ART. 45.—*Maori Plaited Basketry and Plaitwork: I, Mats, Baskets, and Burden-carriers.*

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[*Read before the Auckland Institute, 19th December, 1921; received by Editor, 21st December, 1921; issued separately, 18th June, 1923.*]

Plates 78–82.

INTRODUCTORY.

WE owe a duty to the Maori race to gather and put on record such remnants of information of their ancient arts and crafts as still survive the deluge of civilization. To Hamilton, Brigham, and others we owe much for the illustrations and general description in their works, but more data as to technique is required to supplement their labours. For the comparative study of the Polynesians and their neighbours, the technique used in the beginning, finish, and strokes used in the body of the articles must supply valuable information and be of high scientific importance. From a sentimental point of view, it may interest future generations of the ultimate mixed race of New Zealand to look up the methods and doings of their Maori ancestors. From an economic standpoint, Maori baskets and mats are so easy to make, and the material so accessible and inexpensive, that dwellers remote from towns, and campers by coast and forest, might well derive benefit from the study of the technique of the Maori art of plaiting.

The data from which this article is compiled was gathered from the Ngati-Pamoana subtribe of the Whanganui Tribe, who dwell at Koriniti and Operiki, on the Whanganui River. It was originally intended to make it the basis of a comprehensive article on basketry and plaiting throughout New Zealand. So many variations occur amongst the different tribes, however, that it was considered advisable to postpone their consideration until more exhaustive inquiries have been made. The variation in names and types is shown by the fact that Williams's Maori Dictionary contains over seventy names for kinds of baskets alone.

Basketry and matting are made amongst the Maoris by hand from strips of unspun material. The small baskets with coloured designs, made from prepared flax-fibre twisted on the thigh into warp elements, are a modern innovation, derived from the art of weaving cloaks, and do not belong to this article. "Basketry," to quote from *Notes and Queries on Anthropology*, "may be *woven* (where there are two elements), or *plaited* (where all the elements start and end parallel, sometimes confused with weaving), or *coiled*." Following the classification adopted by the Bureau of American Ethnology, basketry is divided into checker-work, twilled work, wicker-work, wrapped work, and twined work. Wicker, wrapped, and twined work are done on stiffer material, and may be seen in the various fish-traps for eels and *inanga* (adult of *Galaxias attenuatus* and fry of *G. brevipinnis*). They are not dealt with here. Coiled basketry, which is really sewing, is done by sewing or whipping together, in a flat or ascending coil, a continuous foundation of rod, splint, shredded fibre, or grass, or by interlocking stitches without foundation. This class of work was not done by the Maori.

The scope of this paper is thus confined to plaited basketry of the checker and twilled types; but as other articles besides baskets and mats are plaited from similar material and with the same strokes, the following will come into review: (1) Mats; (2) baskets; (3) burden-carriers, or *kawe;* (4) belts and bands; (5) fans and fly-flaps; (6) sails; (7) sandals; and (8) ropes and cords.

Plaiting.

Plaiting, whether checker or twilled, is included under the general term *raranga,* but the plaiting of ropes and cords is termed *whiri.*

Survival of Plaiting.—The rougher baskets and mats, being in everyday use, are still made throughout the country. European plates and dishes have done away with the need for the rough flax containers for cooked food, and many of the younger generation of Maori have never even seen them, so naturally know nothing of how to plait them. The art of making the finer mats and baskets, with coloured designs, is rapidly passing away, and is now confined to the old and middle-aged in certain districts. Burden-carriers, or *kawe,* whilst still in use in the Whanganui and North Island west-coast districts, are now unknown over the greater part of the country. Plaited belts, fire-fans and fly-flaps have practically disappeared. Sandals, even in the old days, had only a limited geographical distribution, and the advent of boots and shoes has long since relegated them to oblivion. Of sails, we know of only one in existence, which is in the British Museum. Ropes are still plaited by a few of the older generation of men.

Definition of Terms.

The vocabulary of basketry has been so varied and confusing that it is necessary to define the terms used. These are adopted from those used by Mrs. A. H. Quiggin.

Weft: A technical factor in plaited basketry. A weft may consist of a single strip of material or a number of strips. The confusion between warp and weft in plaiting is obviated by terming the strips which lean towards the right *dextral* wefts and those towards the left *sinistral.*

Braid: Synonymous with *plait.*

Check, or *checker:* Each weft passes alternately over and under each consecutive crossing weft.

Cord: Two or more wefts twisted together in the same direction.

Decoration: The addition of elements, not essential to the construction, for the purpose of ornament.

Design: The general effect derived from the pattern or conjunction of patterns.

Overlaid weaving, plaiting, &c.: Wefts not essential to the construction, inserted for decorative purposes.

Patterns: The surface effects produced by various strokes.

Plait: The regular interlacing of not less than three wefts to form a continuous band or surface. A plait, cord, or twine is described as three-ply, four-ply, &c., according to the number of wefts.

Stroke: A completed movement in plaited basketwork corresponding to stitch in needlework.

Three-ply plait, cord, &c.: See *Plait.*

Twilled twos, threes, &c.: Each weft passes over or under two, three, &c., crossing wefts.

Otis Mason defines a strip as follows:—

"*Strip:* A narrow ribbon of leaf or other thin basket-material, answering in function to the harder splints."

PLANTS USED.

In plaiting it is in almost all cases the leaves of the plants that are used, and the plants selected are therefore those with long leaves to provide suitable wefts. In one case the stem is used, and in another the bark. For the description of the parts of the plants used we have quoted freely from Cheeseman's *Manual of the New Zealand Flora.*

Phormium tenax (New Zealand Flax; *Harakeke*).—Flax forms the chief material used in all forms of plaiting and weaving. It grows abundantly throughout both Islands, especially in lowland swamps and alluvial ground. Up the Whanganui River it was introduced and cultivated, so that each village had its *pa harakeke,* or flax-garden. Even in villages close to flax swamps, flax was grown close to the houses for immediate use. The Maori recognize several varieties with different quality of leaf and different strength of fibre. The famous *katiraukawa,* whose fibre was so sought after for weaving, is too thick and strong in the leaf for baskets and mats. Whilst it can be so used, other varieties with less fibre and a softer blade are preferred.

The leaves grow from 3 ft. to 9 ft. long or more, and the blades are 2 in. to 5 in. wide, keeled, and the margins and midrib bordered with a red or orange line. The upper or inner surface (*aroaro*) is dark green, and the lower or outer (*tuara*) of a paler sea-green colour. When dry the two surfaces maintain their difference in colour, the upper being brighter and having a smoother appearance. At a point somewhere about midway from the tip the two inner surfaces of the two halves of the blade begin to coalesce at the midrib, and this coalescence gradually increases until one-half of the leaf is joined together and the remainder in close opposition. The Maoris called the part above the diagonal line of coalescence the *kauru,* or leaf, and the part below they called the *putake,* or butt. For ease of description, later on we shall refer to the line of coalescence of the two half-blades as the "butt-junction."

Phormium Cookianum (Whaririki).—This species is much smaller than *P. tenax.* It contains little fibre, and is softer and is less rigid. The leaves are 2 ft. to 5 ft. long, 1 in. to 2½ in. broad, pale green, seldom glaucous, and the margins and midrib seldom bordered with a coloured line. It grows throughout the North Island, and was the only original species growing up the Whanganui, where it grew plantifully about the cliffs and steep slopes of the river. On account of its softness and ease of manipulation it was considered by the Whanganui people to be the best material for plaiting purposes, though the fibre was useless for weaving. Some tribes, such as the Nga-Rauru, of south Taranaki, where *Phormium tenax* is abundant, have imported it to their district, where it is cultivated for plaiting baskets, mats, and burden-carriers.

Freycinetia Banksii (Kiekie).—The Maori was acquainted with *Freycinetia* in the Pacific islands, where those branches of the Polynesians who drop the *k* sound in their speech call it *ieie.* Both there and here the fine roots are used in twined weaving; but with the Maori the leaves are largely used for the best class of mats, baskets, and belts. The *kiekie* grows abundantly throughout the North Island and parts of the South, where it climbs up forest-trees or scrambles over rock and prostrate tree-trunks. The leaves are numerous towards the tips of the branches. They are long and narrow (1½ ft. to 3 ft. long, ½ in. to 1 in. broad), sharply pointed, with a broad sheath at the base, concave, tough, leathery, and with the margins and midrib serrated with sharp spines. The leaves are used in making rough rain-cloaks.

Scirpus frondosus (Pingao).—The *pingao* grows abundantly on the sand-dunes near the coast throughout both Islands. It grows 2 ft. to 3 ft. high, and is of a yellow-green colour. The leaves are very numerous, often curved, very tough and leathery, channelled above, keeled below, gradually narrowed into long points, and expanded at the base into broad membranous sheaths. The margins and midrib are finely toothed. When dry the leaves have a yellow-orange colour, and are used in the colour-designs in fine mats, baskets, and belts. Inland tribes imported the prepared material from their coastal friends. The *pingao* was also used in the lattice-work panels of houses to give colour to the *tukutuku* patterns.

Scirpus lacustris (Paopao, or *Kutakuta).*—The *paopao* grows in the margins of lakes and swamps or ponds. The stems are 2 ft. to 6 ft. high, sometimes almost as thick as the finger, cylindrical, spongy, leafless, and sea-green in colour. The stems are used in the plaiting of floor-mats.

Cordyline australis (Cabbage-tree ; *Ti-kouka,* or *Whanake*).—The *ti-kouka* is abundant throughout both Islands, and reaches a height of from 15 ft. to 40 ft. The leaves form a dense round head at the top of the stems or branches. They are from 1½ ft. to 3 ft. long, 1½ in. to 2½ in. broad, flat, firm, sea-green, sword-shaped, sharp-tipped, slightly contracted just above the broad sheathing base, and have an indistinct midrib. The fibre in the leaf is strong and durable. The whole leaf is plaited into ropes and baskets, and their wefts are used for a neat basket, which is usually dyed black. Sandals were also made from the full leaf.

Cordyline indivisa (Toi).—The *toi*, the finest species of the Cordylines, grows in mountain districts in both Islands. The stem is stout, erect, rarely branched, and grows from 5 ft. to 25 ft. in height. The leaves are very numerous, spreading all round and forming a massive head. They are 2 ft. to 6 ft. long, 4 in. to 6 in. broad at the middle, broadly sword-shaped, tapering to a sharp point at the tip, usually contracted below and then expanded at the sheathing base. They are thick, tough, leathery, flat, greenish with faint purplish or reddish tint above and sea-green beneath. The midrib is very thick and prominent below but gradually decreases upwards. The lateral veins are very numerous and strong. The midrib, on account of its red or yellowish-red colour, is used sometimes in baskets. The fibre of the *toi* is very strong. Whilst its most common use is in the manufacture of a fine type of rain-cloak, it may on occasion be used in plaiting.

The other species of *Cordyline—C. terminalis (ti-pore), C. Banksii (ti-ngahere),* and *C. pumilio (ti-rauriki)*—probably had their leaves used on occasion for the same purposes as *C. australis.*

Astelia Cunninghamii (Wharawhara, Kowharawhara).—This species is abundant throughout the woods of the North Island and part of the South. It is densely tufted, and grows on the ground or is epiphytic on trees. The leaves are numerous, 2 ft. to 5 ft. long, ½ in. to 1 in. broad at the middle, drawn out to a point, contracted below and widening out at the sheathing base. They are rigid, thick, leathery, and with silky midrib and margins, the latter being recurved. The leaves were used by sojourners in the forest for temporary baskets for food, or even as mats to cover the food whilst cooking in the *umu,* or oven.

Astelia Banksii (Wharawhara, Kowharawhara, Puwharawhara).—This species has a longer and broader leaf than *Astelia Cunninghamii*, 2 ft. to 6 ft. long and ½ in. to 1½ in. broad. It has not such a wide distribution, being limited to the North Island as far south as Hawke's Bay and Taranaki, and

growing usually near the coast. The leaves are used for the same purpose as those of the previous species; and, though this one does not come within the region of the Whanganui people, owing to similar Maori names being used it is included here for completeness. There is no doubt that other species of *Astelia* would be used for temporary purposes where more suitable material was lacking.

Rhopalostylis sapida (New Zealand Palm; *Nikau*).—The *nikau* is abundant throughout the North Island forests, and is found in parts of the South Island. The stem grows from 10 ft. to 25 ft. high. The leaves grow in a terminal crown, are pinnately divided, and are from 4 ft. to 8 ft. long. The midrib is stout and the leaflets very numerous, 2 ft. to 3 ft. long or more, and 1 in. to 2 in. broad. The most primitive kind of basket was made from the leaf, similar to those made in the Pacific from the leaf of the coconut-palm.

Hierochloe redolens (Karetu).—The *karetu* is an erect sweet-scented grass, which grew abundantly in moist places throughout both Islands, but has become scarce in many parts owing to cattle and stock. The leaves are numerous, from 1½ ft. to about 3 ft. in length, and ¼ in. to ½ in. in breadth. They are flat, smooth, deeply striate, and a bright shining green. The leaves were used in making belts.

Carex lucida and *Carex comans (Maurea).*—These perennial herbs are found in both Islands, and are both called *maurea* by the Maori. *C. lucida* has numerous leaves, spreading or drooping at the tips, narrow (1/15 in. to ⅛ in. broad), keeled, and with margins and keel slightly rough. The length of leaf is up to 2 ft. *C. comans* has shorter and narrower leaves, 18 in. long and 1/30 in. to 1/15 in. broad. They are flat and concave in front, slightly rounded at the back, grooved and striate, with slightly rough edges. *Maurea* leaves when dry have a reddish-yellow colour, and are used in women's belts.

Hoheria populnea (Ribbonwood, or Lacebark; *Houhi, Whauwhi, Houhere*).—The *houhi* is a tree 10 ft. to 30 ft. high, growing in both Islands. The inner bark splits readily into strips, which are used in plaiting baskets, bands, kilts, &c.

PREPARATION OF MATERIAL.

Owing to the nature of the material, the Maori were saved much preliminary labour that is entailed where bark, wood, and roots are used. For dividing the leaves into strips and otherwise preparing them the only implement necessary was a shell. The shells used were those of the sea-mussel, *kuku* (*Mytilus edulis*); the fresh-water mussel, *kakahi* (*Diplodon lutulentus*); and the mutton-fish, *paua* (*Haliotis*). Taking the preparation of the *Phormium tenax* as typical, the processes of preparing the strips differed according to the kind of weft required. The kinds of wefts used were (1) natural wefts, (2) white wefts, and (3) dyed wefts.

(1.) *Natural Wefts.*—By "natural" wefts we mean that, beyond splitting the leaf into strips and getting them ready for plaiting, nothing was done to alter the natural appearance of the material. In preparing these natural wefts from a blade of flax, three stages were recognized: (*a*) splitting the blade into even strips; (*b*) removal of the strips from the butt; and (*c*) scraping the butt ends of the strips. With a sufficient number of blades to complete the task, the craftswoman completed each stage before passing on to the next.

