

ILLUSTRATED

GUIDE TO COCONUTS



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COCONUT RESEARCH SCHEME,
CEYLON.

An Essay
ON THE USES OF THE
COCONUT PALM

TOGETHER WITH
AN ILLUSTRATED GUIDE TO COCONUTS

BY

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ON THE USES OF THE COCONUT PALM

THERE is an old legend that a certain king in India, wishing to send a gift to a brother monarch, sought the advice of his counsellors, explaining to them that the gift had to be something both unique and magnificent. The learned men, having put their heads together, returned to the king and reverently suggested to him that he could send such a gift as never man had sent before him. Build a ship, said they, using nothing but the products of the Coconut Palm, and freight it with all the various substances and made-products of the palm; and send this unique argosy, O King, to your royal friend.

Thereupon, the king's shipbuilders set out to build the ship. With the wood of the seasoned palm they got ready all the planks and spars. A tall slender trunk served for the mast. Instead of nails to hold the ship together, they used stiff, steel-like pegs made from the hard wood. The cables and cordage were made of the wave-resisting and resilient fibre obtained from the husk. The sails were woven with the fine fibres of the husk and the fibres of the bracts that protect the bases of the leaves. The awnings were made of inter-laced fronds. The sea-chests and the ship's furniture, long chairs and couches, were all made and upholstered with the various portions of the trunk, the leaves and the fruit. The eating vessels and the drinking vessels were carven, polished shells.

The fair ship being ready, they proceeded to merchandise it with dried kernels and oil, cut kernels from the broken nut and whole kernels from the entire nut; water-clear oil from the ripe green coconut, to be used for cooking, and oil set like snow from the King Coconut, perfumed and unperfumed, to be used as an unguent for the hair. They brought to the ship wine and sweet spirits, made from the nectar of the coconut flowers, and jars of fiery drink.

In one part of the ship were the various articles made from the fibres of the husk, ropes and cordage of different thicknesses, strong and elastic; carpets, mats and rugs; brooms and brushes; stiff woven fabrics and sacking. There were boxes and baskets made from the smooth, white midribs of the leaves and a hundred other things too numerous to mention, things that could be eaten and drunk and things with manifold uses.

And when the ship was fully laden, she sailed away.

This old legend shows that even in ancient times the many uses of the coconut palm were known to man. Indeed, it is referred to in ancient Indian literature as *Kalpa Vruksha*, or the Tree of Heaven.

ORIGIN OF THE COCONUT

The early history of the coconut as a cultivated crop is, as one would expect, shrouded in mystery. There are those who believe that it originated in some sheltered valley in South America, and support their statement by pointing out that nearly all the species of palms allied to the coconut are to be found in that sub-continent. The more general opinion is, on the other hand, that the place of origin was somewhere in the Malay Archipelago or in the Pacific Islands.

Whatever the truth may be regarding the place where the coconut palm first appeared, it is a fact that the modern development of the coconut industry has taken place in the East—in the Malay States, the Philippine Islands, the South Sea Islands, India and Ceylon; and it is in these countries that the products of the palm have been and are being exploited to any great extent.

It has been stated already that the uses of the coconut palm are manifold, but how manifold they are is not yet known even to people who inhabit countries like Ceylon, where coconuts have been in existence since before the reign of Kusta Raja, and grown as a cultivated crop since the times of the Portuguese.

It would require much space to give anything like a detailed account of the uses of the coconut palm, and so I propose to describe them in the form of a short narrative. I shall follow the wise command of the King of Hearts in "Alice in Wonderland" and begin at the beginning, by taking the roots of the palm first.

BEVERAGE AND FUEL

The roots of the coconut palm are of no commercial importance, but they have a number of simple, primitive uses. In the coconut districts of South India, the villagers use an infusion of tender coconut roots in the place of tea. It is said to have a pleasant flavour, resembling coffee.

Coconut roots have another use. It is quite a familiar sight in Malabar and in certain parts of Ceylon to see pieces of the matted or felted roots of dead palms used as fuel by the poor. They burn well and cost nothing and, when available, are greatly appreciated by villagers who find it difficult to obtain firewood. This practice, though not so extensive, is similar to peat-burning which is done in European countries.

MEDICINAL USES

Coconut roots are also employed in ayurvedic medicine in Ceylon and in India and in the native systems of medicine of other eastern countries where coconuts are grown.

Their efficacy is said to be due to an astringent substance which is found in the tissues. In the Malay States, they are used in decoctions for intestinal complaints and coughs, and as poultices for rheumatic and other diseases.

In Ceylon, the tender coconut roots are roasted and ground and used as a tooth-powder, in conjunction with certain other substances like powdered arecanut. They are also used in decoctions, as an antiseptic lotion for wounds and as a mouth-wash and gargle.

When we leave the roots and their simple uses and travel up the trunk, the importance of the palm increases, both as regards its direct usefulness to the people for their daily needs and as regards its place in world agriculture.

PORCUPINE WOOD

To the people of Ceylon, the trunk of the coconut palm is very nearly indispensable. It supplies them with fuel, timber for building—the rafters of most houses being made of nothing but coconut wood—and, quite often, timber for furniture.

As regards the more extended uses of coconut wood, I need only mention that it is well known in the timber trade as porcupine wood by reason of its peculiar and attractive grain. The seasoned timber from old palms is, in the

Homeric phrase, wine-dark, and lends itself to ornamental carving; and in the days when elaborate furniture was in fashion, people took pride in articles made of carved porcupine wood.

It cannot be said, however, that coconut wood holds an important place in the timber trade. This is mainly due to the fact that the palm is more valuable for its fruit than for its wood and, consequently, only trees well over sixty years old, that have ceased to bear, are cut down. The supply is, therefore, very limited and, as a result, the seasoned timber is too dear for general use.

We travel up the trunk now and come to the leaves, which are often erroneously called branches.

COOL THATCHED ROOFS

The leaves of the coconut palm have many uses. The stalks or butts are used for burning; the dried leaves provide torches for wayfarers at night; the midribs of the leaflets are tied up in bundles and used as besoms in the house or as stiff garden brooms to sweep up fallen leaves; the midribs of the leaflets are also curiously bound together to make most efficient fish and lobster traps.

The most important use to which coconut leaves are put is in the making of thatching for houses. For this purpose, the leaf is split in two along the midrib and the leaflets are closely and very neatly woven together to form the "cadjans" that are placed together in pairs on the rafters, each pair overlapping the other and forming a perfectly weather-proof covering, cool in the heat of the day and cosy at night.

CHEAP CLOTHING

Before going on to a description of the fruit and the products manufactured from the fruit, I should like to mention briefly the coarse, mat-like bracts which form a protective bandage round the bases of the tender leaves and inflorescences. They are really outgrowths of the bases of the leaf-stalks and are made up of a thin felt of coarse and fine fibres, which are very different morphologically from the fibres in the husk. It is said that in some countries where coconuts are grown these bracts are used as sieves, and also that the fine fibres are often extracted and woven into a coarse fabric which serves for clothing.

The inflorescence of the coconut, during its early development, is completely enclosed in a tough sheath known as the spathe, which on bursting sets it free. While the nuts are ripening, the spathe dries and turns brown and, later, falls to the ground. It is not often realised that these dry spathes are of great importance to village life. They provide a very handy form of fuel and a convenient means of carrying fire from place to place, since there are few things better than a dried coconut spathe for keeping alive a burning coal. It is a common thing in the villages to see a woman go to the house of an obliging neighbour, who is able to afford the luxury of safety matches, and beg of him a live coal. The coal of fire is wrapped up in a shredded coconut spathe and may be carried for miles; so that it is no exaggeration to say that a single match can light up a whole village.

We now come to the last and by far the most valuable part of the palm, namely, the fruit, which is the source of nearly all the products of commercial importance.

THE CLEANEST DRINK

In countries where coconuts are grown, it is well known that the immature fruit at a certain stage provides the cleanest and one of the most wholesome drinks known to man. But it is not so widely known that at this stage the kernel is soft and sweet and provides, when eaten by itself or with coconut treacle, a most delicious dessert.

It is for the sake of the ripe nut, however, and the products of the ripe nut that coconuts are grown today.

FIBRE

From the husk of the coconut is extracted the coconut fibre of commerce. The extraction is generally done nowadays by machinery, although quite an appreciable quantity of fibre is extracted by hand and used for special purposes. Fibre mills may be seen in most parts of Ceylon where coconuts are grown, but hand extraction is carried out on a large scale only along the coast line of the southern part of the Western Province and in the Southern Province.

Fibre extracted by machinery is marketed under a number of names and in several grades, which could be roughly classified as follows :—

1. Mattress Fibre
 - (a) Coarse
 - (b) Fine
2. Bristle Fibre (various lengths of staple)
3. Combings
4. Coireen

Coarse mattress fibre is the grade generally made in local mills, the fine grade, which is much cleaner, requiring special machinery in its manufacture. Bristle fibre, combings and coireen are, as a rule, marketed in two forms, namely, dyed and undyed. Dying may also be done in different colours, but the usual pigments are black and shades of brown.

UPHOLSTERY AND CORDAGE

Mattress fibre, bristle and coireen are chiefly articles of export, but combings often find a market in the country, being used mostly, together with mattress fibre, for car upholstery. Mattress fibre is mainly used for upholstery and for making yarn. As a material for upholstery it is hard to beat, and in rope and cable manufacture it is well known by reason of its being waterproof and very elastic. From the twisted yarn is also made door-mats and carpets. Bristle fibre is mostly used in the manufacture of brushes and is sold in hanks of various lengths, cut and uncut. Coireen is made from dyed or undyed combings and sold in twists.

One of the main difficulties encountered in fibre extraction from coconut husks is connected with the breaking down of the tissues that bind the fibres together. The usual method of doing this is by immersing the husks in water and subjecting them to a process known as "retting", in which by chemical and bacterial action the binding substances are partially destroyed and the fibres set free. The retted husks are subsequently put through the "breakers" and the "dust" is almost completely removed.

Retting is a tedious process and a great disadvantage from the standpoint of the manufacturer. There are, however, at the present time a number of patented processes, whereby the period of retting is hastened by taking advantage of the various chemical and bacterial actions involved. It has been discovered that, under certain conditions, these processes could be artificially accelerated without doing any harm to the fibre itself.

THE VILLAGE TANKARD

Having considered the husk, we now come to the shell, which has its own peculiar and important uses. Its uses in the country are innumerable. The Ceylon beggar holds out a coconut shell instead of a hat. It is the accepted tankard of the village tavern, and one is told that toddy tastes best in a coconut shell. It is the poor man's drinking vessel and the bowl in which the village housewife mixes her salt and water for curries. It is an indispensable part of the toddy-tapper's outfit, for it is in a coconut shell that he carries his cinnamon leaf paste and his lime for the purpose of stimulating the reluctant flowers to give up their sweet nectar. It is with a coconut shell that the village mother bathes her infant, and it may be that a coconut shell serves for the platter from which the child eats his first cooked meal. The rubber planter uses coconut shells for collecting the raw latex from his trees. From the shell are made strange lamp-holders, cups and saucers, spoons and ladles, ash-trays, trinket-dishes, chocolate-stands, buttons and a strange medley of other things.

COCONUT SHELL CHARCOAL FOR GAS-MASKS

Coconut shells are of the greatest importance on plantations, since without them it would be difficult and expensive to manufacture copra. Long lines of burning coconut shells in kiln-pits provide the heat required for making copra.

Lastly, it has been discovered, strangely enough, that the charcoal made from coconut shells has a high gas-absorbent property and it is, therefore, being widely used in the manufacture of gas-masks. Its sudden importance in the trade today is mainly due to this cause, and clusters of smouldering charcoal pits, with their clouds of blinding, irritating smoke, are a common sight in the countryside today.

Finally, we come to the kernel and the water contained inside the kernel. It is quite impossible in a short essay to describe in any detail the various questions involved in the manufacture of the products of the kernel, but it might be useful to indicate briefly the different processes through which the kernel and its secondary products pass before they come on the market.

