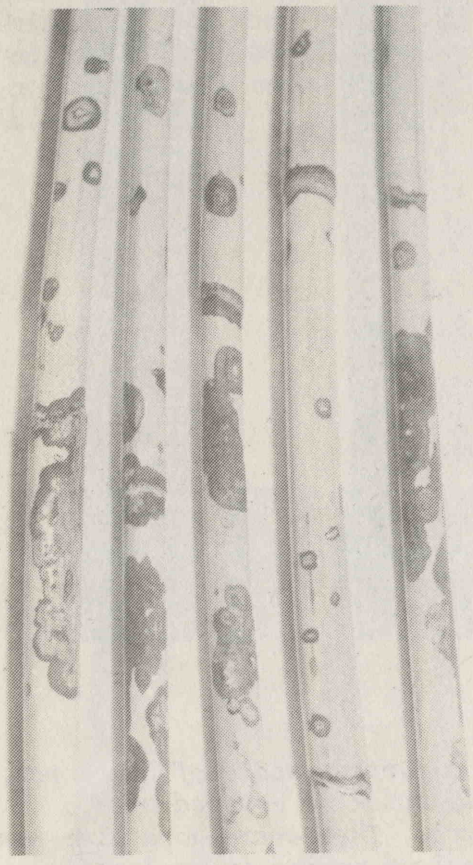
A final treatment of quality cane before export or use in furniture making, is to trim off the dark and uneven node rings either by hand with a sharp steel knife or by sanding machine.



Trimmed nodes



Insect damage caused by powder post borers in a piece of rattan furniture



These dark brown marks, typical for Papuan brown cane are caused by fungus in the skin of the living rattan palm. They greatly reduce any export value. It is possible to remove this defect by hand scraping or by a skinning machine

These deep (up to 2 mm), black marks usually occur near the nodes. They are caused by insects in the top of rattan palms where the stem is still soft and young. It is possible to remove these defects by hand scraping or using a special skinning machine, leaving a white centre-core which can still be used in furniture manufacture. Similar marks are caused by dragging full length rattan over stony ground during harvesting. These scratches make rattan useless for any furniture making or for export

7. Dry storage

The processed cane can be badly damaged by a fungus causing black patches to form on the skin which peels off in flakes. This fungus grows on cane which has not been properly dried to below 18% moisture content and on cleaned rattan which is left out in rain or night dew or which is kept in a damp shed. The fungus quickly grows into the core of the cane making it useless for furniture manufacture or export. To prevent the growth of this fungus the cane must be well dried and stored in a dry shed.

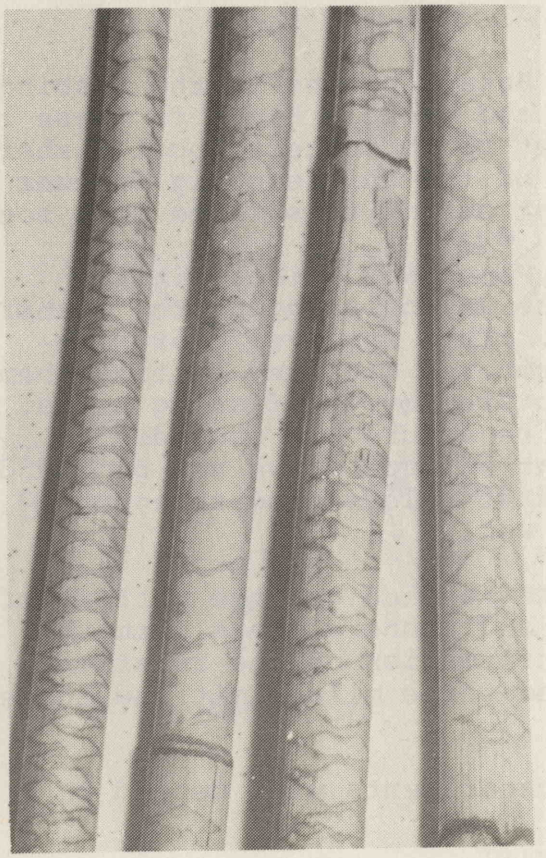
These black patches are caused by fungus on and under the skin which gradually peels off in flakes. This will happen if the cane is not properly dried or if it is left unprotected in rain or night dew or kept in a damp shed

This photo shows a further stage of black rot. Finally, the whole stick is covered with a black fungal growth. The centre-core also has a greyish-black colour making it useless for export or furniture manufacture. As this fungus can spread to healthy cane in the rattan yard, it is advisable to burn all affected sticks as soon as possible

Although all the stages starting from green rattan in the forest to the final quality cane suitable for export and furniture manufacturing are rather simple, it will take some years of experience and great care in every stage to obtain end products which will fetch the highest possible prices.

The phases of processing and selecting rattan for export are very important as we must aim to market the material according to furniture manufacturers' requirements and standards.

Another type of superficial mark (or etching) made by insects on the skin. These sticks of Papuan white were collected from the Gogol River Area (Madang). The swelling near the middle of the node on the right hand stick is called a "high back". It is the place where a flower stalk comes out of the stem and is also considered to be a defect in quality cane



These so called "mackerel" markings are caused by strong bending of the rattan sticks which makes the skin splinter off. These marks lower export prices of whole cane considerably