(*a.*) Splitting the blade into strips (*toetoe*): The margins and midrib of the leaf, with the red or orange line bordering them, were first split off with

the thumb-nail. This waste material was termed *kaikaha.* The two half-blades, freed by the removal of the midrib, were held together with the left hand whilst the right thumb-nail split them into even widths, of $\frac{3}{8}$ in. to $\frac{1}{4}$ in. for baskets, and somewhat wider for mats. As the thumb-nail worked across the blade from right to left the right forefinger and middle finger followed through the openings made and separated the alternate divisions. Holding the butt end of the blade with the left hand, the right fingers were simply drawn along the blade to the tip and completely separated all the divisions. Holding the mid-part of the blade with the freed right hand, the fingers of the left hand were slipped between the divisions and ran them down to the butt-junction. As each blade was dealt with it was laid down neatly on the left of the worker with the butt end towards her. Wonderful accuracy was displayed in maintaining the even widths of the strips throughout. At Koriniti, during a display of plaiting by the older women, some girls joined in preparing the strips. Later on, whilst plaiting the baskets, the women expressed great disgust at the uneven strips preventing neat work, and took it as a sign that the art of plaiting would soon die out.

(*b.*) Removal of the strips from the butt (*takirikiri*): The object here is not only completely to separate the strips, but to remove as little of the butt with them as possible. Owing to the flax of the butt being thicker, stiffer, and narrower, its inclusion in the strip would result in uneven wefts, and cause harder work in manipulating them. The butt near the butt-junction was clasped firmly in the left hand, fingers at the back, thumb in front. The strips are in two rows, one above the other, corresponding to the two half-blades. The right upper strip was seized with the right hand and bent back along the line of the butt; the left thumb was pressed firmly on its junction with the butt, and creased it transversely. Keeping the firm pressure of palm and thumb, the strip was torn off with a quick, sharp pull of the right hand. The right lower strip was then turned back, creased and held against the butt by the left forefinger, and torn off. The remaining strips were treated in a similar way, working from the right and taking the upper and lower strips in turn. It is the quick, sharp pull that gives the name of *takirikiri* to this stage. Each removed strip has a tuft of fibre at the end which was torn from the butt. The strips were kept in the right hand until the blade had been finished, when the separated butt was cast aside and the strips laid down in a neat heap with the tufted ends towards the worker. The secret of this simple process consists in keeping the blade held tightly and pressing down firmly on the strip-junction. If held loosely the strip will run out to the end of the butt. My first efforts were the cause of much amusement to my instructresses.

(*c.*) Scraping the butt ends of the strips (*kaku*): Each strip was taken individually, and the tuft of fibre at the butt end scraped with one of the kinds of shell mentioned above, to remove the non-fibrous material, or *tutae.* It will thus be realized that one of the objects in doing the previous stage neatly is to leave as little scraping as possible to be done in this stage. Where too much butt has been removed, extra time and work are involved in scraping it off. The shell is held with its outer surface towards the body, and, in scraping, the movement of the hand with the shell is away from the body. The scraping of the ends in this manner to remove the epidermis and interfibrous matter gives the exact meaning of *kaku.* The scraped tuft of fibre will be referred to as the "butt-tuft."

The strips having been treated in this way are ready for plaiting into the ordinary mats and baskets for common use. When they become dry they become stiffer, and the colour changes to brown. The two surfaces have a different shade, whilst that corresponding to the anterior (or inner) surface of the leaf maintains its smoother appearance.

(2.) *White Wefts.*—The term " white wefts " is used because the natural wefts are put through a further process to render them as white as possible. Here again the process may be divided into three stages, as follows :—

(*a.*) Treatment with hot water : In these days the rough wefts are boiled for a few minutes in a large pot or a kerosene-tin. In olden days the water was heated in a wooden vessel (*kumete*) by dropping in red-hot stones. The heat softens the strips and helps to get rid of the green colouring-matter in the leaf.

(*b.*) Light scraping (*piahu*) : On removal from the hot water the strips are scraped along their whole length on both sides. Shells were used, but blunt knives are now more in favour. The scraping is done lightly, so as not to cut down on the fibre. A certain amount of epidermis and colouring-matter is removed, and the strips rendered softer and more pliable. The light scraping is accomplished by drawing the strip with the left hand back towards the body against the lower edge of the shell. The term *piahu* as sometimes loosely applied to the *kaku* process is incorrect. As each strip is done it is laid down on a heap with the butt-tuft towards the worker.

(*c.*) Drying (*whakamaroke*) : The scraped strips are gathered up in small bundles, the tufted ends are tied together, and the bundles straddled over a line to dry. When dry they assume a whiter appearance. The surface corresponding to the anterior surface in the leaf has a whiter colour than the back, and maintains its smoother appearance. They are softer and easier to manipulate than the rough wefts. *Kiekie* strips are treated in this manner, and become whiter than flax. The bundles of white wefts, when dry, are often beaten against the ground or a stone to render them softer and more pliable.

For the best class of floor-mats the butt-tufts were not necessary. In preparing the wefts for them the *takirikiri* and *kaku* stages of the rough weft were omitted. After slitting the leaf down to the butt-junction the butt was cut off short, leaving a short piece of undivided butt linking the divisions of a half-blade together. In some cases, perhaps two or four strips were left united. These were then boiled, lightly scraped, and dried, and became white wefts without butt-tufts.

White wefts were used in plaiting the better class of floor-mats and baskets, burden-carriers, and some varieties of belts.

(3.) *Dyed Wefts.*—The dyeing process is continued on from the last. Though red, yellow, and black dyes are used with prepared fibre for weaving cloaks, so far as I know black was the only dye used originally in plaiting. Colenso, however, mentions that a blue-black, obtained from the bark of the *tutu* (*Coriaria ruscifolia*), was used in graceful little baskets for a beloved child. Yellow was obtained from the natural colour of the *pingao* (*Scirpus frondosus*). In these degenerate days European dyes of any shade are used. The stages in dyeing are as follows :—

(*a.*) Treatment with a mordant (*waitumu*) : A mordant to fix the dye was prepared from the bark of the *hinau* (*Eleocarpus dentatus*). The bark was pounded on a flat stone with a beater and mixed with cold water in a wooden bowl (*kumete*). The white wefts were soaked in this infusion for about twelve hours and then hung up to dry. Besides *hinau*, the leaves

of the *tutu* were used as an infusion. On drying, the strips were much darkened in colour.

(*b.*) Black dye (*parapara*): The black colour is obtained by treating the dried strips with the black mud (*parapara*) from peaty swamps. The strips may be rubbed with the mud or, what is more usual, the material is pushed down into the mud in the swamp and left there for eight or ten hours. On removal the wefts have assumed a deep-black colour which is very fast. The best mud is in those swamps where a red rust is collected from the surface for obtaining the red ochre so much prized by the ancient Maori for decorative purposes. If the infusion is poured on the mud it turns an intense black, like ink. It is therefore probable that the black colour is caused by a chemical combination between the tannic acid in the mordant and an iron salt in the mud. It is interesting here to note that the Samoans obtained a black colour by burying the articles in the soft mud of a *taro* patch formed in a swamp. Without the mordant the black colour of Maori articles soon faded. The strips on removal from the mud were washed and dried.

The dyed wefts were used in the coloured designs in mats, baskets, and belts. The neat baskets made from the *Cordyline australis* were often dyed black by putting the completed basket into the mud.

Scirpus lacustris (Paopao, or *Kutakuta).*—The full-grown stems of new growth immediately after cutting are spread out and covered with old mats. The cylindrical stems are thus flattened out, *pararahi.* They are usually left covered for three days, but are frequently inspected and turned so as to obtain an even shade of colour. They turn brownish-red. They are then hung up to dry, and when quite dry are plaited into floor-mats. This material is softer than flax or *kiekie.*

Manufacture of Material.

The prepared strips of material as they are being plaited into articles are termed "wefts." My experience in seeking for the Whanganui word for "weft" is interesting, and instructive in view of the difficulties that must beset the ethnologist seeking for information in an unknown or little-known language. In my case, Maori is my mother-tongue. I picked up a strip of flax (*harakeke*), and in our own mutual language asked my instructress, "What is the name of this?" "*Harakeke,*" she replied. "Yes," I said, "it is *harakeke,* flax. When the plant is growing it is *harakeke;* when a blade is cut from the bush it is *harakeke;* but when you have split the blade into narrow widths, stripped the widths from the butt and scraped the butt-ends, what is the strip?" "*Harakeke,*" she replied. "Quite so," I said, "the material is still *harakeke;* but is there no name to distinguish between the prepared strip and the full blade of flax?" "No," she replied, "it is *harakeke.*" "Let us suppose," I said, "that you wanted me to pass you some of these strips to plait a mat, what would you say?" "Pass me that *harakeke,*" she replied patiently. "Let us suppose that you are instructing me in plaiting a mat. We have started off with a check pattern and you now want me to change to a twilled two. You tell me, instead of picking up alternate ones with the left hand, to pick up alternate twos. Two what?" I asked triumphantly. "Two *harakeke,*" she replied serenely. "Then," I said disappointedly, "there is no special word?" "No," she said convincingly, "they are just *harakeke.*" I turned to a European friend and said in English, "We can note down that the Whanganui Tribe has no special word for 'weft.'" In the evening

the same lady was instructing me how to finish off the top border of a mat. I had found, as others have found, that plaiting cannot be properly described unless one actually learns how to do it. In the finishing process, on turning back the wrong weft, my instructress called out, "No, not that one; turn back the left *whenu*." "The left what?" I asked. "The left *whenu*," she replied without hesitation. "What is a *whenu?*" I asked with suppressed excitement. "A *whenu*," she explained placidly, "is a strip of *harakeke* used in plaiting." "I thought," I remarked, "that the *whenu* is the warp used in weaving." "So it is," she said; "the warp of dressed fibre used in weaving cloaks and the strip of *harakeke* used in plaiting mats and baskets are both called *whenu*." "Are you sure?" I asked. She turned her tattooed face towards me with an indulgent smile and gently replied, "Have I not said it? Do you doubt my word?" "No," I hastened to say, "but two hours ago you told me there was no such word." "Ah," she said, with the faintest tinge of embarrassment in her smile, "we think so much about European matters in these days that the old Maori words sometimes elude us for the moment. The strip of prepared *harakeke* is called *whenu*." I turned to my European friend and said, "We will cross out our previous note, and write instead thereof, 'The Whanganui Tribe *has* a special word for weft, and it is *whenu*.'"

The methods of beginning and finishing will be described under the various articles.

The strokes used come under the headings of checker-work and twilled work.

Checker-work, as defined, consists in each weft passing alternately over and under each consecutive crossing weft. This plait is termed *takitahi* (singly). When the butt ends of the wefts have been fixed in a straight line the wefts lie parallel to one another. Adjacent wefts are now crossed diagonally over each other so that alternate wefts lie in the same direction. Those leaning towards the right are called "dextral" wefts, and those towards the left "sinistral." The plaiting of the wefts is not done singly, but in a series. Alternate dextral wefts are lifted up with the left hand, and the right hand picks up and slips the appropriate sinistral weft along the space between the dextral wefts that are held up and those that are lying flat. The dextral wefts that were lifted up are now dropped and those that were lying flat are picked up in their turn. The next sinistral weft is now passed between. In this way a series of alternate dextral wefts pass above one sinistral and then below the next, whilst the series of alternate dextrals that passed below the first sinistral now passes above the second. This results in checker-work as defined above. The process may be compared to weaving. The dextral wefts correspond to the warps, which are separated in series of alternate threads, whilst the sinistral weft corresponds to the weaving weft which passes through on the bobbin. In weaving, however, the weft works across parallel to the straight edge lying transversely in front of the weaver. In plaiting, whilst the straight edge of a mat, for example, lies transversely in front of the plaiter, the wefts lie diagonally. To meet this the plaiter commences her work on the left. In fig. 1 the dextral wefts are shown plain and lettered D, whilst the sinistrals are shaded and lettered S. The dextrals are crossed over the sinistrals at the beginning, and this initial crossing is not counted in the following description. The first sinistral after passing under the first dextral is bent back into the body of the mat and becomes a dextral. This bend, being vertically above the end of the mat, is the commencement of the left border of the mat.

Sinistral 2, after passing under dextral 2, passes between two dextrals and, coming into the vertical line of the left border, is bent back into the body to become a dextral. S3 passes between four dextrals and S4 between six before being turned back. S5 passes between eight dextrals, and, this being a usual width for plaiting, it is not necessary to turn it back for the present. Working with eight dextrals, picking up four and dropping four, the plaiter works towards the right across the article with the diagonal edge shown. As each sinistral weft is placed between the alternating fours, a fresh dextral is picked up below and the top dextral of the previous series left out. Thus she keeps to the eight dextrals throughout the width of the article, and the last row plaited is parallel with the lower edge of the mat. When the right edge of the article is reached, the dextral wefts which project beyond it are turned back into the body of the mat, as on the left, and become sinistrals.

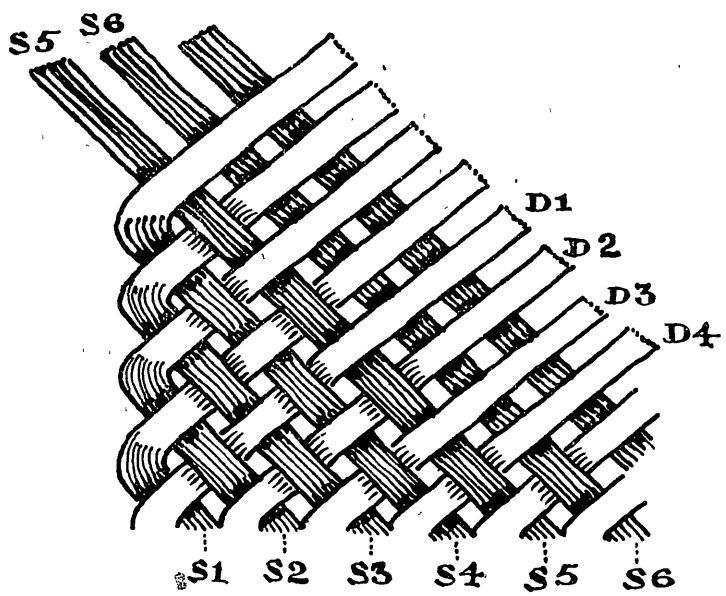


FIG. 1.—Commencement of weaving a *taka* mat, showing arrangement of dextral and sinistral wefts.

Another series is now commenced from the left, and so by successive widths, with an advancing diagonal edge, the body of the article is completed. Whilst plaiting, the dextrals that have just been done with are looped back out of the way, so as not to get their free ends mixed up with the sinistrals. On completion of the strip of plaiting the dextrals are allowed to fall back into their natural position. Thus on commencing a fresh strip of plaiting the dextrals and sinistrals are in two distinct layers, the dextrals being above. The upper layer of dextrals, as we have seen, is first dealt with by the left hand separating a number of wefts, and from the under layer of sinistrals the right hand then picks up one weft and places it in position. Thus the keeping of the two layers distinct renders the work much easier and avoids confusion. Plate 78, fig. 2, shows the lower layer of sinistrals, the dextrals finished with looped over on the left, and those to be dealt with in their normal position on the right. The first completed strip of

plaiting and the advancing diagonal edge of the second strip are shown very clearly. Although the plait figured is a twilled two, except for the actual stroke used it illustrates checker-work equally well.