MANUFACTURE OF COPRA

To take first of all copra and its by-products. On the average plantation the mature nuts are converted into copra. This involves removal of the husk, splitting the nut, an initial short drying in the sun and a final prolonged drying in a kiln. It is only in the very dry districts of Ceylon, in the neighbourhood of Puttalam, and in certain parts of South India that it is possible to dispense with kiln-drying and to dry the copra entirely in the sun. Sun-drying produces a most attractive, fine, white copra which commands a very high price, but owing to the vagaries of the weather in districts registering a high rainfall, sun-drying has been almost completely discontinued; and, in any case, in the improved types of kiln usually employed in coconut plantations, it is possible to produce copra the appearance of which compares very favourably with the sun-dried article, and which is not second to it in quality. Sun-drying takes eight to ten days and combined sun-and-kiln drying takes four to five days.

Plantation manufacture does not extend beyond the making of copra, which is sold to oil mills in the country or shipped to India or to Europe.

At present, Ceylon holds a very high place as a producer of good quality copra, a matter regarding which the country should be proud and a position which should be jealously guarded. Plantation copra is, as a rule, of excellent quality. It is only village copra and copra produced by small dealers that is of poor quality, and which should be improved or eradicated.

OIL AND OIL-CAKE

From the copra is produced coconut oil and a number of grades of poonac or oil-cake, the difference in the grades depending on the method of extraction of the oil and on the portion of the kernels which goes to form the cake. In the primitive way, the oil is not produced from the dried half-kernels but from dried, grated coconut. The drying in this case is almost entirely carried out in the sun, and is continued until the moisture content of the grated coconut drops to about 10 per cent. when the gratings have a crisp feel about them. The grated coconut is then fed to large, stone mortars, known as chekkus, and pressed by means of a revolving wooden pestle, the work being carried out by means of bullocks. The oil produced by this process contains too high a percentage of water and sediment, which have to be removed by repeated boiling and filtering.

The final product is an oil of high quality, if the boiling and filtering have been properly done. The press-cake or "poonac" made by this process is, as one would expect, very rich in oil and is, therefore, valuable as a cattle and pig food. But the high percentage of oil, together with the high percentage of moisture found in the cake, tends to make it go rancid and unfit for animal consumption, if stored for any length of time. Quite a lot of chekku oil comes on the local markets, but hardly any of it is exported.

The so-called *Ath-thel* or "Hand Oil" is coconut oil domestically made from the milk of grated fresh nuts, squeezed out by hand and boiled down. This is a very high grade oil used for edible purposes, but of no importance commercially.

Oil manufactured in mills can be divided into four classes, namely, White Oil, Ordinary Oil, Parings Oil and Drain Oil. White Oil and Ordinary Oil can be made from copra in one of two ways. Firstly, by pressure, and secondly, by extraction with a solvent. In the first process, the grated copra is subjected in the cold or with the application of heat to very high pressure, but, depending on the amount of pressure applied, a certain quantity of oil is always left behind in the press-cake, for which reason it is a valuable animal food. The extraction process, on the other hand, results in the almost complete removal of the oil by a solvent such as benzene, and, consequently, only the merest trace of oil is left in the residue, thereby rendering it less valuable as a feeding stuff. White Oil is water-white and of very high quality, with a free fatty acid content of less than 1 per cent., and is said to be made from first quality plantation copra. Ordinary Oil, on the other hand, is darker in colour and has a higher free fatty acid content, between 2 per cent. and 3.5 per cent. Rancidity is, of course, due to the presence of free fatty acids.

Parings Oil is made from the "spokeshavings" or portions of the pericarp or outside brown layer of the fresh kernel, which is removed as a preliminary operation in the manufacture of desiccated coconut. It is somewhat different in chemical composition from ordinary oil and is said to be a more suitable substance for soap-making owing to its higher oleic acid content, which results in the production of a softer soap. Drain Oil is made from the wash-water which is drained from the tanks

in which the "pared" kernels are washed, and is a very inferior grade of oil. The poonac produced in the manufacture of Drain Oil is also of very poor quality and quite useless as a feeding stuff. But as a manure for coconuts it is said to be of considerable value.

SOAP MARGARINE COOKING FATS

By far the greater portion of the oil and oil-cake produced in Ceylon does not undergo any further processing in the country, but is exported, mainly to Europe. There the oil is refined further, after which it passes into the hands of the manufacturer. Coconut oil is largely used in the manufacture of soap, margarine and cooking fats, and it is due to these uses that the whole coconut industry exists; and coconut oil being only one of the many oils used in soap and margarine manufacture, its price naturally fluctuates in relation to the periodical output of these other oils. Further, very few soaps can be made with coconut oil alone, the majority of hard household soaps requiring a supplementary fat like tallow for their production. Therefore, soap manufacturers in Ceylon are seriously handicapped by reason of the lack of a free and cheap supply of such a supplementary fat.

COCONUT CAKE AS STOCK FOOD

The by-product of oil manufacture, Poonac, is sold in three main grades for stock feeding, namely, White, Ordinary and Parings Poonac. At present, most of the poonac produced in Ceylon is exported to other countries, where stock-breeding is taken seriously. When the present apathy to stock-farming has disappeared, the people of this country will realise what a valuable animal food good coconut poonac is. In fact, parings poonac, as a supplementary ration, has been proved by experience to be an excellent food for milch-cattle and poultry.

DESICCATED COCONUT

The next article of commercial importance produced from the kernel is the well known desiccated coconut. It is not possible in a short space to give the details of this most interesting industry. In brief outline, the processes of manufacture are as follows:—

The shell is removed in pieces without doing damage to the kernel. The outside brown layers of the kernel are pared with a special tool, removing by this process from 10 to 13 per cent of the kernel. The pared

kernels are washed in tanks and passed through a grater, shredder or special cutter according to requirements. The grated or shredded kernels are then placed in a dryer. The dried article is cooled and put into a sifter where it is separated, in the case of grated coconut, into three grades, Coarse, Medium and Fine; the shreds being sorted sometimes according to length. From the sifter the finished article, which is snow-white and of a sweet, fruity smell, is directly fed into lead-lined boxes for despatch.

Nearly all the desiccated coconut made in Ceylon is exported to Europe, England being the largest buyer, and used in the manufacture of confectioneries. It also has many uses in the household, being especially valuable in the making of sweets and cake. As a stock food, it is too expensive, but it is worth mentioning that for conditioning dogs and keeping their coats glossy and free from vermin there is nothing better than a little desiccated coconut added to their food.

There is little doubt that desiccated coconut could be put to many more uses than as a mere adjunct in the confectionery trade.

ALCOHOL WINES AND SPIRITS

With desiccated coconut I have to conclude this description of some of the major products and by-products of the coconut palm. I have only touched the fringe of the problem, and many matters of importance have been left out of account. I have not said a word regarding the wines and spirits industry associated with the coconut palm, and the utilization of coconut arrack as an alcoholic base for medicated spirits. I need only mention that the palm has not yet been properly studied as a source of alcohol, although toddy and arrack have been known for hundreds of years. There is no doubt that various spirituous liquors can be made from arrack and that the medicated wines industry is coming into some prominence just now in Ceylon. But these are complicated subjects that cannot be discussed in a short essay such as this.

SUGAR HONEY AND JAGGERY

I have also purposely left out of account the consideration of the coconut palm as a source of sugar, honey and jaggery or coconut toffee, which are articles of some importance. And I have only made a very casual reference, in discussing the uses of coconut roots, to the great

therapeutic value of the various parts of the coconut palm. There would be no end to this essay if I attempted to describe the hundred and one things that the coconut palm is capable of producing.

But what a wonderful product of nature the coconut palm is, its roots providing antiseptic lotions and a dentifrice and its tender bud, or cabbage, a Delikatesse. How many people have eaten the Coconut Apple or even seen it—that sweet, soft, storage organ which is developed when the nut germinates and sends up a sprout?

THE TREE OF HEAVEN

The famous Ernst Haeckel visited Ceylon in the last century and, on his return to Europe, published a little book called "A Visit to Ceylon", where, in attempting to compare Ceylon with Egypt, which he had visited earlier, he writes thus eloquently regarding the coconut palm,

".....In Egypt and in Ceylon alike, a palm tree is the most important vegetable product in the general economy of the nation—in Egypt the date palm, in Ceylon the coconut palm. Although these two noble gifts of Flora are of almost equal value, and every part of each has its special utility, still they are as dissimilar in detail as the two trees are in appearance, and in the character they impart to the landscape. The date palm is as inseparable from Egyptian and Arabian scenery as the coconut palm is from the low-country of Ceylon.

"A native of the north who, after crossing the Alps, sees the date palm for the first time in Italy, admires it as the representative of a noble tribe, and his admiration increases as he travels further south to Egypt, where he finds it in abundance and far more beautiful in growth. I myself have worshipped it with true devotion.

"How poor by comparison did the date palm now seem when the incomparably fine and more perfect form of the coconut palm, as I had seen it in Ceylon, was freshly stamped in my mind! The slender, smooth, white trunk of the Cocos is always gracefully bent, and it is usually twice as tall as the thickset, scaly, dingy-brown stem of the date palm. The huge, finely sweeping, yellow-green plumes of the coconut are twice as large and twice as beautiful as the stiff, straight, dull-green leaves of the date palm. Indeed, the picturesque beauty of the Cocos exceeds that of the date palm as greatly as its large nut exceeds the small and inconspicuous date itself."



PLATE 1

The *Gedi-gé* or Pandal, built with arecanut trunks and ornamented with bunches of coconuts. The *Gedi-gé* is a triumphal arch, erected in honour of great personages or of great occasions, and is a necessary part of the decorations for religious festivities.



PLATE 2

Bunches of Coconuts.



PLATE 3

Coconut seedlings in a nursery. Note the position in which nuts should be planted.



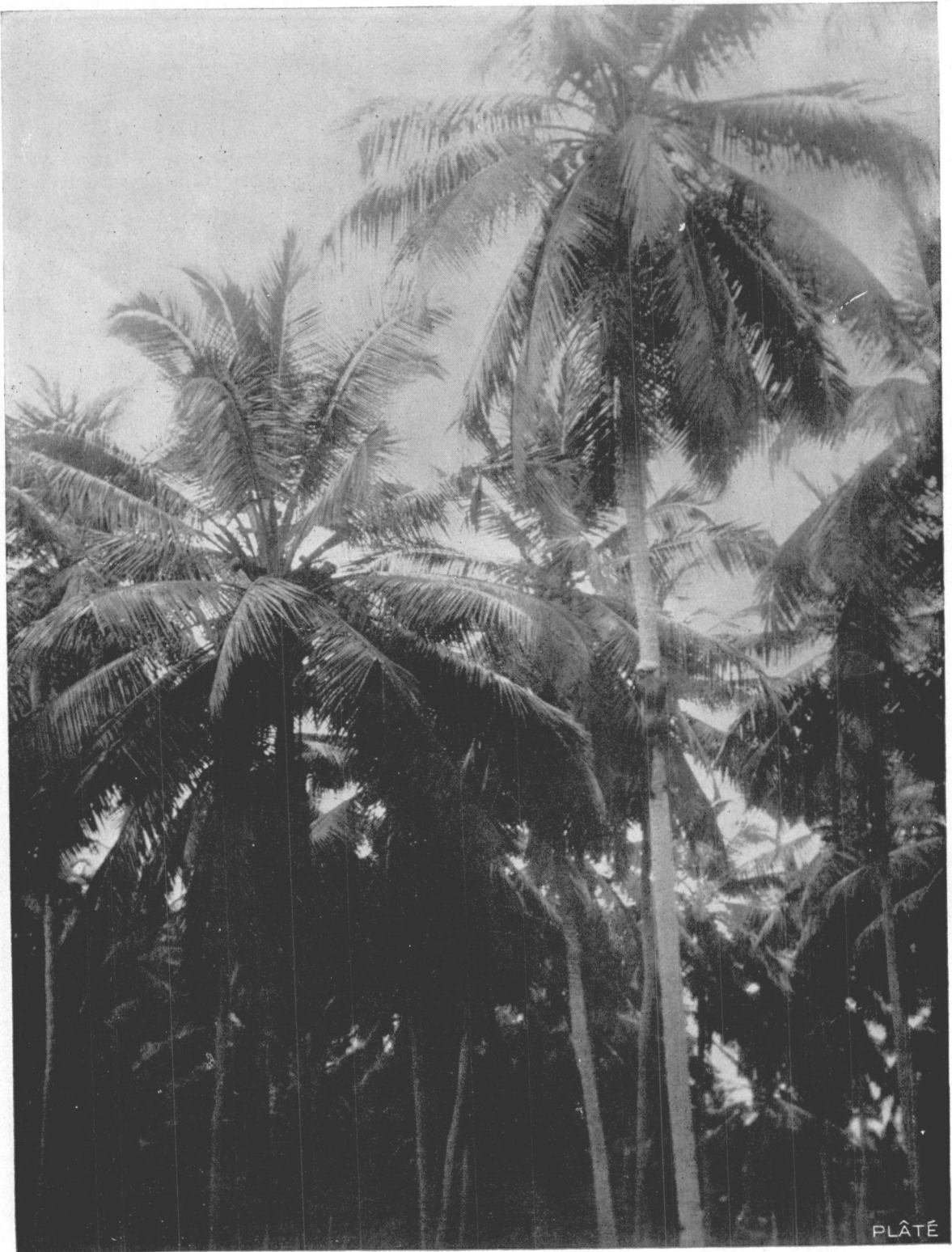
PLATE 4

A two-year-old palm.



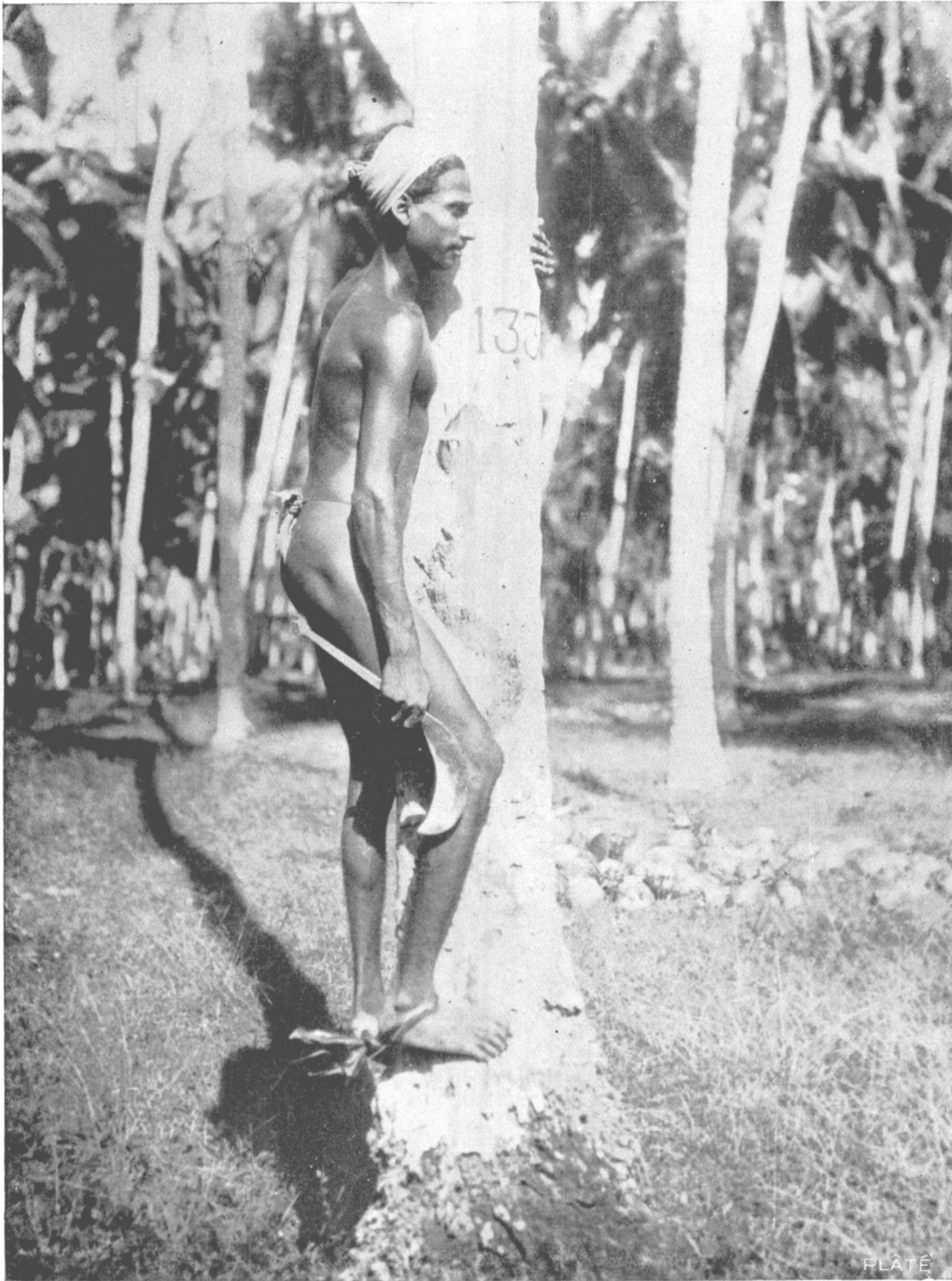
PLATE 5

The inflorescence of the coconut. The female flowers or button-nuts, as they are called, are situated proximally and the male flowers distally. The coconut inflorescence, in a somewhat younger stage, is used in religious ceremonies.



PLÂTÉ

PLATE 6
Climber.



PLÂTÉ

PLATE 7

Close-up of climber. Note the ring, which is made of coconut leaflets, round his feet. This ring prevents him from slipping. Also, incidentally, note the cobra painted on the trunk to scare away rats which do a lot of damage to young nuts.



PLATE 8

Pickers with bamboos. Each man can pick, on an average, 250 palms in a working-day of six hours, picking two bunches or more from each palm.



PLATE 9

Close-up of pickers, showing curved knives tied to the ends of the bamboos. These knives are very sharp and cut easily through the bunch stalks.



PLATE

PLATE 10

Removing the husk from the coconut. This is done by means of a sharp, iron spike planted in the ground. A skilled man can husk 2,500 nuts in a working-day of 9 hours. Note the coconut branch stuck in the ground for shade.



PLATE 11

Loading husked coconuts into bullock carts for removal to the copra-drying kilns.



PLATE 12

Splitting nuts on the barbecue. The water or "milk," as it is wrongly termed sometimes, is collected in a tank and often fed to cattle and pigs. Milch cows, on whom it has a mild laxative effect, take it readily. It ferments to form acetic acid, which was used, at one time, in the coagulation of rubber latex; and when boiled down forms a treacle. Owing to the high content of potassium compounds, this treacle is not very palatable.



PLATE 13

Split half-nuts spread out on the barbecue to dry in the sun. In the background is a copra-kiln.

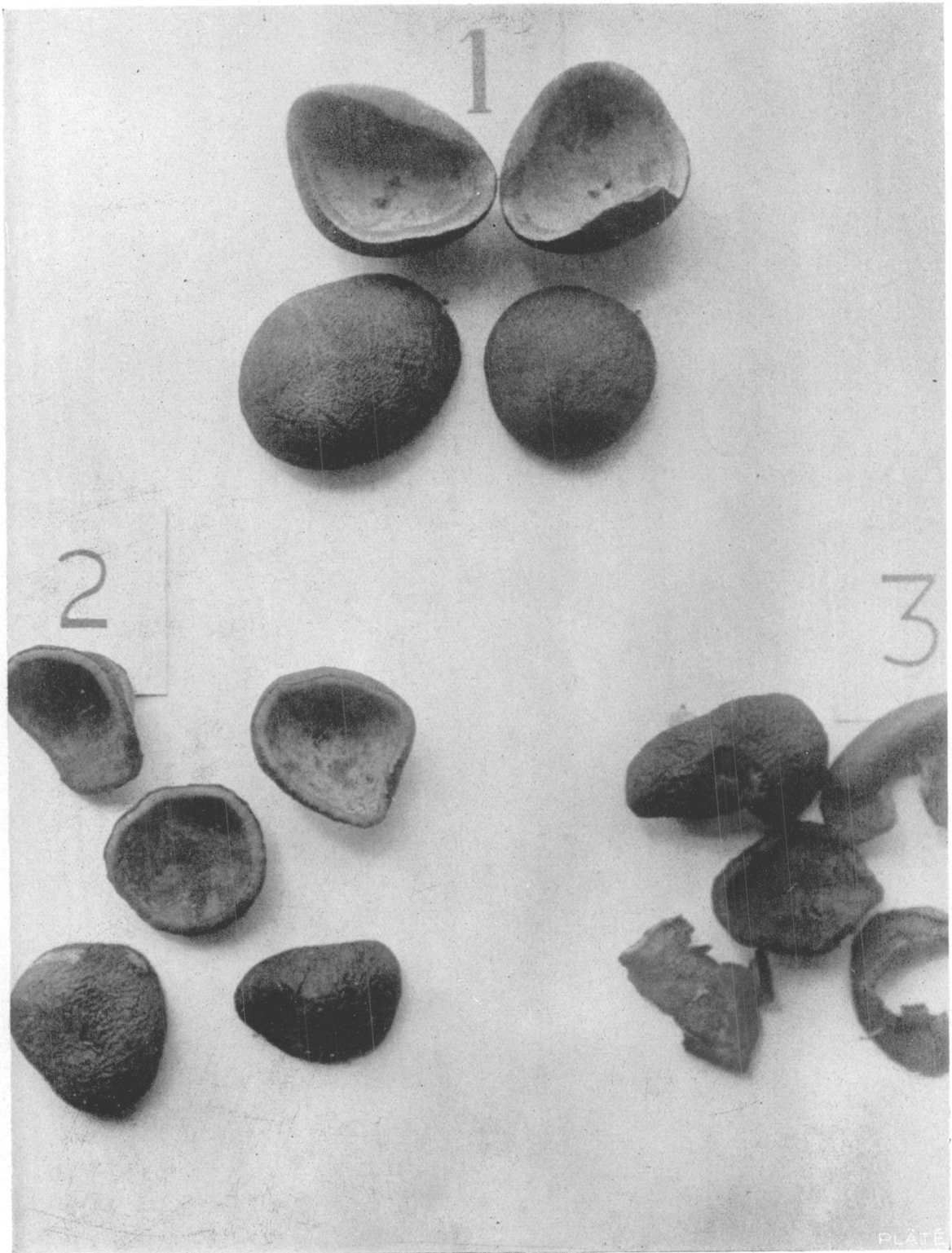


PLATE 14

The three grades of copra. Grade I, as displayed in the picture, is no more considered as first grade copra; a super No. 1 grade, which is a far superior article, is now being put on the market.