Checker-work is usually done on the rougher articles, such as small baskets for cooked food, baskets, and sometimes mats, made from the rough wefts.

Twilled work is distinguished as "twilled twos" or "twilled threes," &c., according as each weft passes over or under two or three, &c., crossing wefts. A twilled two is a very favourite plait. This stroke is commonly known as a *rangarua* (two-plait). The Whanganui people have different names according as the lines of the pattern are horizontal (*pae*) or vertical (*tu*). The names *pae* and *tu* simply mean horizontal and vertical, but are only applied to twilled twos. Anything more than a two, such as twilled threes, &c., are called *hora* (spread out). These are usually introduced into the coloured designs, but a row or rows of threes are sometimes worked on floor-mats and the better baskets.

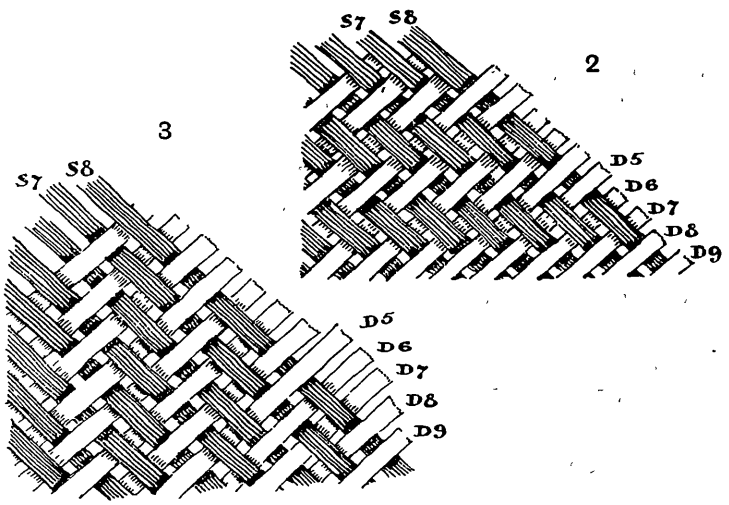


FIG. 2.—Twilled twos, horizontal.
FIG. 3.—Twilled twos, vertical.

The technique of twilled work is similar to that of checker-work, except, of course, that the left hand picks up alternate twos or threes, &c., of dextrals whilst the one sinistral is placed through as above. As the work progresses, the plaiting-in of each sinistral adds another dextral and necessitates a rearrangement of the dextral series. In a horizontal twilled two the upper dextrals of the previous series passing over the sinistrals are dropped and the upper of those passing under are picked up. The lower dextrals in each case are carried on. Referring to fig. 2, mark the course of the sinistral S7. The dextrals D8 and D7 pass over it, and D6 and D5 pass under it. In preparing for the next sinistral, S8, another dextral, D9, has come in from below. D9 and D8 are lifted so as to pass over S8, and this causes D7, which was the upper of the previous pair, to be dropped so as to maintain the twilled two. Thus the previous under-pair, D6 and D5, are added to from below, and the upper D5 must be picked up to prevent a three. This is carried on throughout. The skilled plaiters carry

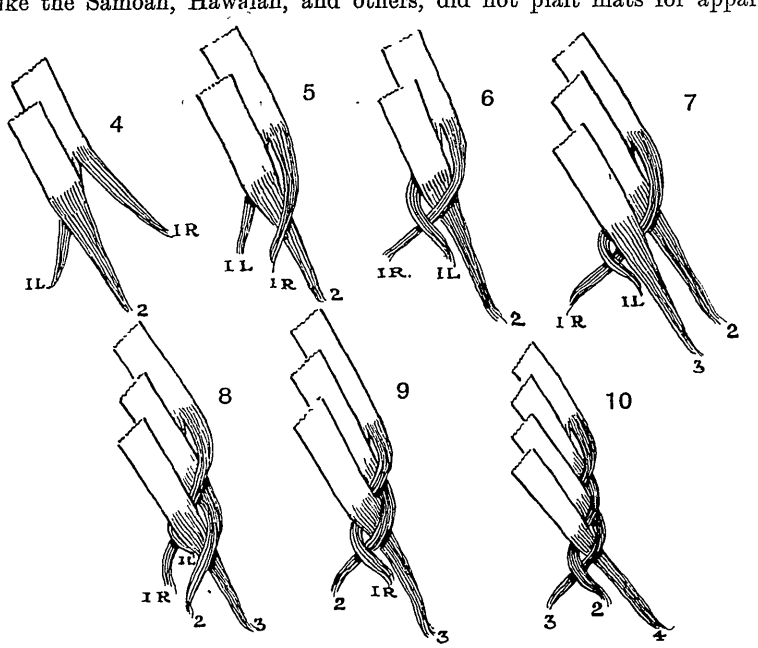
on mechanically, and can pick up and drop the right dextrals by the sense of touch. In the vertical twilled two, instead of the upper dextral of each pair being changed, it is the *lower*. In fig. 3, follow the course of the sinistral S7 : the dextrals D8 and D7 pass under and D6 and D5 pass over it. For the next sinistral, S8, the lower of the previous pair passing under D8 is picked up, and the upper, D7, is carried on. The lower of the pair passing over, D6, is dropped to join D7. D5, the upper of the pair, is kept up, and will be joined by the lower of the next pair being picked up. Thus, in plaiting, the automatic picking up and dropping of the lower or upper of each pair of dextrals works a vertical or horizontal twilled two with absolute exactness.

Both in mats and baskets it is usual to commence with a horizontal twilled two. Later on the stroke may be changed to the vertical. A variety of designs can be obtained by plaiting alternate widths of horizontal and vertical patterns, and even alternating with checker-work.

Articles manufactured.

(1.) *Mats.*

The term "mats" is here confined to plaited articles for sitting or sleeping upon, and coverings used for domestic purposes. The Maori, unlike the Samoan, Hawaian, and others, did not plait mats for apparel.



Figs. 4–10.—Method (*a*) of commencing the twist, or plait, *whiri*.

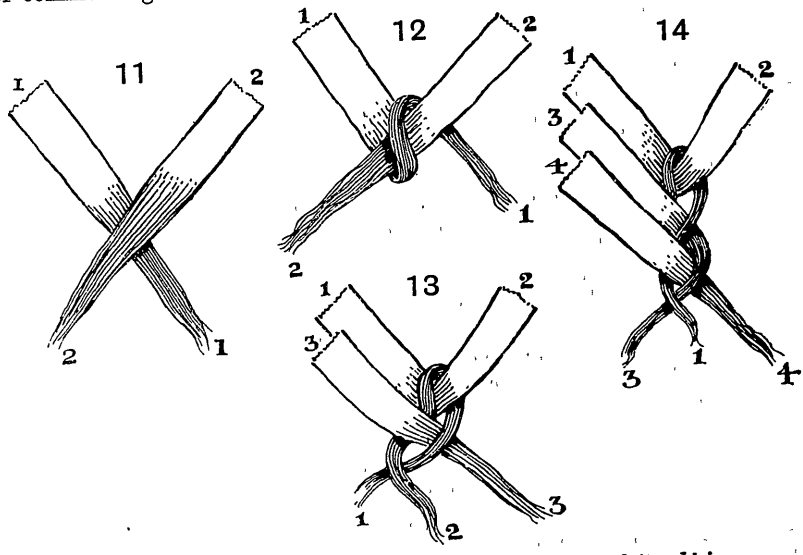
The word "mat" has often been applied to cloaks and capes. This use of the word is to be strongly deprecated, as those articles of clothing were woven from prepared flax-fibre. It would be just as reasonable for a Maori to call a tweed coat a piece of linoleum.

Floor-mats come under the general term *whariki*. *Whariki* means anything spread on the ground or floor; and it includes, nowadays,

anything from leaves or fern to a Persian carpet. Floor-mats consist of two kinds—the rough, quickly made mats for everyday use, and the better-class sleeping-mat, usually with designs plaited in with coloured wefts.

Ordinary Floor-mats (*Taka*).—These mats have a variety of names according to district, such as *pokipoki*, *tamata*, *hipora*, &c. They are made from the natural wefts of the *Phormium tenax*. The length is usually 6 ft. or more, so as to prove sufficiently long for the reclining figure, whilst the width varies from 2 ft. to 4 ft. according to the length of flax-blades from which the wefts have been prepared.

The beginning consists of plaiting the butt-tufts of the wefts together with a three-ply plait until the required length of 6 ft. or so is reached. This stage is called *whiri* ("twist," or "plait"). There are three ways of commencing the *whiri*.



FIGS. 11–14.—Method (*b*) of commencing the twist, or plait, *whiri*.

(*a*.) The first weft has its butt-tuft split and diverged into two equal parts. The second weft is placed parallel with the first, overlapping its left edge and crossing the left half of its divided butt-tuft. Reference to the figures shows that there are now three tufts of fibre which form the basis for the three-ply plait. The right tuft (1R) is twisted over the middle tuft (2), and then the left tuft (1L) is twisted over it to the middle position (fig. 6). A third weft is overlapped along weft 2, as in fig. 7. The plaiting is repeated as before. It will be noted that the butt-tuft of the new weft is in the middle with the end of the previous middle tuft (1L), and they are treated as one element in the three-ply plaiting. The right tuft (2) is twisted over to the middle (fig. 8), and then the left tuft (1R) is twisted over it to take up the middle position (fig. 9). The addition of weft 4 and the right and left twists results in fig. 10. Wefts are added singly in this manner until the required length is reached, when the fibrous tufts are continued on in a three-ply plait and tied in a knot. To get a closer plait in the body of the mat, double wefts are plaited in every here and there along the course of the *whiri*.

(*b.*) In the above method of commencement there is a tendency for the first weft to split up from the division of the butt-tuft. To prevent this the basket beginning is used. The first weft is not divided at its butt-tuft. The second weft is crossed over it (fig. 11). The butt-tuft of weft 1 is twisted over weft 2 and carried down behind it to the right (fig. 12). A third weft is added by overlapping it along weft 1. We have now our three elements for the three-ply plait. To fix the commencement firmly, the right tuft 1 is twisted over tuft 3 to the middle, and then the left tuft twisted over it to occupy the middle position, as in figs. 13 and 14. From now on, the procedure of method (*a*) is carried on. Each additional weft overlaps the preceding one on the left, and its butt-tuft merges with the one occupying the middle position. On completion, the second weft, which sticks out from the line of the others, is simply bent into the same line on commencing plaiting the body of the mat.

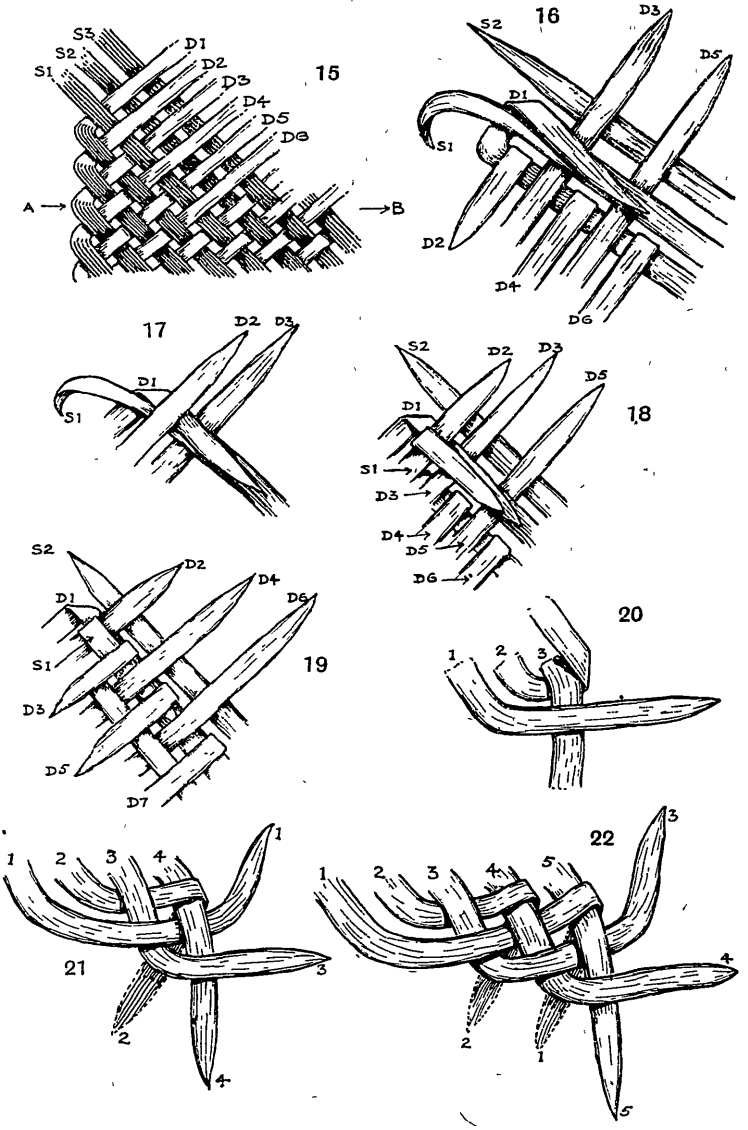
(*c.*) The third commencement is seen in the *tapora* mats for covering food in the cooking-ovens. In this a three-ply cord is commenced with ordinary strips of flax, and then the butt-tufts of the wefts are plaited in on the left side, as in the usual *whiri*. In the case of the *tapora* a cord long enough to form a loop for hanging up is plaited, but in the ordinary floor-mat just enough is plaited to fix the commencement ere including the wefts. During the progress of the *whiri* the butt ends of the wefts are held in position by the left hand, whilst the right hand adds the fresh wefts and twists the butt-tufts into position.

The body of the mat is usually plaited with a twilled-two stroke in horizontal or vertical lines; and combinations of the two are used. The check stroke may be used entirely or in combinations with twilled twos. As pointed out already, the side edges are defined by turning in the projecting sinistral wefts on the left and the dextrals on the right. In turning in the wefts they are merely bent so that the same surface is kept uppermost. The surfaces of the wefts corresponding to the inner or upper surface of the plant-leaf are kept uppermost on the body of the mat, so that the better colour and smoother surface of the completed mat will show when in use. A twisted turn at the edges would expose the different shade of the under-surface and give an ugly mixed appearance to the completed article. When the body of the mat is of the requisite width the plaiter makes sure that the upper edge finishes on the same parallel of strokes from side to side.

The finish in these mats is the process called *tapiki* by most tribes, but *kopetipeti* by the Whanganui. The mat is turned over so that the finish may not be seen on the upper surface. As mentioned in describing the technique of checker-work, the dextral wefts form the upper layer and the sinistrals the lower. On turning the mat, the sinistrals form the upper layer, but they now lean towards the right, whilst the lower layer of dextrals lean towards the left. To avoid confusion it is better to refer to the wefts in their altered position according to the direction in which they lean. Thus the upper layer becomes dextral and the lower sinistral.