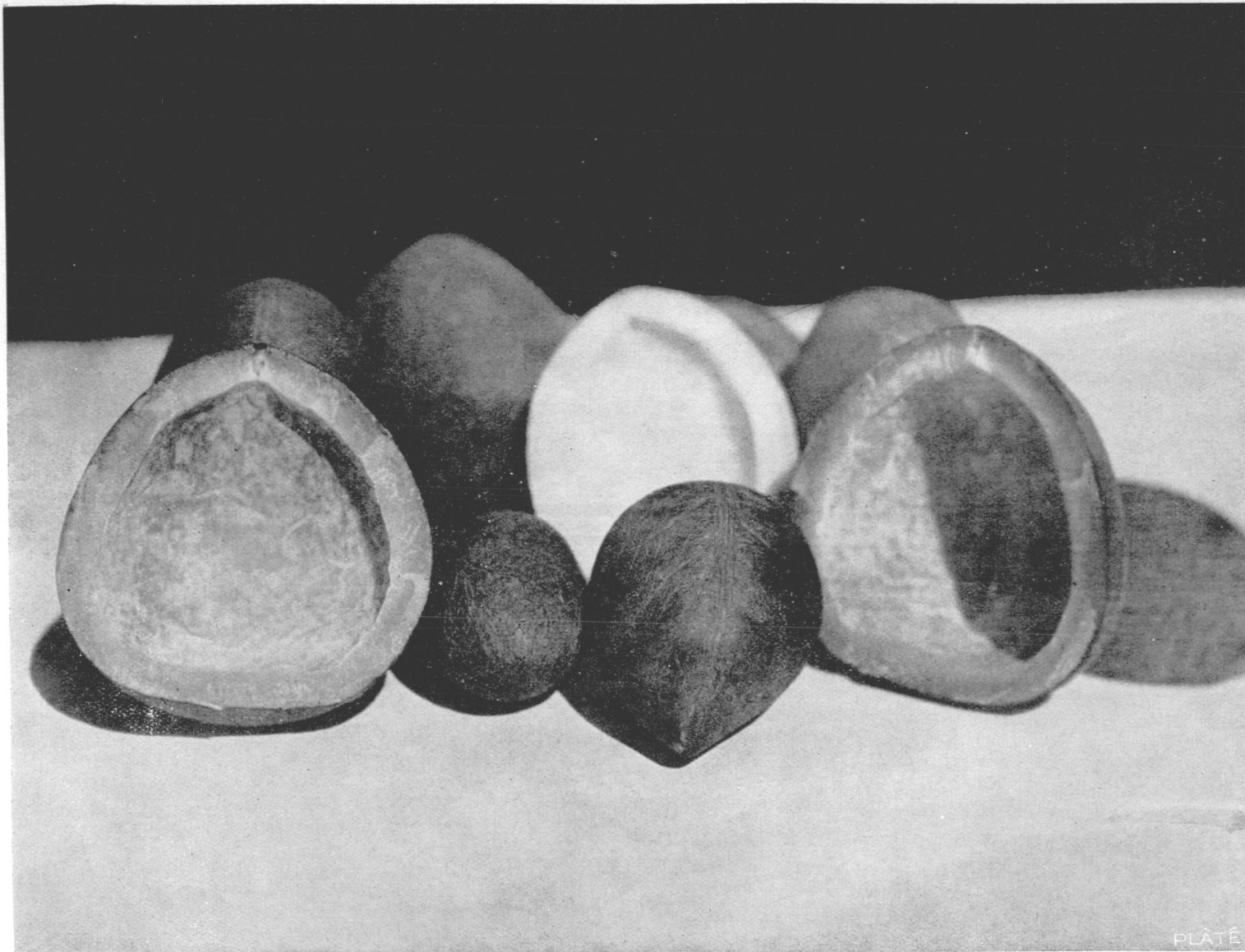


PLATE 15

Ball copra. Whole copra or *Kotta-pol*. This is the best copra that comes on the market, and is made by the slow drying of the whole nut in the husk. The nuts are dried in lofts over kitchen fires and may take as much as six months to reach complete dryness, when the kernel becomes completely detached from the shell. Ball copra is quite smooth outside & the cut halves show that the inside is snow-white or powdered over with a greyish-white bloom.

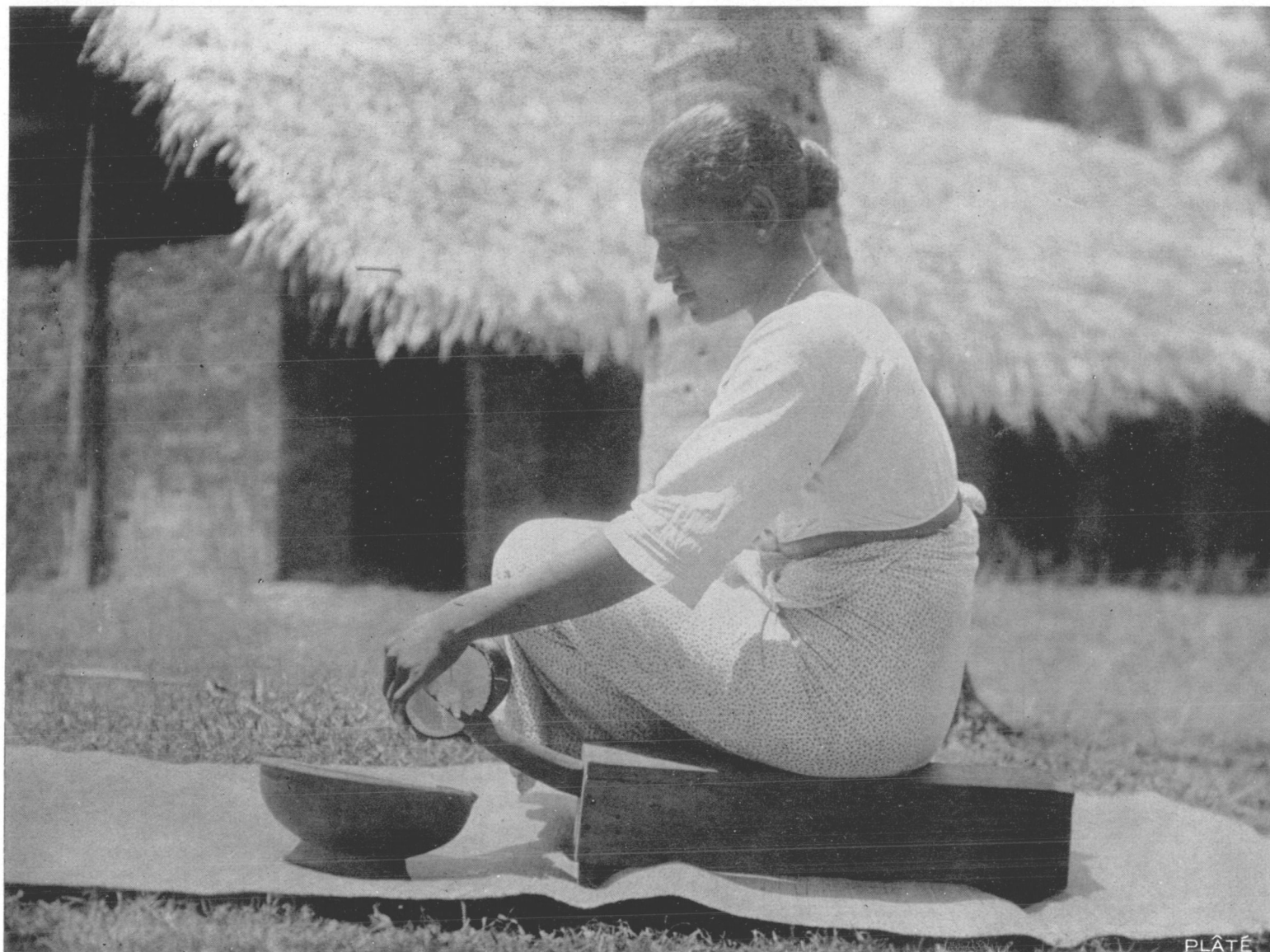


PLATE 16

Grating coconut. The husked coconut is split in two, and each half is grated on a toothed, circular, steel blade fixed to a block of wood, known as the *Hiramane*.



PLATE 17

Making *Ath-thel* or Hand oil. The milk is squeezed out of grated coconut by hand with the admixture of a little water, put through a sieve made of cane slivers in an earthenware pot over an open fire. When all the water has been boiled off and the proteinous scum removed by skimming and filtering, a high grade edible oil is produced.



PLATE 18

The Chekku or village oil press. Greater pressure may be obtained by sitting on the shaft or by placing a large stone on it.



PLATE 19

A battery of coconut chippers. The shell has to be chipped away from the kernel in the manufacture of desiccated coconut,

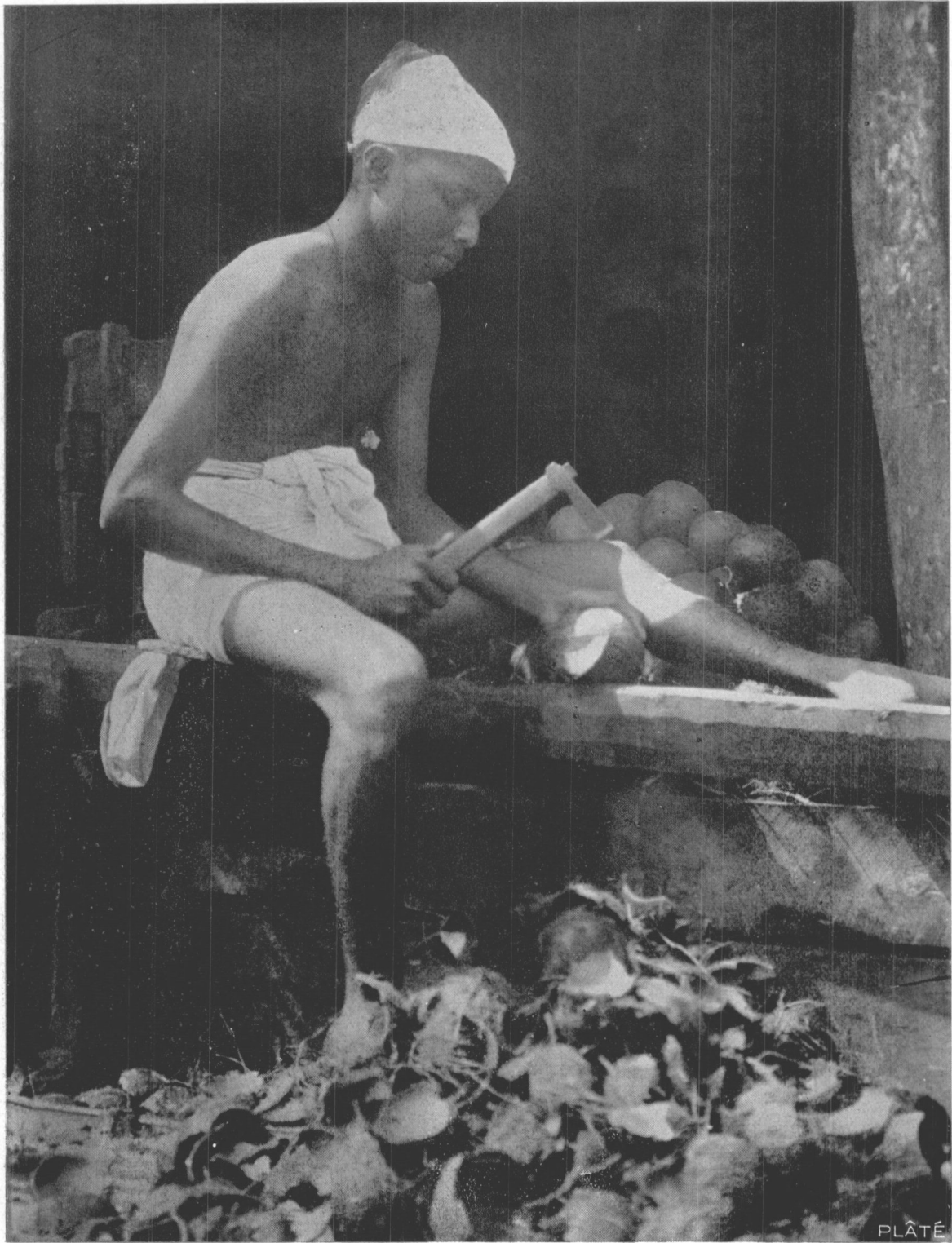


PLATE 20

Close-up of Coconut Chipper



PLATE 21

Paring the outside brown layers of the kernel in the manufacture of desiccated coconut. A high grade oil is obtained from the parings or spokeshavings.



PLATE 22

Pared kernels are broken and washed in tanks or in running water. Careful washing and removal of bad pieces are essential processes in the manufacture of desiccated coconut. Only clean, healthy pieces are fed to the graters. The wash-water, which is milky by reason of the oil globules exuded from the kernels, is collected in a tank and used for the manufacture of "drain oil" and "sediment poonac".

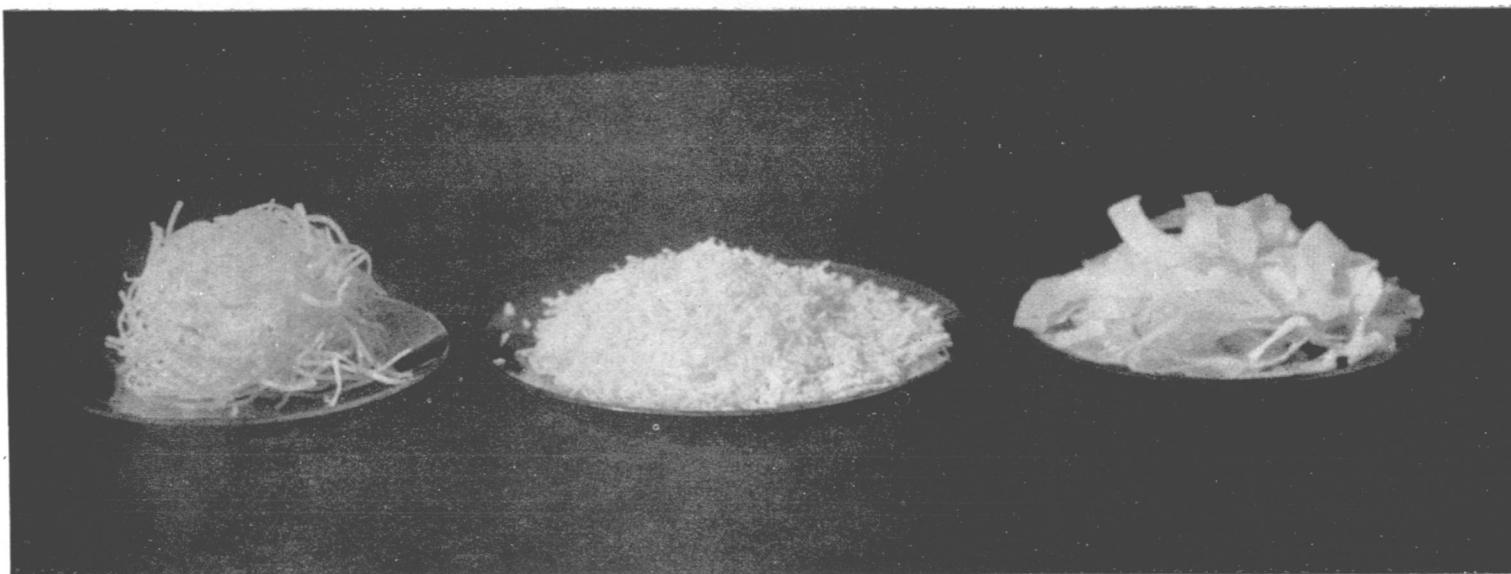


PLATE 23

The various grades and cuts of desiccated coconut.



PLATE 24

Husk heaps and retting tanks, where, by chemical and bacterial action, the fibres in the husk are loosened and rendered workable. Sometimes the husks are crushed before they are put into the retting tanks.



PLATE 25

A lorry-load of bristle fibre and bales of mattress fibre. Also note the mattress fibre put out to dry in the sun.

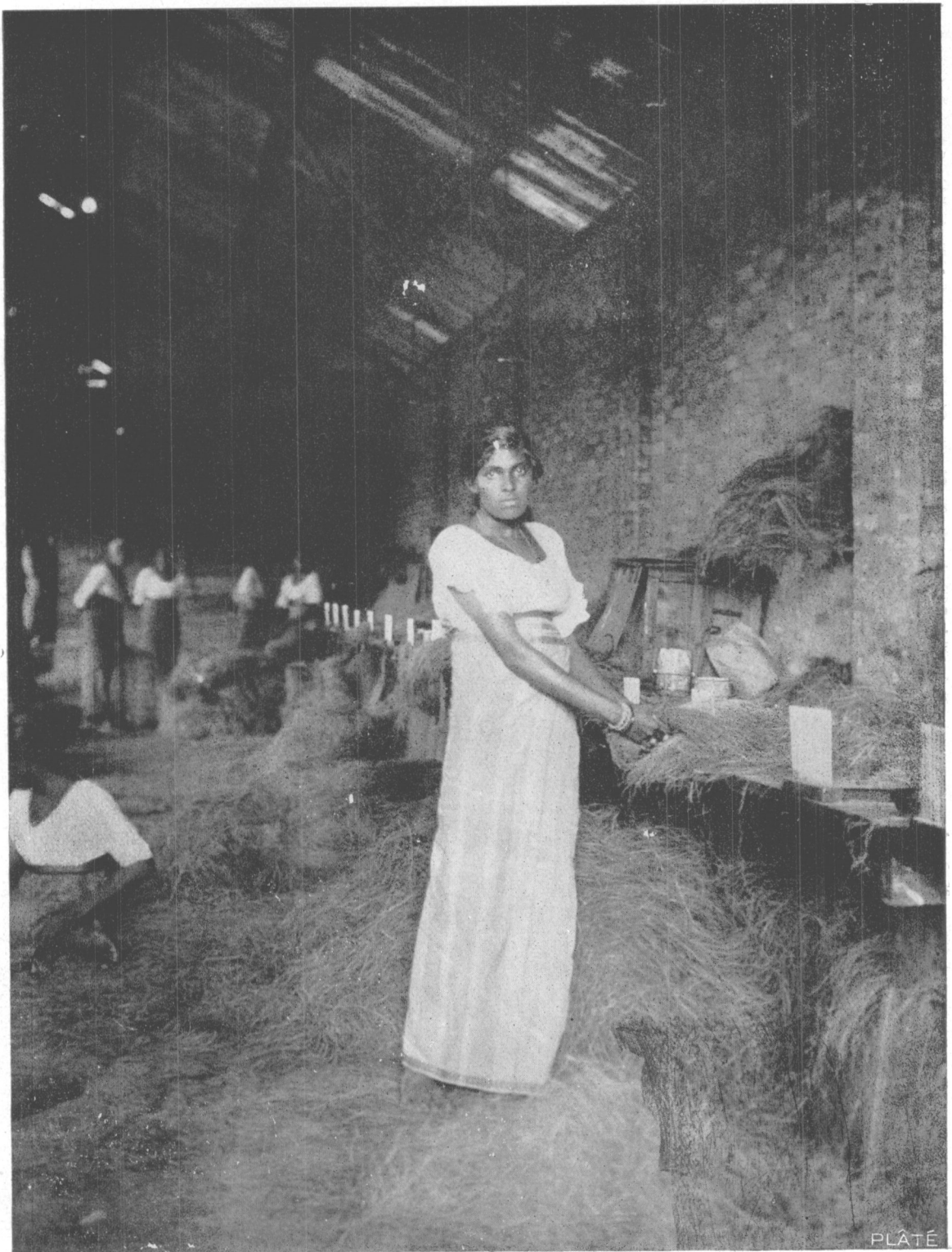


PLATE 26

The fibre is combed or "hackled" in order to separate the bristle from the combings.
This work is usually done by women.



PLATE 27

Bales of pressed mattress fibre and ballast.

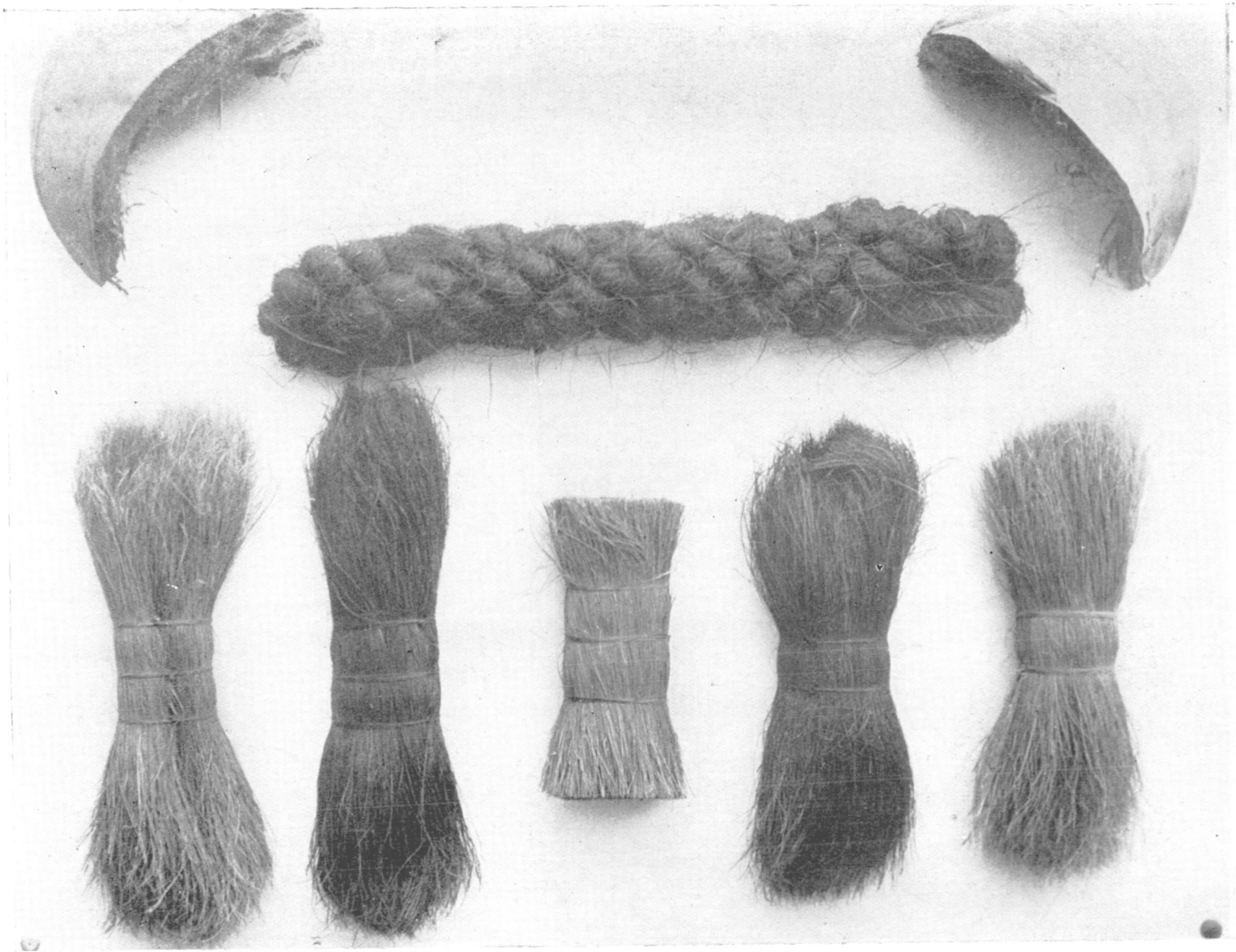


PLATE 28

Bristle fibre and coireen. Above, on either side, are two pieces of coconut husk; below them is a twist of dyed coireen; and in the bottom row are hackles of bristle fibre of two lengths of staple. 3-tie and 2-tie, and a cut 3-tie hackle.



PLATE 29

Retting husks in lagoons on the road to Galle.



PLATE 30

Beating the retted husks with wooden batons to free the fibre from the connective tissue or "dust."



PLATE 31.
Hand-making of coir yarn.



PLATE 32
Coir yarn, Rope and Cable.



PLATE 33

Toddy tapper with his outfit, which consists of a sharp knife for cutting the unopened spathe, an open basket containing the cinnamon leaf paste or lime, used to stimulate the flow of sap, a wooden baton with which he taps the spathe for the same purpose, and an earthenware pot to collect the toddy. Note the coconut husks tied to the trunk to facilitate climbing.



PLATE 34

Toddy tapper going from palm to palm on stretched coir ropes. Note the pots placed over the prepared spathes, one on each palm.