The finish is carried out by plaiting a width from the left with the usual diagonal advancing edge of about six dextrals. The edge of the upper border is formed by turning back the dextrals and sinistrals into the body of the mat by twisting and doubling them along the course of the sinistrals, and keeping them in position by plaiting the other dextrals of the series of six over and under them in the usual way. In fig. 15 the line AB denotes the line of completed plaiting for the full length of a mat done with a check

stroke. The left edge has been continued until there are six dextrals above the completed edge. The left projecting sinistral is marked S1. The problem is to turn the left sinistral, S1, and the left dextral, D1, back into the body of the mat along the course of S1 and fix them in position by



FIGS. 15–19.—Method of finishing edge of mat.
FIGS. 20–22.—Method of making the secure *hiki* finish.

the ordinary plaiting of the dextrals. It will be noted that D1 passes *under* S1. The alternative dextrals, D2, D4, and D6, which pass over S1, are lifted with the left hand, and in fig. 16 are turned back to make the

process clear. The upper border is commenced by twisting over the first dextral, D1, at right angles to its own course, and laying it along the course of S1. In this turn the weft is twisted over so as to expose its other surface, whereas in the side borders the wefts are bent into the body without changing its surface. D1 is now fixed down by dropping D2 across it in its normal course (fig. 17).

The turning of the mat-edge is completed, for this series, by doubling back S1 over D2 to lie over the turned-back portion of D1 and along its own course (fig. 18). The remainder of the dextral series are dealt with in the ordinary manner. The under-wefts (D3 and D5) are picked up, and the over-wefts (D4 and D6) pressed down over the course of S1. Thus in the new combination D2, D4, and D6 are down, whilst D3 and D5 are turned back; and to complete the series of six a fresh dextral (D7) is picked up (fig. 19). We perceive that the first dextral and sinistral on the left have been disposed of, and the process of plaiting has opened up a fresh series of alternate dextrals for the next sinistral. S2 is now placed in position between them, and by carrying on as above the next two wefts on the left, D2 and S2, are disposed of. So it is continued to the right edge.

Where the wefts are long and project beyond the lowest crossing dextral the ends are cut off. At the right corner the weft-ends which cannot be doubled back are plaited into a three-ply braid and knotted against the edge.

In the *taka* type of mat the *kopetipeti* finish is usually quite enough. Some of these mats, however, are made much better by having the wefts lightly scraped. To some of them, as well as to the best-class mats, the additional finish called *hiki* is applied.

The *hiki* finish is used after the *kopetipeti* finish to make doubly secure the weft-ends and prevent the edge unravelling. Thus the weft-ends have to be sufficiently long to permit of their being plaited in a three-ply plait. By dropping one weft as a new weft is picked up, the actual elements plaited consist of three throughout.

The plait commences from the left. It will be remembered that in the *kopetipeti* finish the weft-ends are in twos, a dextral and a sinistral being together. These pairs are treated and numbered as single wefts. Take the first three wefts on the end, numbering from the left. Proceed as in ordinary three-ply plaiting. The right weft (3) is brought over the middle one (2) and then the left weft (1) is brought over it to occupy the middle position (fig. 20).

From now on, as each new weft is taken up, the old weft on the right is discarded. This discard is accomplished by turning it back first of all to allow the new weft to be brought down over the middle one, and then as a last movement twisting it over the base of the new weft and pushing it under and to the left, where it is kept by the ring and little fingers of the left hand. Applying these principles in fig. 21, a new weft (4) is drawn over the middle weft (1), and the left weft (3) is drawn over it to occupy the middle position. The old right weft (2) is twisted over the base of the new weft (4) and pushed to the back and the left, where it is discarded. The new series consists of 3 in the middle, 4 on the left, and 1 on the right. The weft on the right (1) is pushed back to allow the new weft (5) to be brought down over the middle weft (3). The left weft (4) is brought over 5 to the middle position, whilst the old right weft (1) is twisted over the base of the new weft (5) and discarded, as seen in fig. 22. By continuing in this manner and exercising enough pressure to tighten the wefts, the *hiki* finish is carried across to the right edge and the upper border rendered secure,

[*J. McDonald, photo.*

FIG. 1.—A completed *kono*, or food-basket. The young woman, seated on *taka* mat, with *Phormium tenax* at her back.

[*J. McDonald, photo.*

FIG. 2.—*Taka* mat in twilled twos. Shows two layers of wefts and diagonal working edge—lower layer of sinistrals, dextrals finished with looped over to left, and those to be dealt with in normal position on right. Note position of left foot, which steadies the work.

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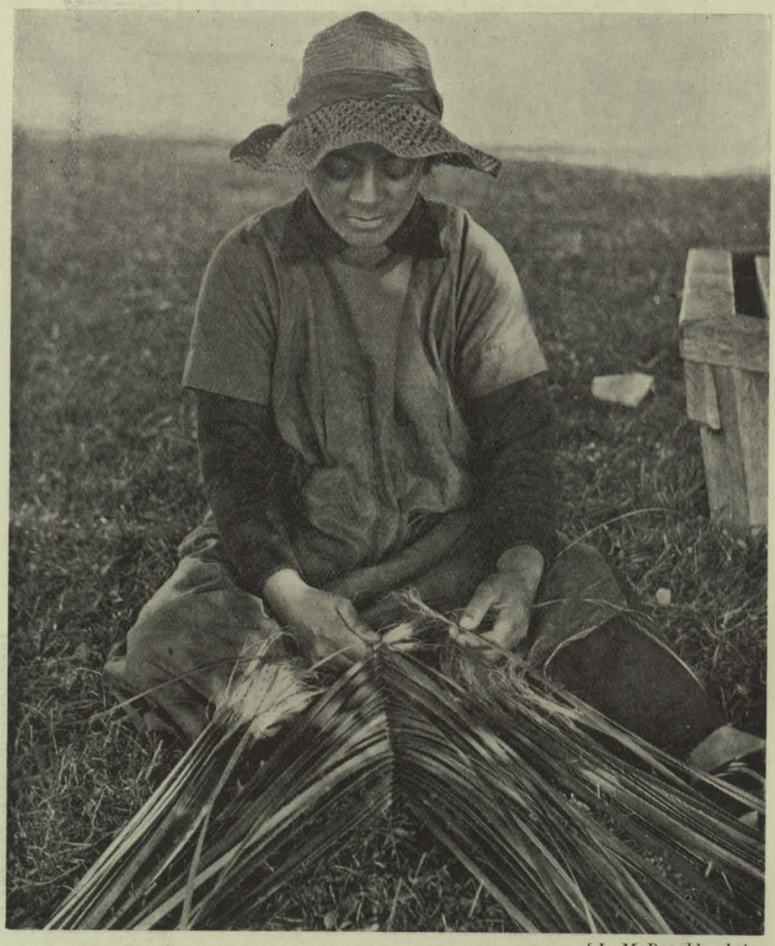
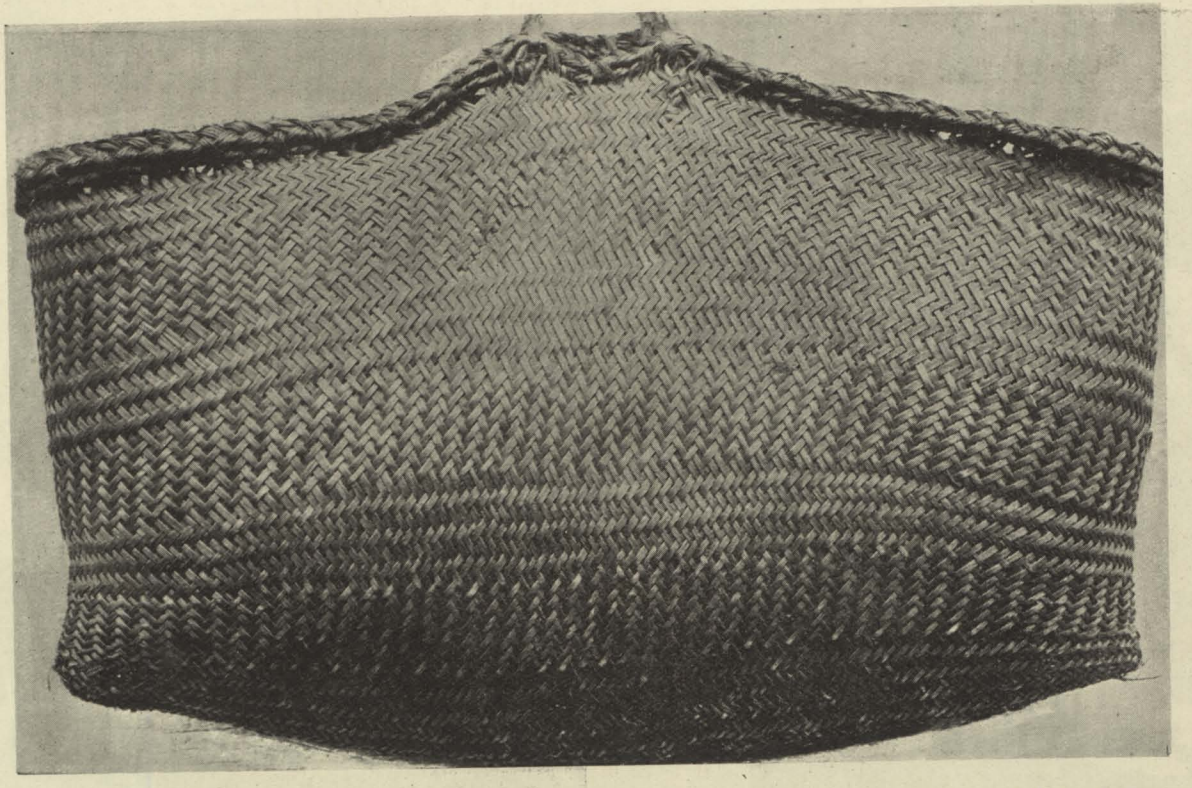


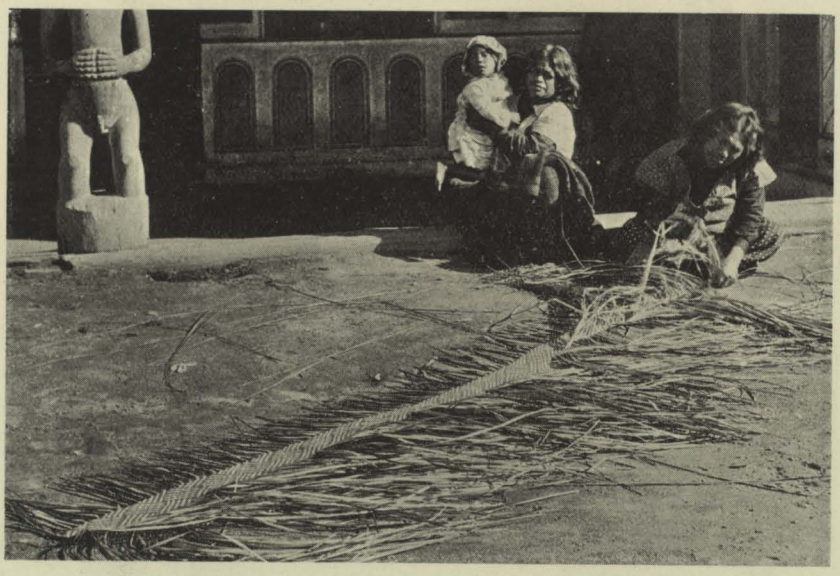
[*J. McDonald, photo.*

Laying the keel of *kete*, or satchel-basket.



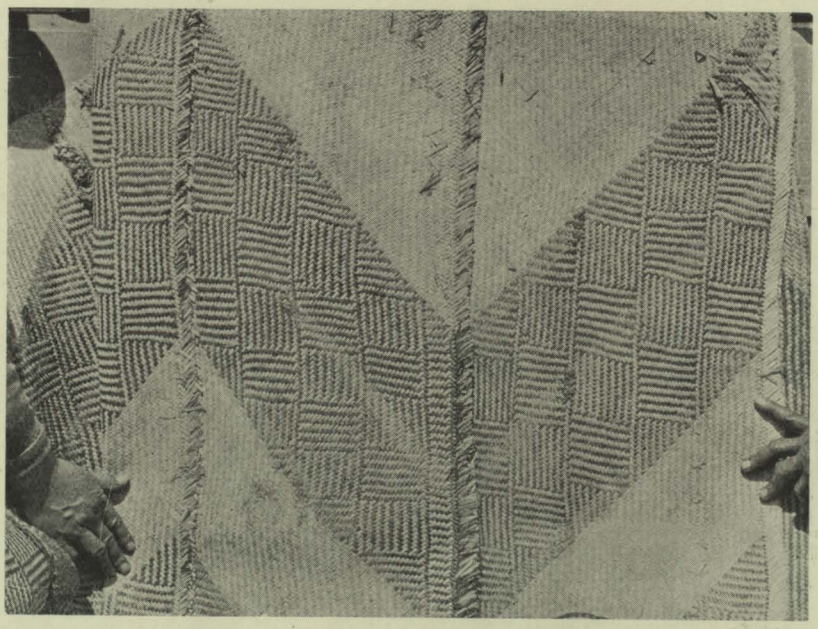
[*J. McDonald, photo.*

A completed *kete*. Shows horizontal and vertical lines of twilled twos and three-ply upper border; also shows greater depth at middle than at ends.



[*J. McDonald, photo.*

FIG. 1.—*Porera* mat, in check. Shows undivided butt-pieces carrying two wefts.



[*J. McDonald, photo.*

FIG. 2.—*Porera* mat, showing two *whara* divisions and three joins. It has been folded under on left where held by hand.

the loose projecting ends being finally cut off. Owing to the narrowing of the flax-blade towards the butt-junction, the wefts partake of this narrowing. The part of the mat, therefore, near the three-ply-plait border made from the butt-tufts is more open than the rest of the mat. Though, in plaiting the mat, we have spoken of the "lower" and "upper" borders, when the completed mat is in use it is placed longways and these two borders become the sides.

A variety of mat for very rough use is made with very wide wefts, almost the full width of the half-blade of flax. Others, again, instead of having butt-tufts for plaiting the beginning, have three or four wefts united by a narrow strip of butt, and these undivided portions of butt form the edge. Another variety, owing to the flax-leaves being short, has two rows of wefts plaited on to the butt-tuft three-ply, beginning as in the basket beginning. The wefts on one side are then plaited in the usual way and finished with the *kopetipeti* ending. The wefts on the other side are then dealt with similarly. Thus we have a mat about 4 ft. wide with the three-ply plait of butt-tufts running down the middle.

The *tapora* mat is another variety. This mat is used to cover the food in the *umu* (cooking-oven) before the earth is heaped over it to seal up the steam. The wefts are lightly scraped (*piahu*), not to make them white but in order to remove some of the epidermis and colouring-matter, so as to prevent them imparting a bitter taste to the food. It is curious that this reason is assigned, as fish are often wrapped up in green flax and cooked in the embers without any taste being imparted to it. It may be that the steam of the *umu* draws out the bitterness of green flax more than the dry heat of the embers.

In the commencement of the beginning of the *tapora*, method (*c*) is used. A three-ply braid of sufficient length to make a loop is plaited, and the butt-tufts of the wefts plaited in as in the *taka*. The body is plaited in checker-work or twilled twos. In the finish, instead of the *kopetipeti*, a three-ply plait is used, as in the case of the ordinary basket. On the left a three-ply braid is plaited to form a loop, and then the wefts, both dextral and sinistral, are added in and plaited along the border until the right edge is reached. The extra length of wefts is carried on in a braid to form another loop. The length is shorter than the *taka*. Thus we have a mat like the *taka* but with a different finish, and with a loop at each corner for use as handles in picking the *tapora* off the hot food when cooked, and for hanging up in the cooking-house when not in use.