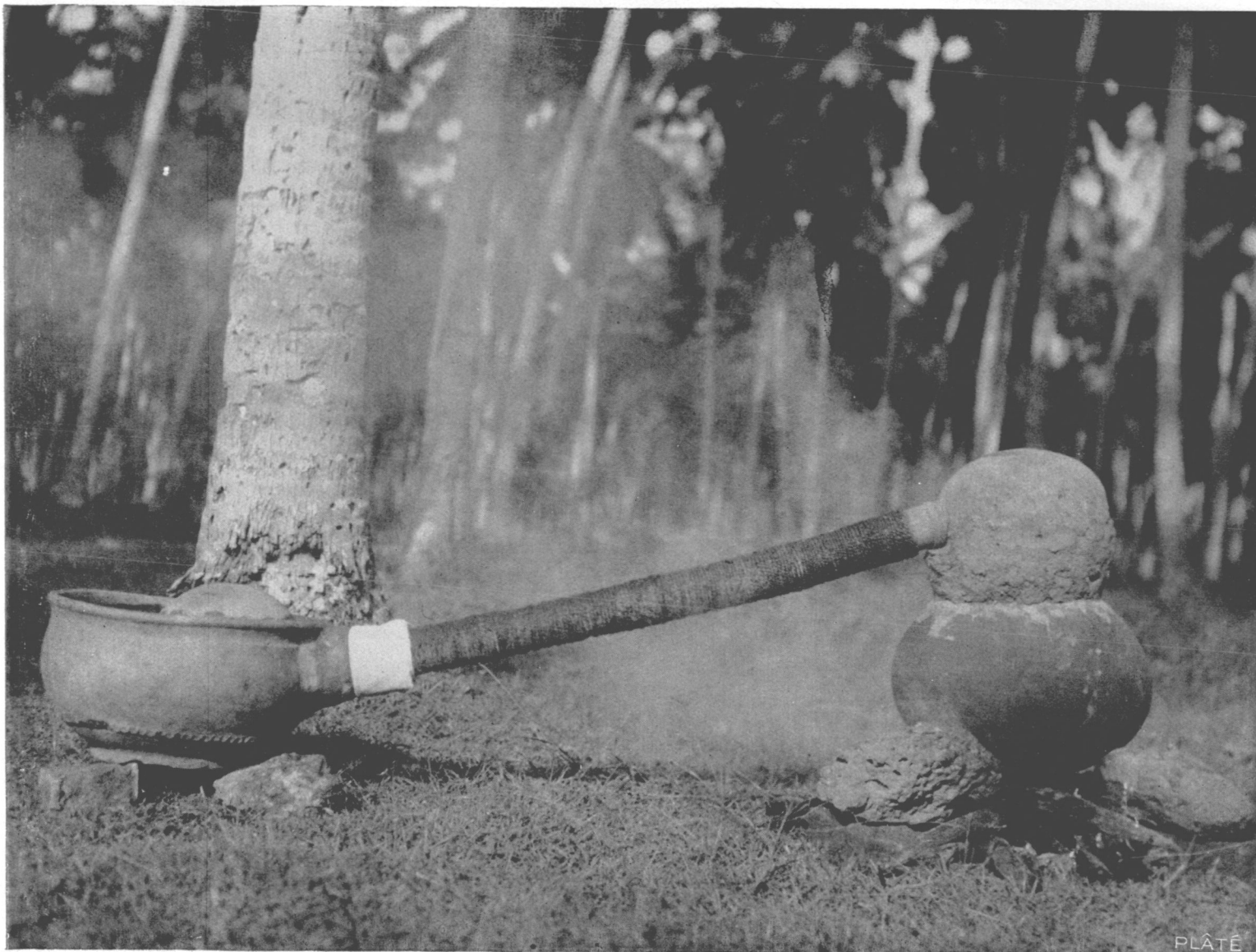


PLATE 35

Primitive arrack pot-still in which illicit arrack is made today. The fermented toddy is placed in the pot on the right and the arrack distils over into the pot on the left which is surrounded with water in the open earthenware pan. Illicit arrack is a potent drink.

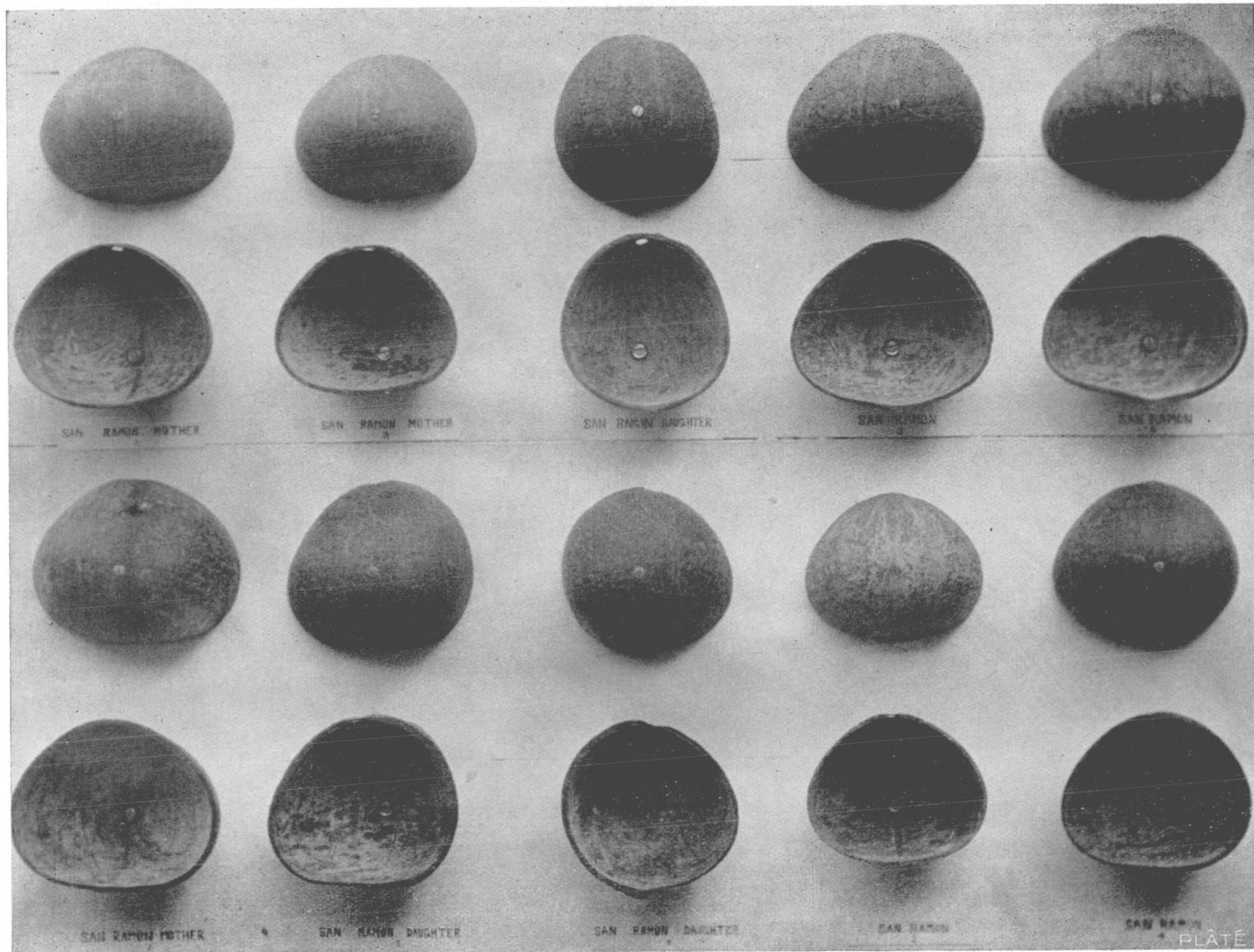


PLATE 36
Coconut Shells

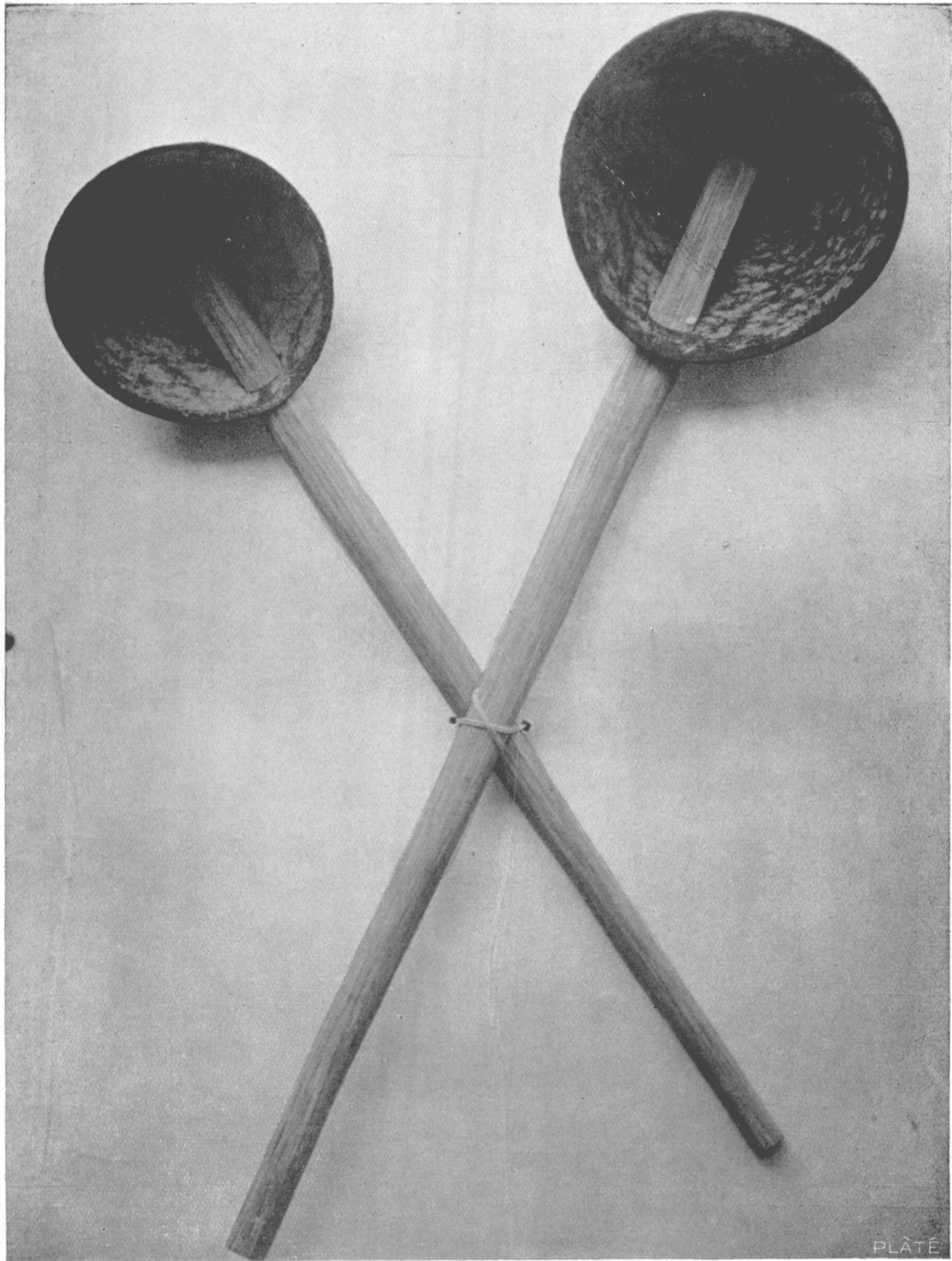


PLATE 37

Coconut shell ladles, widely used in Ceylonese households

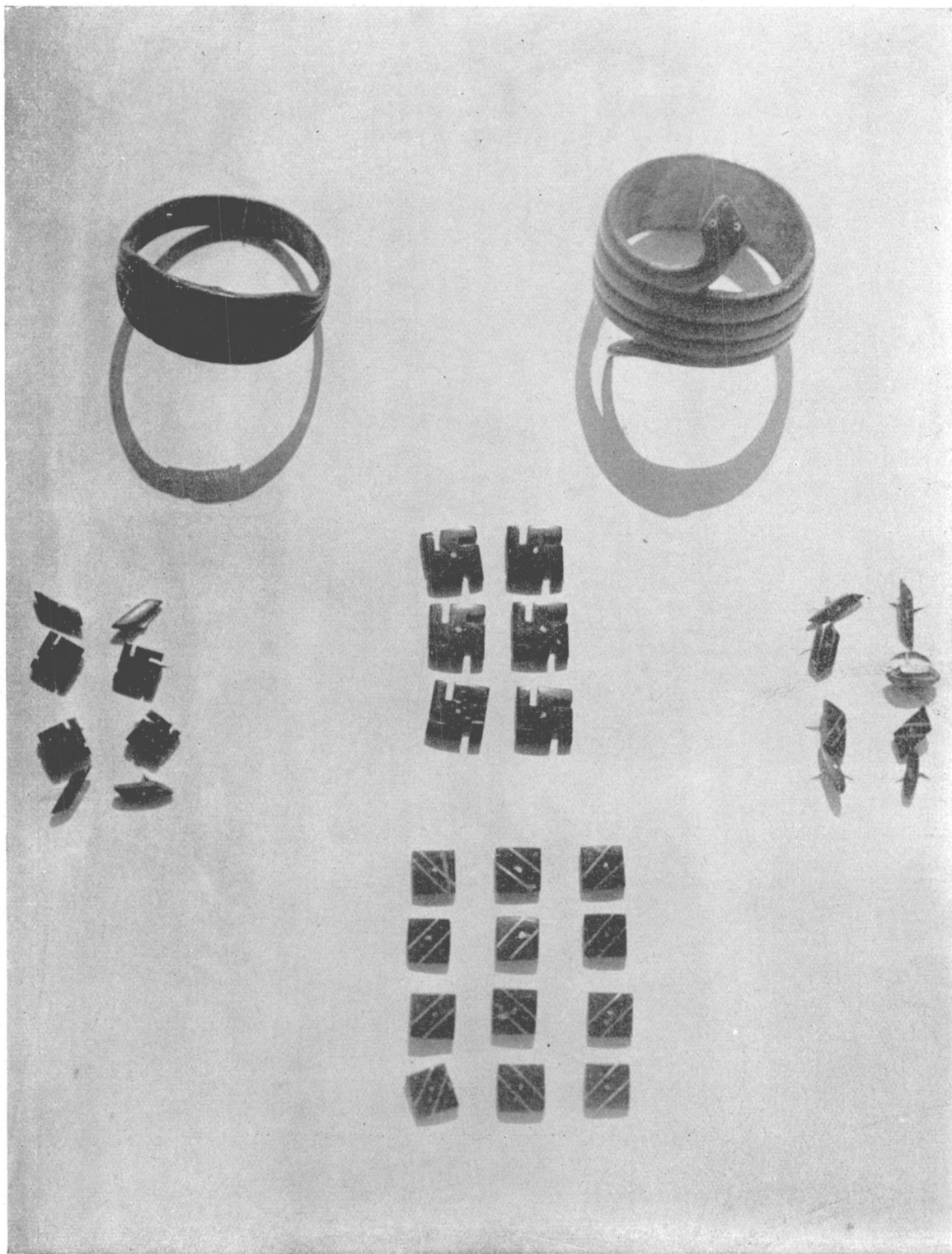


PLATE 38

Coconut shell ware. Bangles, buttons and cuff-links.

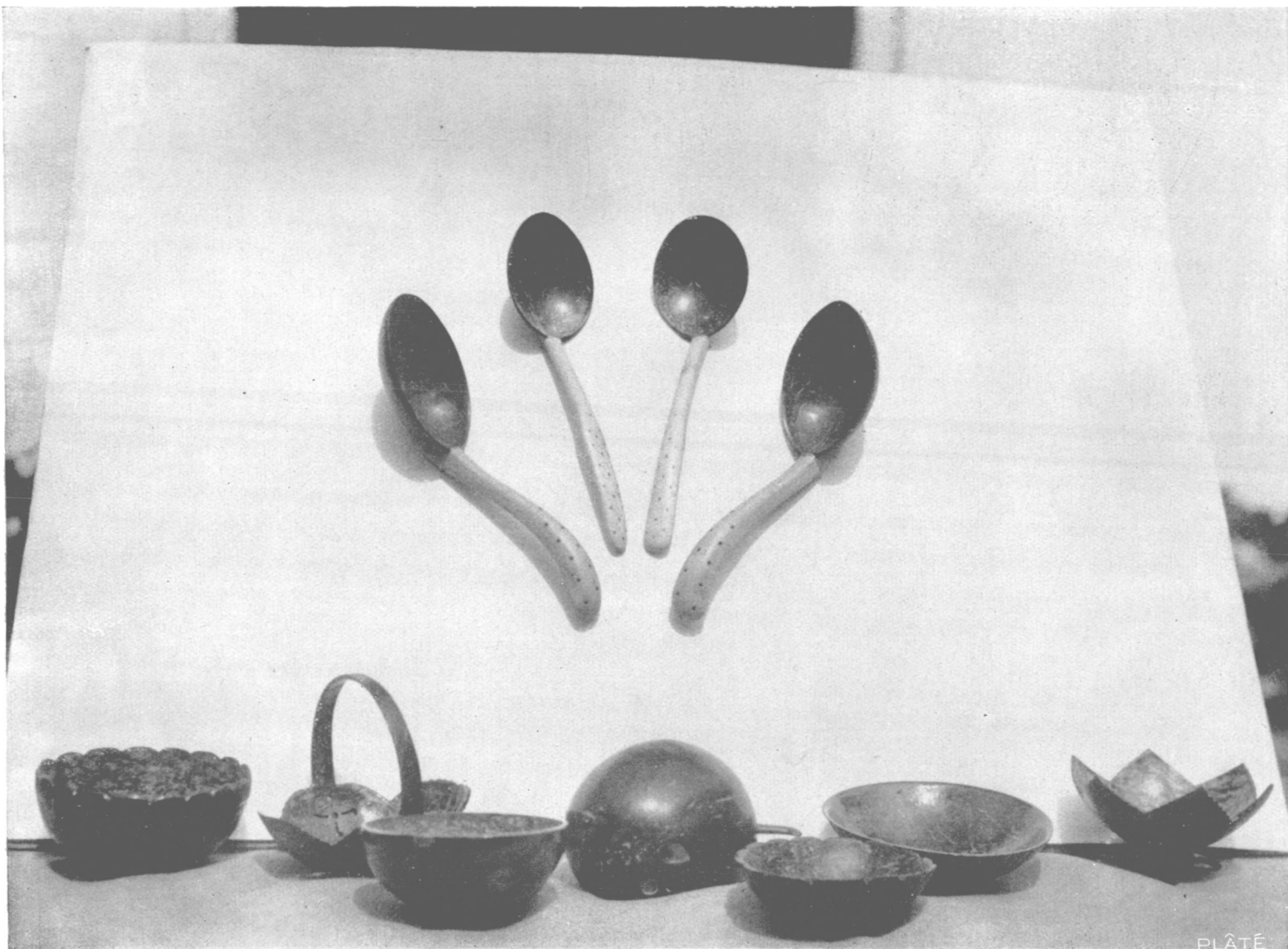


PLATE 39

Coconut shell ware. Salad spoons, ash-trays, trinket-dishes, and paper weights.