Finer mats, *Porera*, or *Tienga*.—The finer mats are made of white and dyed wefts of flax or *kiekie*, and *pingao* is used in the coloured designs. *Kiekie* mats are whiter than flax, and, if carefully looked after, last longer. If bent too sharply in rolling or folding, the wefts are apt to crack, and are then liable to wear into holes. These mats are used for sleeping upon, and all meeting-houses have a set as part of their furnishing. These are kept stored away; but when visitors come the floor is strewn with dried rushes or fern, rough mats placed over it, and then an upper covering of fine *porera* makes the reception-house worthy of both guests and hosts. On the East Coast these mats are called *takapau*. *Porera* are usually about 6 ft. 6 in. in length and 4 ft. 6 in. to 10 ft. or more in width. In some cases very wide mats are made for flooring the meeting-houses.

The beginning: Wefts for these mats do not have the butt ends scraped, therefore the *whiri* beginning of rough mats is inapplicable. The wefts, as previously mentioned, are left united at one end by the butt end of the

half-blade of flax being undivided. The wefts of one butt-piece are used as dextrals and the next as sinistrals, so that the beginning-edge consists of butt-pieces crossing each other, the alternate ones being in the same direction. The butt-pieces prevent the edge from coming loose as the plaiting proceeds. In rough mats quickly made this beginning-edge is sometimes used and left in the completed mat, but with the *porera* it is only temporary. Sometimes, where two wefts to a butt-piece are used throughout, the two wefts are diverged in opposite directions. In cases where the wefts are single, a row of them is laid down and two thin strips of flax are twined round the butt ends in a fitch to keep them in position temporarily for the plaiting. The beginning-edge is continued for the full length of the mat—that is, 6 ft. 6 in. (Plate 81, fig. 1.)

The body is usually plaited in twilled twos, but a check stroke is sometimes used, especially in a fairly common mat made with alternate black and white wefts. Owing to the limited length of the wefts the mat is plaited in narrow widths of from 14 in. to 18 in. (Plate 81, fig. 2.) A width is by some tribes called a *whara*, and by some a *papa*. A *whara* is plaited for the full length of the beginning-edge, and the wefts as they become free at either end are turned back into the body of the plaiting, as in the case of the *taka* mats. This forms edges at right angles to the beginning-edge, and will form sections of the upper and lower borders of the completed mat. Four *whara*, or sections, of 15 in. each make a convenient total width of 5 ft., but this width may be increased by adding more sections. Four *whara* require three joins.

The join is called a *hono* in some districts, and in some a *maunua*. The first *whara* has the weft-ends finished off by turning them back on the under-side in the *kopetipeti* finish described in *taka* mats. Still keeping the section with the under-side uppermost, the undivided butt portions of the beginning-edge are split with the thumb-nail into their component wefts. These free ends can now be joined to a fresh set of wefts necessary to form the next section. Joins are double (*hono rua*) or single (*hono tahi*). The double join is the older one in the Whanganui district, but the single join is more quickly made.

(*a.*) The single join: The first step is to reduplicate the dextral wefts by laying a fresh set along the course of the old set. They are kept in position by pushing the butt ends under two crossing sinistrals at the joining-edge. This is done along the entire edge except for a couple of inches at the left end. The butt ends of the fresh wefts project below the crossing sinistrals for 1 in. or so (fig. 23).

The dextrals are now in pairs, consisting of a newly added long weft and the short end of the old weft. The first movement in adding the fresh sinistrals is to turn back the first two pairs of dextrals on the left. A fresh sinistral is placed along the course of the old sinistral that is exposed. This old sinistral is picked up and drawn tightly along the upper surface of the fresh sinistral, and kept in position with the left thumb (fig. 24). The short weft of the first dextral pair is picked up, drawn taut, and with a quick half-turn bent down at right angles to lie along the course of the fresh sinistral (fig. 25). The long weft of the first dextral pair is then straightened back into its proper position, crossing over the pair of sinistrals (fig. 26). The short sinistral is turned back on its own course over the crossing long dextral (fig. 27). The second pair of dextrals is brought forward to straighten up matters, and then brought back again with a third pair of dextrals. This brings us to the position at the

commencement where there were two pairs of dextrals turned back. A fresh sinistral is added along the course of the next old sinistral, and

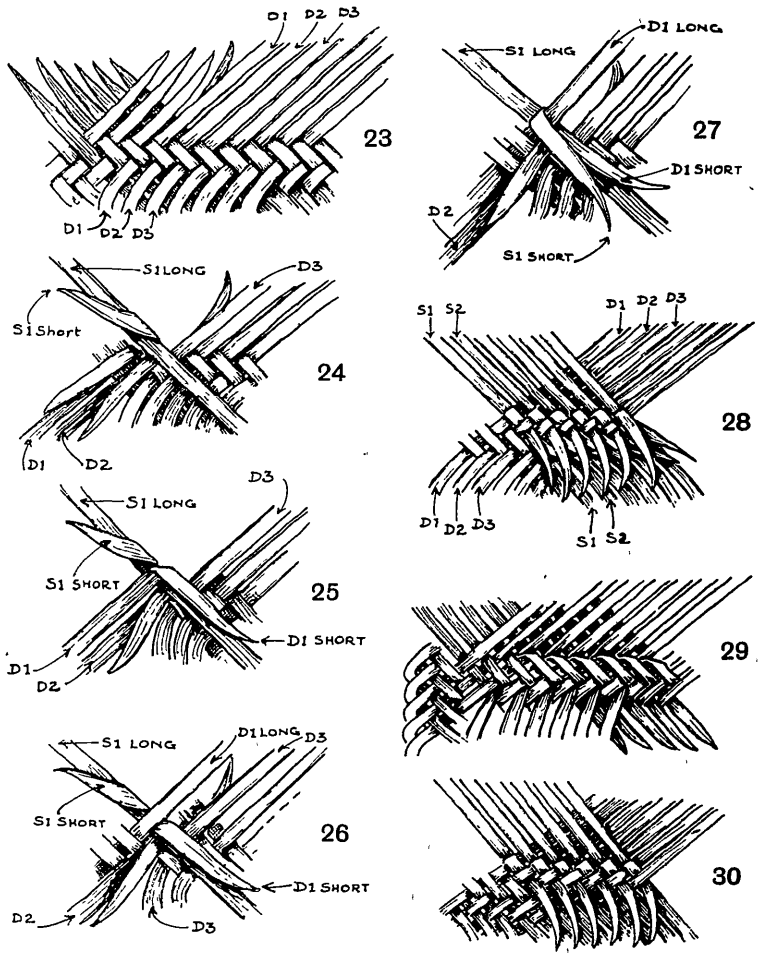


FIG. 23.—*Porera*, single join. Butt ends of fresh dextrals pushed under two crossing sinistrals, showing space on left where old dextrals are not reduplicated.

FIGS. 24–27.—*Porera*, single join. Steps in adding fresh sinistral.

FIG. 28.—*Porera*, single join. Section of completed join, showing fresh dextrals and sinistrals in position, and resulting fringe with under layer of dextral butt ends directed to left and upper triple layer of sinistral butt ends, and tips of old dextrals and sinistrals directed slanting to the right.

FIG. 29.—*Porera*, double join. First stage, showing addition of fresh set of dextrals, with resulting fringe composed of butt ends of fresh dextrals slanting to the left, and under layer of tip ends of old dextrals slanting to the right.

FIG. 30.—*Porera*, double join. Second stage, showing addition of fresh set of sinistrals, with resulting fringe of butt ends of fresh sinistrals below and tip ends of old sinistrals above, both slanting to the right.

the above process repeated. When the second long dextral is in position it effectually fixes down the ends of the first short dextral and the first short sinistral (fig. 28). This is continued throughout.

It is readily seen that the fresh dextrals were added by pushing the butt ends under two crossing sinistrals already plaited into position. The fresh sinistrals by the second part of the joining process are crossed by two dextrals; and thus the twilled-two stroke is maintained throughout the join. The continuation of the twilled-two plaiting keeps them all firmly in position. The short ends of the old dextrals and sinistrals are disposed of by turning them back and to the right. In the resulting fringe of weft-ends we have a layer of the butt ends of the fresh dextrals slanting towards the left, and above that a triple layer of the butt ends of the fresh sinistrals and the tip ends of the old dextrals and sinistrals slanting to the right. These ends are trimmed off evenly, but remain as a fringe on the under-surface of the mat. On the left end of the join the ordinary twilled plaiting is continued, and the side edge continued by bending back the sinistral wefts into the body. On plaiting forward for 2 in. or 3 in. it will be found that a number of dextral wefts on the extreme left that have not been replaced by fresh ones, together with unreplaced sinistrals that have been turned in from the left side edge to function as dextrals, are becoming short. These are now replaced with fresh dextrals, making a short join parallel with the main join and about 3 in. in front of it. It is called a *pahupahu*. At the right end of the join a similar *pahupahu* join is made for the sinistrals.

(*b.*) The double join: In the double join the dextrals are joined first in a separate row. The fresh dextrals are not pushed under the sinistrals, as in the single join, but are plaited in individually, whilst the short ends of the old dextrals are bent down and to the right, as in the single join, when they are cut off evenly (fig. 29). The first fringe will thus consist of an upper layer of the butt ends of the fresh dextrals slanting down to the left, and an under layer of the tip ends of the old dextrals slanting down to the right. The fresh dextrals and old sinistrals are plaited on for 1 in. to 1½ in., and the fresh sinistrals added in an exactly similar manner to the single join, except, of course, that there are no short dextrals to turn back. The short sinistrals are turned back and disposed of as before. In the resulting second fringe (fig. 30) the two layers of ends are both directed down towards the right, the upper being the tip ends of the old sinistrals and the other the butt ends of the fresh.

In the double join there are two rows of fringes, as against one in the single. Some tribes call the fringe a *hiki*, and thus call the double join a *hono* with two *hiki*. As before stated, the Whanganui people restrict the term *hiki* to the three-ply plait done to the weft-ends composing the fringe in order further to secure them.

(*c.*) Another method of joining was used by men in the North Island west-coast district. The weft-ends were plaited with a four-ply plait (*whiri tuamaka*); but this, owing to the ridge formed along the join, was not so comfortable to lie on in the pre-mattress period.

After the join was completed the mat was turned over and the plaiting continued with the proper surface uppermost.

The finish: The outer edge of the first section was finished off in the *kopetipeti* method, and all that remained when the last section had been joined and completed was to finish off its outer edge in a similar fashion. The tribes of the east coast of the North Island call this finish at the edge *tapiki*, and the Taranaki tribes call it *kapeu*.

Many *porera* are made with white wefts alone, and designs may be worked by changing from horizontal to vertical lines of twilled twos. To get neat

work a row of check strokes is used when changing. If the change is made direct there will be a row of alternate twos and threes at the junction. With black and white wefts and yellow *pingao* a great variety of designs were worked. Polynesian mats have the coloured designs done by overlaid plaiting. The coloured wefts are laid on the wefts proper of the mat and plaited with them. They are purely decorative. In Maori mats the coloured wefts enter into the construction of the mat, and thus must go diagonally across the entire width of the *whara*, or section. Broad coloured bands are worked in parallel lines across each section. A series of similar parallel lines may be worked on each section; or, by changing the coloured wefts from sinistrals in one section to dextrals in the next, and fitting the ends together at the joins, a series of broad zigzag bands may be continued across the entire width of the mat. Within the bands themselves a great variety of patterns are introduced. The subject of coloured designs, from its length, must be deferred for special treatment.

At the present day the tribes most skilled in plaiting coloured designs on floor-mats are the Ngati-Kahungunu, of Hawke's Bay; the Ngati-Porou, of the East Coast; and the tribes of the Bay of Plenty district.

Mats of the *porera* type are made from *paopao* or *kutakuta* in exactly the same way. Though they do not last so long, they are much warmer than flax or *kiekie*. It is quite a common habit to show the better *kiekie* mats on the surface in the daytime, and then to reverse the position with the warmer and softer *paopao* mats from beneath when the rugs and blankets are spread for sleep. I saw a *paopao* mat in the North Auckland district with an overlaid coloured design, but it was a recent innovation copied from the Pacific. It is interesting to find that the same material, *Scirpus lacustris*, is widely used for mat-making by the Indians of the Pacific coast of America.

(2.) *Baskets.*

Baskets may be divided into the circular, rimmed type, in which cooked food is served, and the satchel type. The satchels vary in size and material, and are known as *kete* to the Maori and "kits" to the European. *Kete* were used not only as receptacles for containing and carrying material things in, but figure in incantations and mystic rites to enclose the miraculous. The god Tane, as the personified form of knowledge, successfully ascended to the twelfth heaven to obtain from Io the three baskets of occult knowledge. Again, Tane, after Hine-titama the Dawn-maiden had fled from him, collected the stars into four named baskets ere adorning the person of the Sky-father with them. It is interesting to note, from an incantation handed down about one of those astronomical kits, named *whiriwhiri*, that the process of manufacture must have been the same in those god-like days as now. The incantation recorded by S. Percy Smith runs:—

Ka whiriwhiri taku kete
Ka rangaranga taku kete
Ko Tu-tawake taku kete tu.

The ends of the wefts of my basket are being twisted,
The wefts of my basket are being plaited;
My basket is Tu-tawake.

Whiriwhiri, as we shall see, is the process of twisting the scraped ends of the wefts into a three-ply plait which is the special beginning of the Maori *kete*. Before dealing with the two main types of basket, mention must be made of a rare variety of *kete* which forms a link with the ancient home in the islands.

Kete nikau.—This basket was made from the leaf of the *nikau*-palm, and is the direct representative of the rough baskets made in Polynesia from the leaf of the coconut-palm. The women at Koriniti knew such baskets were made in the past, but had forgotten how. One in the Dominion Museum, Wellington, and figured in Hamilton's *Maori Art*, shows that the technique was exactly the same as the rougher island ones. The midrib of the leaf was split down for the desired length of basket, and the two halves, each with its attached row of leaflets, formed the two sides. The midrib portion formed the upper border, whilst the leaflets were treated as wefts already in position and plaited downwards in a check stroke for the requisite depth. They were then finished off on the inside in a three-ply plait along the bottom.

These baskets were made on emergency occasions in the forest, and were not nearly so common as their island prototype.

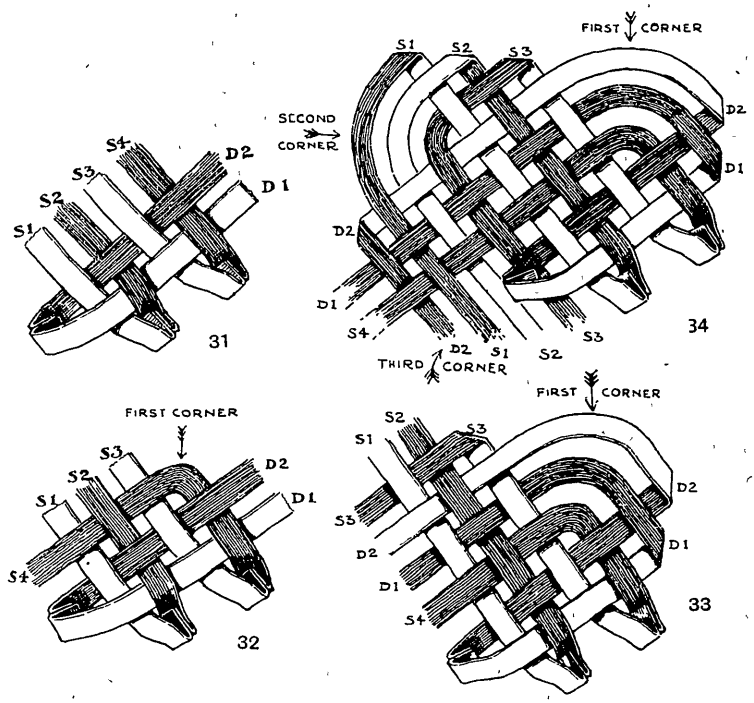
Baskets for Cooked Food.—The *kono* is in shape like a wide-bottomed bowl; but though the rim is circular, from the pliability of the material, the bottom has four corners. It is about 10 in. in diameter and 3 in. deep, but the measurements vary with the width of the flax-blades used.

It is usually made from three full blades of flax, which, after having the margins of the leaf and midrib removed, are split down and left connected by a portion of butt of 1½ in. to 2 in. below the butt-junction. Each weft, consisting of a half-blade, is thus the widest weft obtainable. In splitting down it is difficult to prevent the blades becoming completely separated, and if by care the process is stopped at the right place, below the butt-junction, the pressure brought on the wefts, when plaiting, causes the butt connection to separate. This is prevented by bending the butt backwards and forwards so as to make a crease across it below the butt-junction. This is done first, and as the two half-blades are pulled apart the splitting process stops naturally at the crease, leaving the connecting piece of butt beyond intact. The butt connection is further strengthened by completely bending back the half-blades at the crease, so that the blades are inside out. as it were, and the butt portion is tucked away between the half-blades. This not only strengthens the butt connections but, by concealing them, makes neater work.

The beginning consists in plaiting with a check stroke one pair of wefts through two pairs at right angles (fig. 31). They are drawn tightly together so that the closed ends are locked and nearest to the plaiter. The purpose of the butt connections is easily seen: they prevent the wefts at the beginning from coming apart, and make for neatness and celerity of work. Try to commence a *kono* with six separate wefts and you will appreciate the difference. Maori women, when separation of the pairs sometimes takes place with very stiff flax, quickly tie the butt together again with a thin strip of flax ere attempting to go further.

Fig. 31 shows four sinistral wefts and two dextrals. The right sinistral (S4) is bent at right angles to its course and plaited through the other three sinistrals by raising S2, and depressing S3 and S1 with the left hand. By pulling S4 taut the sinistral and dextral wefts are bent upwards and approximated, whilst the surface of S4, which looked upwards, now looks inward towards the butts. The closing-in of the angle between S4 and D2 forms the first bottom corner, and the alteration in the direction of the surface of S4 begins the side of the *kono* (fig. 32). Through the tightening up of S4 the two dextrals and remaining three sinistrals have been drawn closely together. The right weft of this series of five (D1) is

given a half-twist forwards so as to expose its other surface, and is then plaited through the remaining four wefts of the series so as to continue the check pattern. To do this S3 and S1 are drawn forward and D2 S2 pressed back with the left hand, whilst the right places D1 between them, pulls it taut, and presses it down in close contact with the preceding weft, S4. The next weft on the right (D2) is now given a half-turn, usually forward, and interlaced through the remaining three wefts by raising S2 and pressing back S3 and S1. The next weft on the right (S3), with a half-turn forwards, passes between the remaining two wefts by pressing back S2 and bringing S1 forward. It will be noted that we commenced with a series of four



The making of a *kono*, or basket for cooked food: Fig. 31, the commencement; fig. 32, the first bottom corner; fig. 33, the second bottom corner; fig. 34, the third bottom corner.

sinistrals and two dextrals, and have arrived at a second series of a four on the left and a pair on the right. In the first series it was the right-hand weft of the four that made the corner. It was not twisted, but simply bent. The other three were given a half-twist ere being plaited. The twists form the upper edge of the *kono*, and a forward twist makes it lie more smoothly. However, a back twist may be used; but whichever twist is given must be adhered to throughout. The plaiter, from observing the crossing of the wefts, separates the appropriate wefts with easy accuracy, and the work goes on automatically. The work is also rotated so as to keep the plaiting in front.

Fig. 33 shows the new series of a four on the left and a pair on the right, but to avoid confusion the old numbering is adhered to. The angle between

the four and the pair, on being closed in, will form the second bottom corner. The procedure is exactly as before. The right-hand weft of the four (S3) is bent through the remaining three at right angles to its course, and passes under the projecting end of one of the butt connections. On being drawn taut, the remaining three wefts (D2, D1, and S4) and the pair (S2 and S1) are drawn close together into a series of five and their course directed upwards. S3 has its upper surface turned inwards to continue the side of the *kono*, and its bend forms a second bottom corner. The five wefts are dealt with as before, commencing on the right with half-twists forward, and plaiting throught the wefts on the left till S2, S1, and D2 have joined S3 on the left, and a pair (D1 and S4) remain on the right as in fig. 34. The third series of four and two are dealt with again to form the third bottom corner and the corresponding parts of the bottom, sides, and twisted upper border. When the fourth series of four and two has been dealt with, the plaited work will have come right round under the projecting butt connections and behind the starting-point, and we have a bowl-like basket with four corners at the bottom.

The finish is made by passing one of the wefts of the last pair through an interval below the nearest part of the twisted upper border or rim, bringing it over the rim and tying it to the other weft of the pair with a reef-knot. The ends are cut off, and also those of the four, and the *kono* is complete. (Plate 78, fig. 1.)

The keynote of the work is *he wha, he rua* (a four and two). When the right-hand weft of the four is bent round it is called *whakapoti* (to make a corner). The technique here differs from the usual in that the plaiting works round towards the left.

A larger *kono* is made by using four full blades instead of three. Two full blades are plaited through the other two at right angles, making four dextral wefts and four sinistral. The right-hand blade of the sinistrals, fourth from the left, is used, as in the former *kono*, for forming the corner. Commencing then on the right of the approximated seven wefts, each weft is twisted in turn and plaited to the left through the remainder until one is left. We then get the series of seven wefts to the left and one to the right. The next corner is made by taking the fourth weft of the series of seven, counting from the left, and bending it through the three wefts on its left. Commencing again on the right, the wefts are plaited as before until another series of seven and one is arrived at. This is repeated until the four corners are made and the basket is completed. It is finished off by tying and cutting off the ends as before.

By using the fourth weft for turning the corners the *kono* is the same width at the bottom as the previous one, but the extra material goes into the sides and makes it deeper. If the fifth weft of the left-hand series is used for turning the corners the *kono* will be wider and shallower.

The *kono* is for temporary use, and as the butt portion rests upon the bottom and side of the plaitwork the weak portion of the work is secure enough for ordinary purposes. By continuing the plaiting for another corner the overlap on the outside is increased, and the *kono* rendered more secure. By continuing the plaiting still more a double basket results.

Until comparatively recent times the *kono* was in universal use. At Maori gatherings I have seen women seated by a heap of flax-blades, turning then out rapidly by the score. When the cooking-ovens were opened the *kono* were filled with potatoes or kumara, and a share of meat or fish placed on top. They were then carried by women and men singing

appropriate songs with action-dances, and placed before the visitors, one *kono* sufficing for a couple of guests. The empty *kono* were gathered and thrown away, fresh ones being so easily and quickly made. European plates and dishes have almost completely ousted them, and they are now rarely seen.

A better class of *kono* is made with narrower wefts. The turning of the corners, the plaiting, and the upper border are the same as above. At the finish, however, the ends of the wefts are plaited in three-ply along the free edge from below upwards, and the ends continued into a tail which is passed through a weft-interval near the upper border and simply knotted on the inside of the *kono*, or tied.

The *kono* has a variety of names, such as *paro*, *konae*, *rourou*, &c. Under the name of *rourou* it figures in proverbs as the smallest measure of food. *Te rourou iti Haere* (the little food-basket of the Traveller) is a common expression, and is found in the proverb—

He aha koe i haere mai ai i te rourou iti a Haere?
Te noho atu ai koe i te tokanga nui a Noho?

Why did you come with the little basket of the Traveller?
Why did you not remain with the large basket of Stay-at-home?

This was said by Parewhete in greeting her deserted husband, Wairangi, who had followed her into the midst of numerous enemies with only a small war-party. His life would have been safe had he remained at home in the midst of his powerful tribe, who were the full basket. Instead he had followed with a small handful of men, who were likened to the meagre contents of a *rourou*. Pakaru-a-te-Rangi, of the Ngati-Kahungunu Tribe, in urging unity and combined effort in peace or war, said:—

Nau ko te rourou, naku ko te rourou, ka ora te manuhiri;
Nau ko te rakau, naku ko te rakau, ka whati te hoariri.

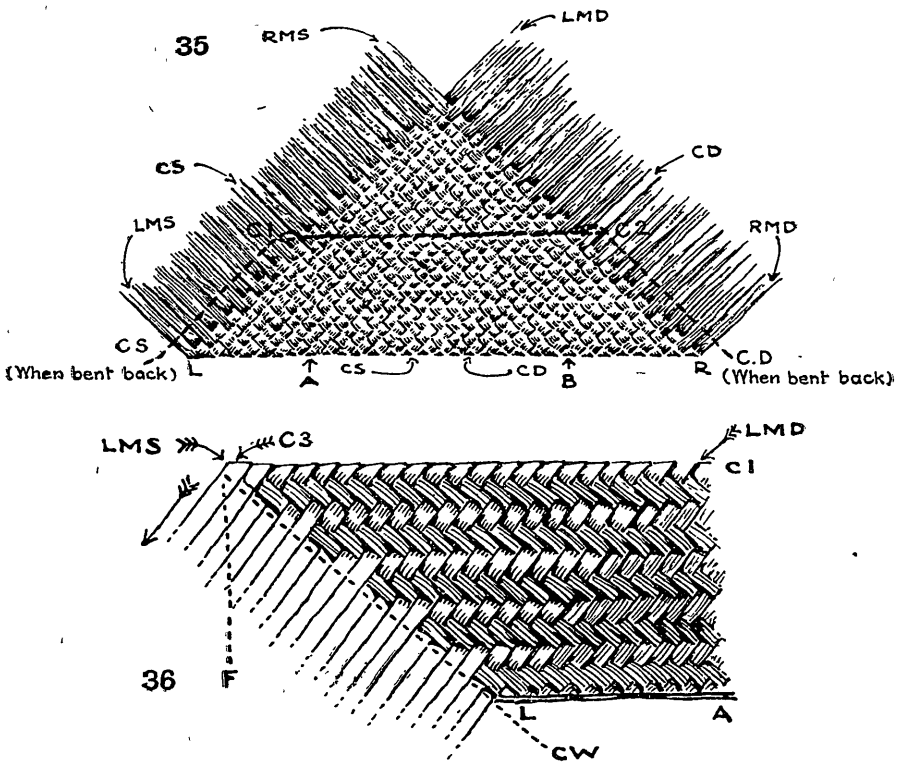
Yours is the small basket of food, mine is the small basket of food,
and our guests will be fed,
Yours is the weapon, mine is the weapon, and our enemy will be routed.

The *poti* (Plate 82, fig. 2) is a four-cornered basket similar in shape and size to the narrow-wefted *kono*. It was used to contain cooked *taro* (*Colocasia antiquorum*) for people of higher rank. Both in deference to the rank of the guest and the quality of the food, better material in the form of bleached white wefts was used. The butt-tufts of the wefts necessitated a different beginning from the *kono*, and the whole construction differed accordingly.

The beginning, like that of the *taka* mat, consists in plaiting a single row of wefts, by means of their butt-tufts, into a three-ply braid of 13 in. to 14 in. in length.

The body is usually plaited in a twilled two. The wefts, along the whole length of the braid beginning, are speedily separated into an upper layer of dextrals and a lower layer of sinistrals. Reference to fig. 35 shows that where the two layers cross one another a triangular area is formed, bounded on the left by the left marginal dextral (LMD), and on the right by the right marginal sinistral (RMS). In this area the two sets of crossing wefts are in position for plaiting, and merely need rearrangement by separating the dextrals with the left hand and placing the sinistrals in position with the right. The plaiting is continued for the depth of the basket, 4 in., till the line C1 to C2 is reached. The first left-hand corner is made at C1, by turning back the sinistral weft (CS) which crosses the left marginal

dextral (LMD) at this point. It will be noted that the plaited portion has been narrowed by the converging wefts, LMD and RMS, from 13 in. at the braid beginning (LR) to 6½ in. at the working-edge (C1 to C2). At the same time that the crossing sinistral (CS) is bent at right angles to its course, the left portion of the work (LA) is bent forwards at right angles, and CS is plaited through the disengaged sinistrals on the left. It comes to occupy the dotted line parallel with LMD. The single layer of disengaged sinistrals to the left of CS, by the bending-forward of the portion LA, have now changed their direction and function as dextrals. The sinistrals to the right of CS continue the plaiting through the original dextrals and the left sinistrals, which have joined them. The inner two of the latter have



FIGS. 35, 36.—Methods of making a *poti*, a variety of *kono*.

to be bent in slightly to lie parallel with the left marginal dextral (LMD). By pulling the wefts taut the corner of C1 is defined. As the plaiting proceeds beyond the line C1 and C2, all wefts are bent forwards and downwards at right angles to their previous course. The second corner at C2 is formed by bending back the dextral CD, which crosses the right marginal sinistral (RMS) at this point. The right portion of the plaited work (BR) is also bent forward at right angles, and the disengaged dextrals to the right of CD change direction and function as sinistrals. The crossing dextral (CD) is plaited through them at right angles to its original course, and occupies the dotted course parallel with the right marginal sinistral (RMS).

The dextrals to the left of CD, as the plaiting proceeds, pass through the remaining original sinistrals and the right dextrals which have joined them. The inner two dextrals have to be bent in to lie parallel with the right marginal sinistral (RMS). The tightening-up, as before, defines the first right corner (C2). The plaiting proceeds, and the part beyond C1 to C2 forms the bottom. The sides are also continued by bending the wefts from the bottom surface over at the lines produced forward from the two corners at right angles to the line connecting (C1 to C2). The plaiting continues forward for about 8 in., when the two sides run into the bottom surface through the wefts from the body having no crossing elements to combine with. Fig. 36 shows a side view of the left side of the work. The part of the side completed on the formation of the left corner (C1) was the triangle L A C1. The bottom surface, which of course is not visible, has gone on from C1 to C3. The additional part of the side completed is the triangle L C1 C3. Here the side runs out at C3 because, after crossing the left marginal sinistral weft (LMS), the downward wefts from the bottom surface have no crossing elements to engage. A similar condition exists on the right side, where the right marginal dextral weft (RMD of fig. 35) will run into the bottom surface at a point (C4), corresponding to C3 as C2 did to C1. The points C3 and C4 form the other two corners of the basket. The area between the four corners completes the bottom surface. The corner at C3 is formed by bending back the weft from the bottom surface that crosses the left marginal sinistral (LMS) at C3, and plaiting it through the disengaged wefts to lie parallel with it in the dotted course CW. The wefts from the bottom surface are bent down at right angles at the line connecting the two corners C3 and C4. They continue the end side of the basket, and the appropriate ones follow CW, being bent round to the side as they come below the corner C3 in the dotted line C3 to F. Similarly the side wefts as they reach this line are bent at right angles to engage the wefts in forming the end surface. Similar procedure forms the fourth corner. The changes of direction of the different sets of wefts all fit in, and provide two sets of crossing-elements to complete the end and sides. The plaiting continues until the sides reach the same level as that part bounded by the braided butt-tufts.