PLATE 40

Coconut shell tea set. The tray is made of cocout wood

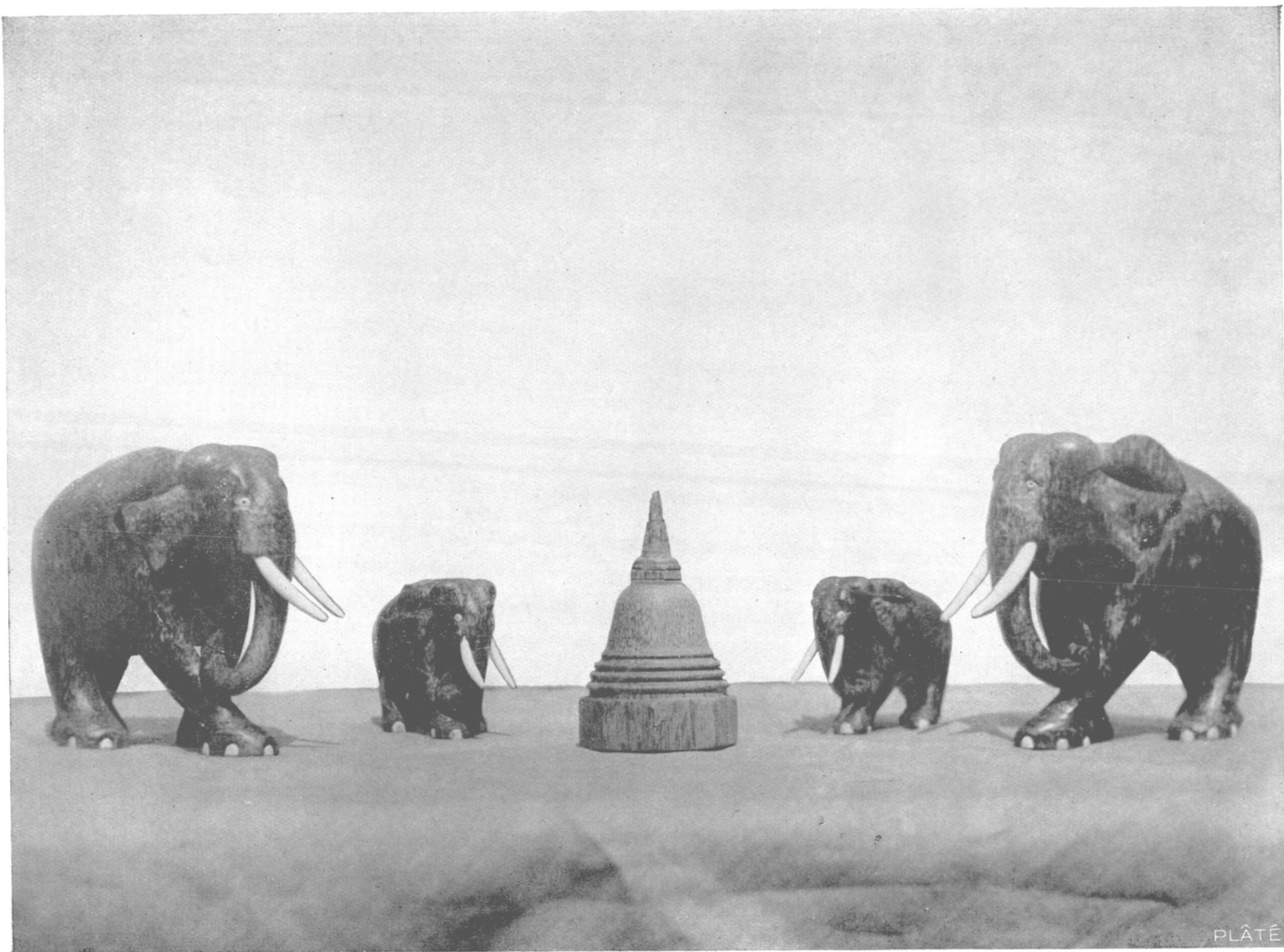


PLATE 41

Elephants and Dagoba made from coconut wood

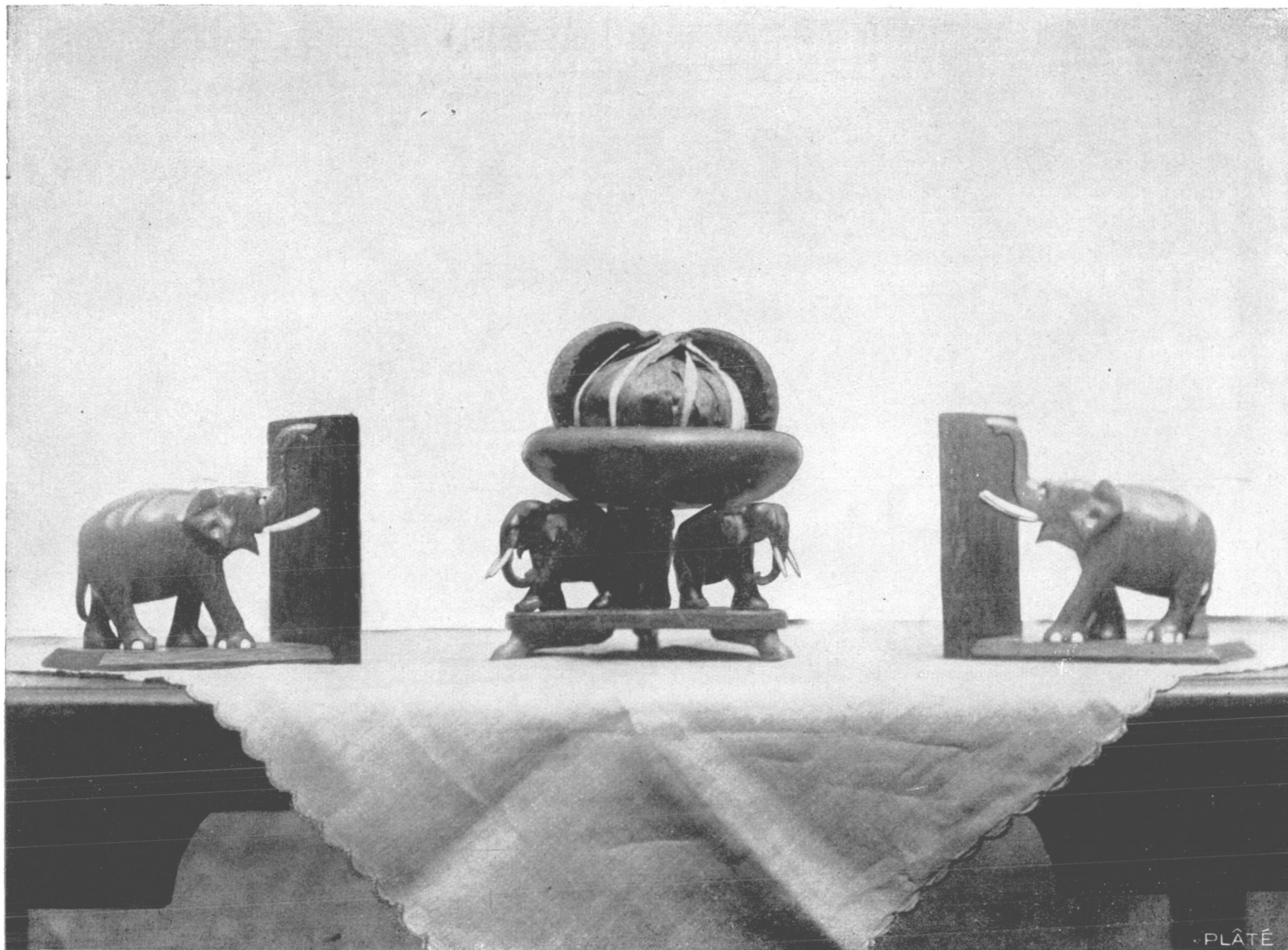


PLATE 42

Book-ends and fruit-stand made from cocout wood. Note the jaggery or coconut toffee in the fruit-stand.



PLATE 43

Bundle of dried coconut spathes, used for fuel and as fire-lighters



PLATE 44

Weaving coconut leaves to make "cadjans" for thatching

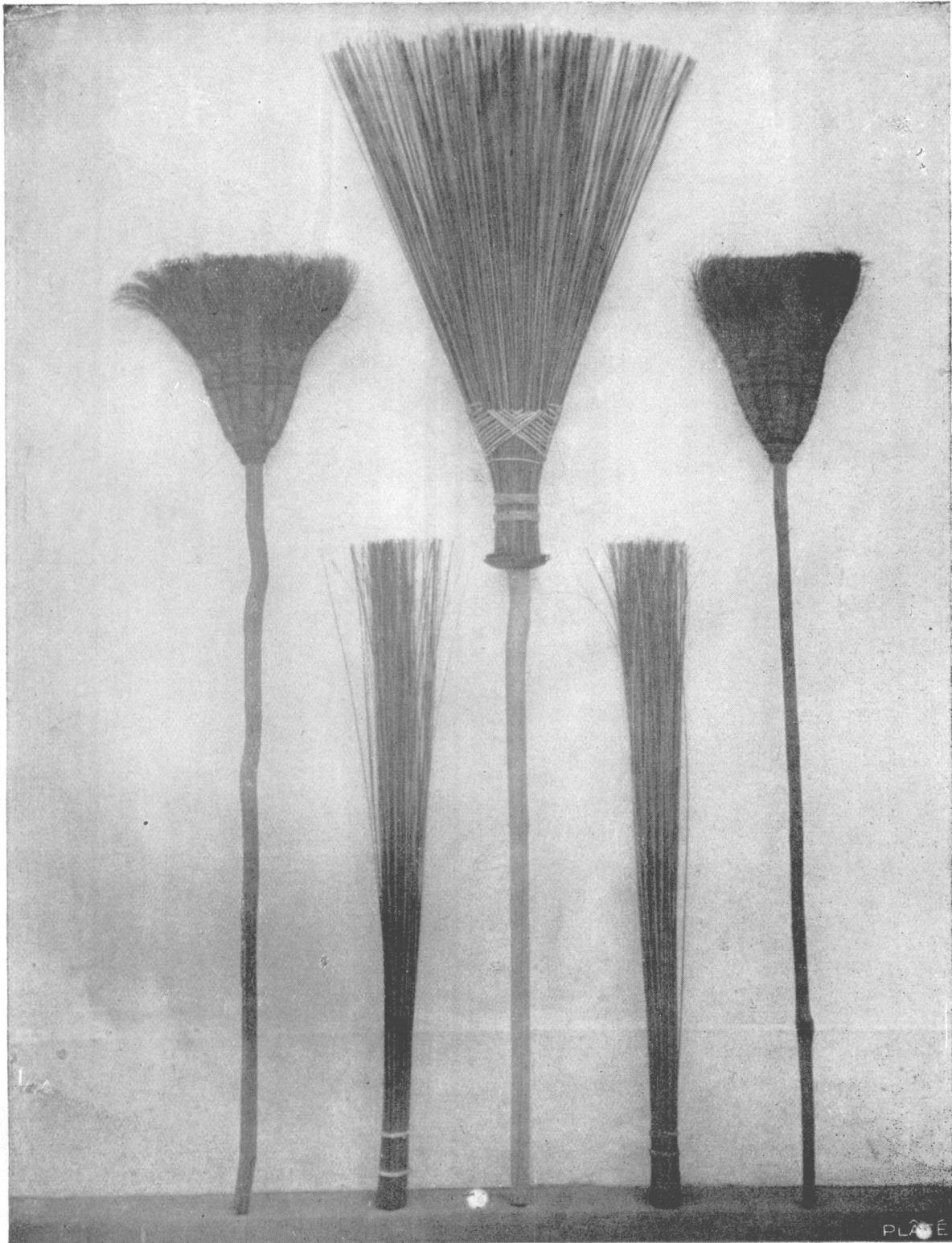


PLATE 45

Brooms, besoms mops. In the centre is a garden broom, made with the midribs of coconut leaflets or ekels. On either side of this are two besoms, also made from ekels, and commonly used in village homes. On the outside are two household mops, made with coir fibre.



PLATE 46

A fish-trap, made with ekels



Photo by

PLATE 47

courtesy of Director, Colombo Museum

Coconut oil lamps used in Buddhist and Hindu temples. The three lamps displayed here are to be found in the Colombo Museum and date back to the late 17th century. The oil is poured into the pans, on which the wicks are placed. The lamp on the left carries 14 wicks, the one on the right, 18 wicks, and the one in the centre, 88 wicks.



PLATE 48

South Indian boy about to regale himself with the water of a tender coconut or *kurumba*

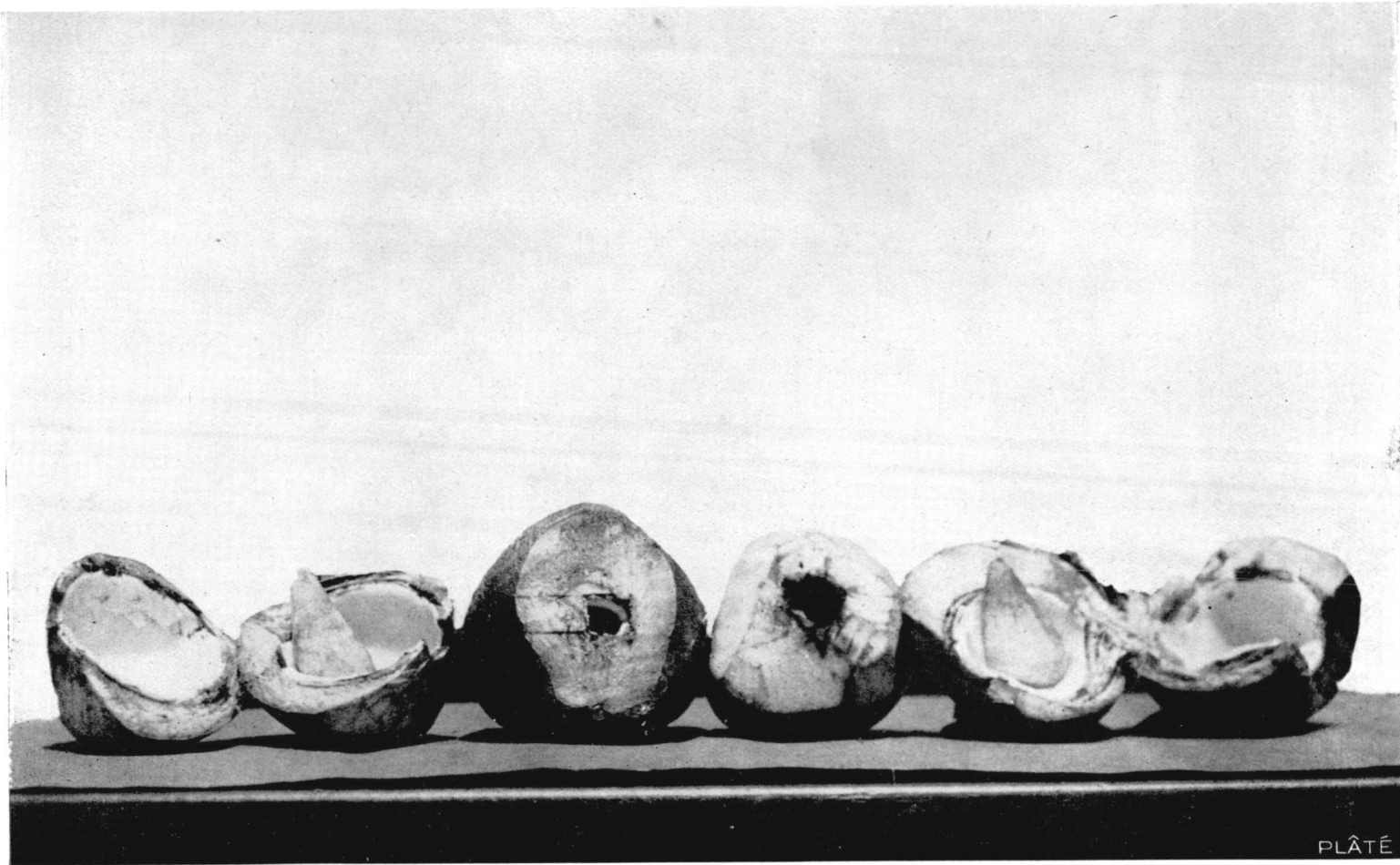


PLATE 49

Kurumba ready to be eaten or drunk. Note the scoops made out of pieces of the immature husk. The water contained in the young coconut is one of the finest drinks in the world. It is slightly sweet and naturally charged with carbon dioxide, and makes a most refreshing drink on a hot day. The water of the Golden Yellow King Coconut is sweeter than that of other varieties. The kernel of the tender coconut is sweet and fruity and not at all fibrous



PLATE 50

Coconut Apples. When a coconut germinates, a haustorium or storage organ develops inside the nut, while the sprout grows upwards and seeks the light. When the seedling is about three months old, the haustorium or "apple" fills more than half the cavity of the nut, most of the kernel, especially at the stalk end, having been broken down by this time. At this stage, the apple is very sweet and delicious. One kernel is shown in the picture, cut in two, with the apple completely filling the cavity.