The finish is a modified *kopetipeti* called *kopekepeke*. With the basket turned on its outer side we have a lower layer of sinistrals and an upper layer of dextrals. Commencing on the left, the sinistrals are twisted on the outer side of the basket with a half-turn at right angles to their former course, brought diagonally across the upper border, and bent to run downwards and to the right. Fig. 37 shows that the first sinistral (S1), in its new course on the inside, passes over the first dextral it meets (D1), whilst the next dextral (D2) is lifted over it. The first dextral (D1) to reach the edge is now bent over at right angles, and the next sinistral (S2) is twisted over with it. This double weft passes over the first dextral it meets (D2) and the next dextral (D3) is lifted over it. When the dextral D3 is lifted, the sinistral to its left (S1) is twisted upwards at right angles and, passing under D3, continues upwards with it as a double weft. From now on the upward wefts are double, formed of the dextral and the descending sinistral on its left, which is bent upwards as above. The next dextral at the edge (D2) is bent back at right angles and accompanied downwards by the next sinistral (S3). They cross the double weft (D3–S1) and pass under the next dextral (D4), which on being lifted is joined by the sinistral on the left (S2). In the next series from the edge, the double weft (D3–S1)

is bent back with the next sinistral (S4). From now on the down wefts consist of three elements, the double up-weft being joined by a fresh sinistral after being turned at the edge. The triple weft, after passing under D5 with its sinistral addition S3, drops the two older elements which formed the up-weft (D3–S1), whilst the latest sinistral element (S4) is turned upwards with the dextral on the right (D6). It is thus seen that the sinistrals which form the upper edge by covering the dextrals are firmly fixed by having a double zigzag course. The edge is completed on the right by plaiting the last wefts into a three-ply braid and tying it to the end of the plaited butt-tufts. The projecting ends of the wefts are cut off, and loops of twisted flax-fibre may be fixed to the rim on either side as handles.

Satchels, or *Kete.*—*Kete* are divided into *kete tatahi* (open-plaited) and *kete puputu* (closely plaited). The latter are also called *kete pae*. Open-plaited baskets are made from natural wefts, and closely plaited ones from white and dyed wefts.

(*a.*) *Kete tatahi* (open-plaited satchels): These are the ordinary rough baskets in everyday use. They are of all sizes, and are used for so many purposes that it is difficult to imagine the Maori being without them. All kinds of food, from *kumara* and *taro* to fern-root and forest berries, were

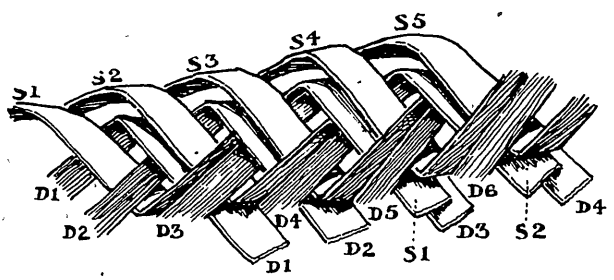
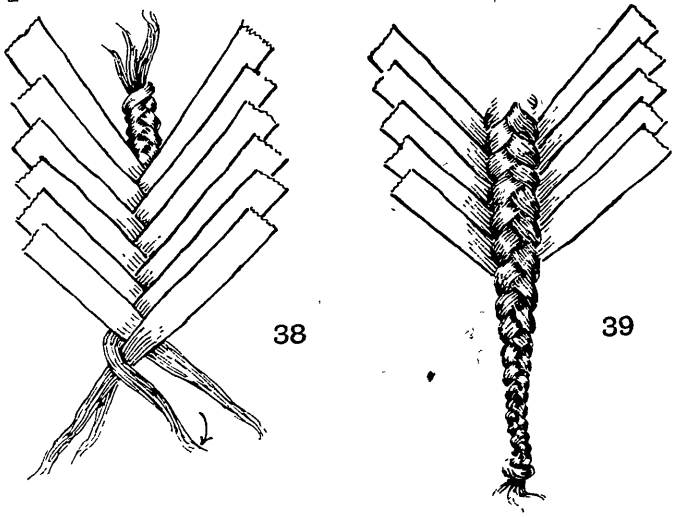


FIG. 37.—The *kopekepeke* finish of a *poti*.

collected in them. In recent times seed-potatoes were often stored away in special baskets with a wide weft. In gathering shell-fish, baskets with three handles on either side were used, the end pairs for tying with flax around the waist, whilst the middle pair was pulled apart to admit the supplies obtained. This was, of course, in water; and the same was done in some forms of fishing. Dried and cooked *inanga* were stored in them. Food-supplies, on the march, were packed in baskets and carried on the back. *Karaka* (*Corynocarpus laevigata*) berries, after being cooked, were steeped in water in baskets made of *kiekie*. Large calabashes containing preserved pigeon often had baskets plaited round them, and were finished off with long handles for facilitating transport. Kelp bags containing mutton-birds (*Puffinus griseus*) were covered with *totara* bark and the base fitted into a basket. Even the shorter lengths of drift firewood were collected in *kete*, and in the excavation of fosses for their fortifications the earth was carried away in them.

The beginning consists in plaiting the butt-tufts of the wefts in a three-ply, the wafts being added alternately from either side to the ply that goes to the middle. This process, as in the *taka* mat, is called *whiri*. The commencement of the *whiri* is the same as (*b*) and (*c*) in the *taka* mat (pp. 717–18). Fig. 13 shows the butt-tuft of weft 1 crossing that of weft 3 to the middle. In the basket commencement, the tuft of a

fourth weft added on the right is brought over with tuft 1, and as tuft 2 is twisted over them another weft is added on the left, and its tuft brought over to the middle with tuft 2. The addition from either side is continued to the required length of the basket, and the ends of the tufts plaited on, knotted with an overhand knot. The more common commencement, however, is (*c*). Three short pieces of flax are knotted with an overhand knot, and then plaited in three-ply for about 1 in., when the butt-tufts are added alternately on either side to the strand that crosses to the middle position. The crossings are kept from unravelling by the thumb and fingers of the left hand, whilst the right adds the fresh wefts and twists the tufts. On the surface towards the worker the overlapping wefts on either side come close together, but on the under-side the crossings of the butt-tufts show as a thick fibrous cord between the two even rows of wefts (fig. 39).



FIGS. 38, 39.—Laying the keel of a *kete*.

In the smallish-sized basket I am describing, the length of this plaited keel (see Plate 79) is 18 in., the depth in the middle 10 in., at either end 8 in., and the number of wefts on each side is sixty-eight. The wefts in the dry condition average $\frac{3}{16}$ in. in width.

The body in these rough baskets is practically always plaited with a check stroke. Turning the work towards her with the keel lying transversely, the plaiter speedily crosses the alternate wefts close to the keel. Commencing from the left on one side, if the direction of the wefts is towards the right it is obvious that alternate wefts must be bent close to the keel at right angles to their course to provide the sinistral wefts. As in all this work the plaiting proceeds in widths from the left towards the right, the dextrals form the upper layer and the sinistrals the lower. The plaiting proceeds exactly as in the check mats, except that wefts are not turned in to the body at either edge as they pass the marginal crossing weft. Thus a plaited triangle occurs, for the reason described in the *poti* basket. The marginal wefts of the triangle are, in a neat manner, kept from coming loose. If the weft is a dextral, the free end of a sinistral that passes *under* it at the spot likely to become loosened is looped back *over*

it, and the loop passed under a crossing dextral on the plaited portion. A pull on the end of the sinistral disengages the loop when work in this part is to be continued. If the weft to be restrained is a sinistral, then of course a dextral is looped back in a similar manner. This method is also used with a working-edge when work is discontinued for a time.

The work is now turned and the triangle plaited on the other side. The next step is to fill in the space between the triangles which form the ends of the basket. The two sides are bent up so that the raised ridge formed by the plaited butt-tufts is inside. Holding it with the end towards one, it will be readily seen that the disengaged sinistrals from the right side can be brought round to engage the disengaged dextrals from the left side. In this case the dextrals on the left are separated in the usual way and the first sinistral from the right placed in position. The dextrals are reversed and the second sinistral from the right placed between. Continuing this procedure, the gap is filled up (*tutaki*) from the bottom until it reaches the level of the sides. Of course, the wefts are bent round in the vertical line from the end of the keel, but as the material is so pliable this causes no

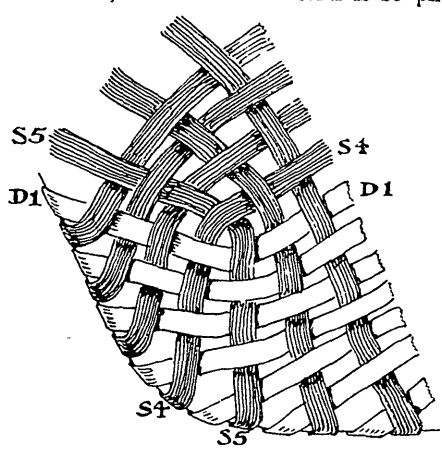


FIG. 40.—Technique of the corner of a *kete*.

trouble. The wefts on each side being equal, they fill up the space naturally, the worker being careful to draw them taut. The other end is done in a similar manner, and the basket is complete except for the finish. This method of dealing with the ends results in a basket with a straight and narrow bottom. The usual method, however, is to make four corners at the bottom. The technique of the corner is shown in fig. 40. Here the left end of the right side is shown with the original sinistrals shaded and the dextrals plain. On the completion of the side triangle the marginal dextral (D1) marked the edge of the completed work. The worker decides on the width for the bottom and selects the appropriate sinistral, in this case the fourth. The fourth sinistral from the end (S4) is accordingly bent back (*ka whatiia*) into the body of the work beyond the marginal dextral (D1), runs parallel with it, and functions as a dextral. The next sinistral to the right (S5) is bent in the opposite direction, and it and the following sinistrals continue to function as sinistrals. The sinistrals to the left of the key weft (S4) follow S4 and function as dextrals. Tightening up S4, S5, and D1 tilts up the left end of the foundation-keel and sharply defines the corner at the crossing-place of these three wefts. The tilting-up

of the keel and the change of direction keeps the sinistrals on the left of the figure close together, although in the diagram they are shown somewhat apart. On the left triangle the same procedure is carried out, but of course it must be the fourth *dextral* that is turned back into the body of the work. The gap is now filled with the disengaged wefts, which have arranged themselves into dextrals and sinistrals. The corners are made at the other end, always remembering that it is the fourth of the series that projects beyond the margin of the completed triangle that is the key weft. If a wider bottom is desired, the fifth or sixth weft may be taken as the key weft; but whichever it is, the same number must be adhered to for all four corners or the basket will be awry and the gaps will not fill in properly (*e kore e tutaki*). In these baskets the keel curves up at each end, making the middle deeper than the two ends (see Plate 80). The depth at the middle is increased by the weight of the contents pulling directly on the handles which are attached to the middle of the upper border.

The finish is made by plaiting the weft-ends with a three-ply plait. The wefts are picked up in fours usually, two dextrals and two sinistrals. Starting usually at one end, the wefts that run in the same direction as the plait are taken together into the lower ply, whilst the other two are bent back and taken into the next ply that crosses it. On reaching the starting-point one of the plies is passed round the first part, and then, rejoining the other two, they are run out in a free braid and the end knotted. This tail is threaded through the side of the basket and the end left inside. Owing to two wefts of the series of four being bent back, holes are left under the braided upper border between the fours. These are useful for threading flax or a rope through to keep in the contents of a full basket. I saw an old lady one morning dropping a single weft from the upper border and then incorporating it farther on, thus making a series of long loops which looked rather untidy. On asking her the reason, she smiled and said, "That is my earmark." Thus one often sees little differences in the plaiting of the upper border, which, if they have no constructional reason, are probably the private marks of careful old ladies for recognizing their property and saving argument.

The handles are put on as the upper border is being plaited. They consist of loops of a three-ply plait of natural wefts about 8 in. long and 4 in. to 5 in. apart where the ends are fixed to the upper border. The upper border is plaited to the middle of the side and the weft material for the handle passed through one of the holes under the border 2½ in. from the middle. The two ends of the handle-material are drawn together, forming a loop round the border, and the wefts divided into three equal parts. The three divisions are plaited in three-ply for 8 in. and then the upper border is plaited on for another 2½ in. The ends of the handle-wefts are now merged with the wefts of the upper border, which is continued on to the other side, where the second handle is affixed in the same manner. In some baskets three or more handles of a similar type are made on each side. These are used in lashing over fern or other covering-material to protect the contents.

Baskets made of cordyline-leaves are made in a similar manner. The wefts are much narrower, but permit of the butt ends being scraped to admit of the *whiri* beginning at the bottom. The completed basket is usually dyed black or considerably darkened by submerging in swamp-mud.

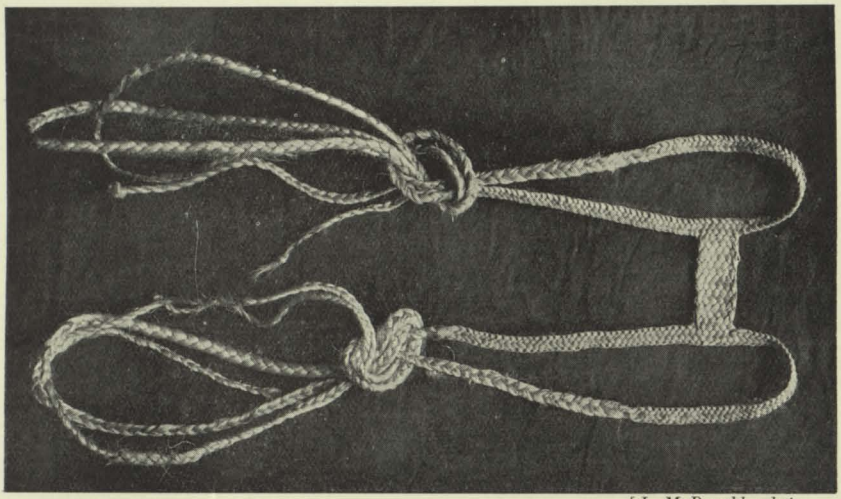
(*b.*) *Kete puputu*, or *kete pae* (closely plaited satchels): This class of basket obtains its name from being plaited closely together and leaving no spaces between the wefts. They were used for containing more valued possessions, and not for rough work. In these days the older women are usually seen carrying a small one to contain their pipe, tobacco, and matches, so that they correspond to the modern civilized woman's handbag for holding her purse, handkerchief, vanity-box, and cigarette-case. Prepared wefts in white and black are used, and another generic name for the class is *putea*. They are made in all sizes. Plain white baskets are made with the same twilled stroke throughout, or plain designs are worked by changing the stroke. Geometrical designs in black, white, and yellow had full play. In some cases the entire basket was made of black wefts, and in others diagonal bands of white, running in the same direction or crossing, were made by introducing four or six white wefts at regular intervals along the keel. White baskets in a similar way were made with narrow diagonal bands of black or yellow. Some were made entirely of *pingao*, and the wefts being narrow resulted in a neat golden-coloured basket. By plaiting the foundation-keel with every alternate weft black and the others white, or making all the sinistrals one colour and the dextrals another, the entire surface of the basket could be covered with coloured designs in zigzag lines, triangles, and lozenges. Owing to the smaller surface, neater work and a greater variety of design was possible than in the *porera* mats. In the earlier days of colonization the making of these baskets was one of the principal sources of income to the womenfolk, and they vied with one another in plaiting complicated coloured designs so as to command a readier sale. They were freely hawked about the towns, but nowadays the few remaining skilled workers have to be sought out and a special order placed in order to obtain them. As in the case of the *porera* mats, the coloured wefts formed an essential part of the structure of the basket; whereas in the Polynesian baskets I have seen, from Niue Island, the coloured elements are overlaid, as in the case of their mats. The various coloured designs must be postponed for treatment with those of the *porera* mats. A splendid assortment of these baskets is figured in Hamilton's *Maori Art*, vol. 4, plate 44.

The beginnings, in the district under discussion, consist of two forms:—

(*a.*) The *whiri* beginning, as in the case of the open-plaited baskets, consisted of plaiting the wefts into a three-ply braid, with the difference that the wefts were added in pairs instead of singly. For the same length of keel there was thus double the number of wefts. This resulted in the close plaiting that distinguished it from the other class. Care was also exercised in eliminating enough of the narrower butt ends to ensure the wefts being of even width throughout their working-length.

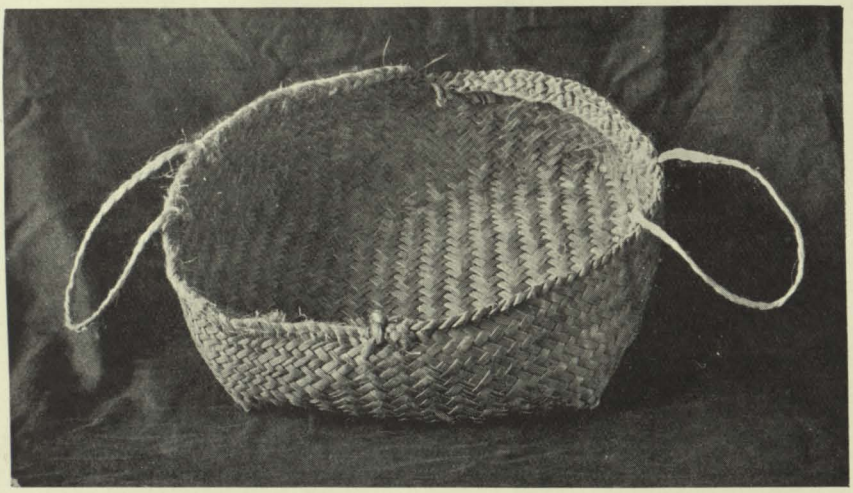
(*b.*) The *porera* beginning was used with some of the baskets whose whole surface was covered with coloured designs. The undivided butt portions were used to lock the beginning-edge, and the wefts were interlaced and divided into dextrals and sinistrals. All the coloured butt portions pointed in one direction and the uncoloured in the other. This beginning was plaited for twice the length required for the keel.

The body of the basket, after the *whiri* beginning (*a*), was plaited in exactly the same manner as in the rough baskets, but the stroke was usually a twilled two. Some were plaited with a check stroke throughout, and others again with combinations of check and twill. The geometrical patterns involved the introduction of twilled threes, fours, or fives. The



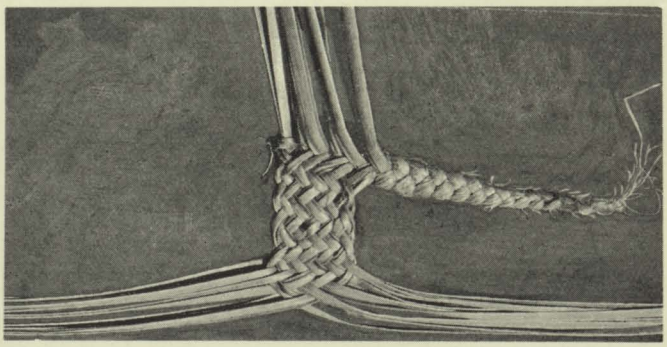
[*J. McDonald, photo.*

FIG. 1.—*Kawe*, or burden-carrier.



[*J. McDonald, photo.*

FIG. 2.—*Poti*—four-cornered basket for containing cooked *taro*.



[*J. McDonald, photo.*

Face p. 736.] FIG. 3.—*Kawe*, showing start of plaiting.

plaiting of the side triangles, the filling-in of the ends, and the formation of the bottom corners were the same as before.

With the *porera* beginning (*b*), a *whara* or section was plaited to the depth required for the basket, as if making a *porera*, but at the ends the disengaged wefts were left free. The two ends were then brought together and the disengaged sinistrals of one end were interplaited with the disengaged dextrals of the other, in exactly the same manner as filling in the ends of the rough baskets. The sides and ends of the basket were thus completed, leaving a fringe of weft-ends at the upper border and a fringe of undivided butt portions at the lower. No bottom corners were made.

The finish, at the upper border, was made in four ways:—

(1.) *Whiri toru:* The weft-ends were plaited in three-ply, but more carefully and neatly than in the rough baskets.

(2.) *Whiri tuamaka:* This was a four-ply plait at the upper border which made a rounder plait and gave a neater finish than the three-ply.

(3.) *Kopetipeti*, or *kopekepeke:* As already described in the section on mats.

(4.) *Whakakitaratara:* This finish results in the upper border having a serrated appearance, from the wefts being plaited into a series of triangles with the apices upwards. The usual working-number of wefts to each

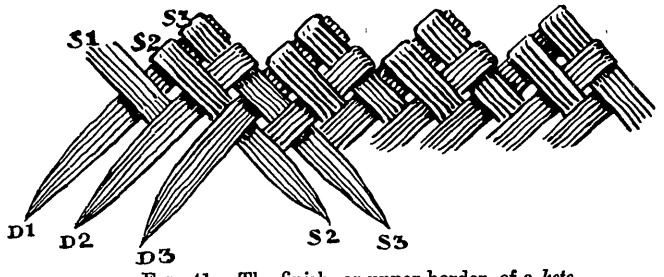


FIG. 41.—The finish, or upper border, of a *kete*.

triangle is three sinistrals and three dextrals. The plaiting is done on the inner surface of the basket, and commences from the left. The first dextral (D1) is looped by bringing the end back on its own course. The first sinistral (S1) crosses above the doubled first dextral. The second dextral (D2) is also looped, and the second sinistral passed through its loop, passed under, round, and over the doubled first dextral, and back along its former course over the second dextral, and then under both parts of the third dextral (D3), which is looped. The third sinistral (S3) passes over the third dextral, through the loop of the second dextral, through the loop of the first dextral, back over the returning part of the first dextral, through the loop of the second dextral again, and over the third dextral. The ends of the first and second dextrals and the second and third sinistrals are drawn taut, and the triangle sharply defined (fig. 41).

The free part of the triangle really consists of these four wefts, as the other two assist in the formation of the bases of the triangles on either side. Thus reference to the above figure shows that S1 corresponds to S3 in the previous triangle, and D3 to D1 in the following; or, as the Maori instructress said, "The third weft in this tooth will form the first weft in the next tooth." The triangles having being completed round

the upper border, the upper layer of dextral wefts are secured by a three-ply plait, whilst the under layer of sinistrals, which is more secure, is cut off evenly without further plaiting.

One or more rows of these serrations were often plaited on the body of the basket for ornamentation. These were innovations; but the old women maintained that the *whakakitaratara* finish at the upper border is ancient. It is the common finish of Niue Island baskets.

The *porera* finish is given to the baskets commenced with the *porera* beginning. The upper border is finished in any of the above four ways. The basket is then turned inside out and finished at the bottom by splitting the undivided butt ends into their component wefts and joining the wefts of the two sides in a modified *porera* join.

The handles are made of prepared flax-fibre twisted into a two-ply cord. One end is looped through the upper border of the basket, whilst the other end is tied in a knot over the border. In some cases this end is simply passed from the outside through an interspace between the wefts and knotted on the inside, making a very weak finish.

(3.) *Burden-carriers* (Kawe).

The *kawe* consists of two long plaited bands connected by a cross-band at the middle, and is used for carrying burdens on the back (Plate 82, fig. 1). It really belongs to the section on belts and bands, but is of such extraordinary interest as to merit special treatment.

White wefts of flax are used in the construction. The method of beginning is the same as in baskets. The butt-tufts are plaited with a three-ply plait, with wefts on either side to form a keel. The wefts, however, are placed in pairs with the under surfaces in apposition, so that the white upper surfaces may show on either side of the bands. The stiff-leaved varieties of flax are not so good, and the *whaririki* (*Phormium Cookianum*) is the best kind. In the *kawe* I watched being made, six double wefts were plaited in on either side. The ends of the last butt-tufts were plaited on into the usual tail, as in baskets. Each double weft was then split into two with the thumb-nail, making twelve double wefts on either side. The wefts were $\frac{1}{8}$ in. in width. The twelve double wefts on one side were then plaited with a twilled-two stroke into a band $2\frac{1}{2}$ in. long. The width of the band at the plaited base of butt-tufts was $1\frac{3}{4}$ in., and this width was maintained throughout by turning the wefts back into the body of the band by a half-twist which turned up the surface of the other weft. In some *kawe* the wefts are turned in by merely bending them without changing the surfaces, as in the side edge of floor-mats. This does not make such a smooth edge as the twist. Having reached the desired length of $2\frac{1}{2}$ in., the wefts are divided into two lots of six. The six wefts on the right are plaited through to the left, and continued on in a narrower band at right angles to the first part. Owing to the turns at the edges, it is now only $\frac{5}{8}$ in. wide, and is continued on for about 17 in. The remaining unplaited portions of the wefts, of about 18 in., are tied together temporarily to prevent unravelling. The other six wefts are now plaited in a similar manner in the opposite direction and tied. It will be observed that at this stage the two bands are in the same straight line, with an absolutely straight even outer edge, so that they form one continuous band with two unfinished ends. The twelve double wefts on the other side of the keel are dealt with in exactly similar manner, so that we have made two long narrow bands with unfinished ends, joined together at the middle by a band $1\frac{3}{4}$ in. wide and 5 in. long.

The finish to the ends is done with dressed flax-fibre (*muka*). The unplaited weft-ends are untied, and divided into three equal parts of two wefts each. To each part a 3 ft. length of fibre is attached by looping the thicker end and incorporating the short portion with another weft-division. The three compound divisions of fibre and weft-material are then plaited on in the ordinary three-ply plait so as to produce a somewhat flattened cord. Note that the bending-back of a short length of fibre in another division and plaiting it down for a few strokes absolutely fixes the junction of fibre and weft, and allows it to stand the strain of heavy weights without becoming loosened. As the weft-ends become thinner and give out, the band changes from a flat band to the ordinary fibrous cord. This cord thins down until it is tied in a knot about 3 ft. from its junction with the wefts. The tail of plaited butt-wefts is doubled back and forwards over the middle of the connecting-band, and tied down to it by strips of fibre passed over the plait and through the plaiting on either side of it.

A burden is carried with the *kawe* in the same manner as a soldier's knapsack. It corresponds to what are called in this country swag-straps. The *kawe* is laid on the ground with the two bands parallel, and the burden is placed across the mid-part by the connecting-band. The two bands are brought over the burden and tied in loops loose enough to allow of the arms being inserted between the band and the burden. The connecting-band prevents the long bands slipping off the sides of the burden. The act of tying the fibrous ends of the bands is known as *tui*. The carrier usually sits down in front of the burden with his back to it, puts his arms through the loops, and is usually assisted to his feet by a pull on the arms. Failing assistance, the burden with the *kawe* in position is usually placed on something to raise it from the ground. From this we get the old proverb, *Tuia te kawe, tairanga te kawe, ooi ko te kawe o te haere* (Fasten the *kawe*, lift up the *kawe*, ah! it is the *kawe* of departure). This denoted readiness to depart on some project, whether on a military expedition or some more peaceful object.

The bands for encircling the loads were 8 ft. or 9 ft. long. Some were made much broader than that described. The flat band made it more comfortable for the shoulders, and the fibrous ends made the tying easier and firmer. The connecting-band in the middle prevented the long bands from slipping over the sides of the burden. Altogether, the *kawe*, with its simple but ingenious construction, was admirably suited for its purpose.

Burdens were carried on the back by women, commoners, and slaves. In the frequent war-expeditions extra provisions had to be carried on the back, and this necessitated a fair number of porters. It was the lack of transport facilities when departing from the coast that restricted military operations until the season when food was plentiful in the enemy country.

The point of extraordinary interest in the *kawe* is that it forms one of the increasing number of differences that are coming to light between the Maori and the rest of the Polynesians. Throughout eastern and western Polynesia the method of carrying burdens is by means of the balance-pole, so commonly seen amongst Chinese gardeners and porters. In Samoa, Tonga, and Niue it is to be seen in everyday use. In Niue men, women, and even children may be seen coming in from their plantations with a load of bananas, plantains, yams, or taros suspended at each end of a pole carried across one shoulder. In eastern Polynesia, from the Hawaiian Islands down through the old distributing-centre in Tahiti and Raiatea, on to the Maori nearest of kin, the Rarotongan, and away to the islands

farther east, the balance-pole is in universal use. In New Zealand it is entirely absent. That the old-time Maori was acquainted with it a study of the words connected with that form of transport would seem to indicate. The Polynesian root word for carrying on the shoulder is *amo*. In the Samoan dialect *amo* means "to carry on the shoulder," and the name for the balance-pole is also *amo*. A burden is *amoga*. In Tongan, *haamo* is to carry on the shoulder burdens suspended from each end of a stick, and the burden carried as above is *haamoga*. In western Polynesia the Polynesian *ng* sound is represented by the letter *g*. In Niuean, to carry on the shoulder is *hahamo*, and the balance-pole is *lakau hahamo*. The Niue dialect has more aspirates than the Maori, as indicated in such words as *uha*, *mohe*, and *tahi*, which have the same meanings as the Maori *ua* (rain), *moe* (sleep), and *tai* (tide or sea). In Hawaiian, to carry a burden on the shoulder is *amo;* the burden so carried is also *amo;* and the balance-pole is *auamo*. In the Marquesan and Mangain dialects *amo* also means "to carry on the shoulder," and in the Moriori dialect of the Chatham Island *amo* is "to carry on a pole." Returning to New Zealand, in the Maori dialect *amo* means definitely "to carry on the shoulder." In his *Comparative Dictionary* Tregear gives as one meaning of *amo* "to carry in any manner," and quotes as an example, "*Amo ake au i taku toki nei.*" The phrase certainly means "to carry an axe," but if any Maori were asked how the axe was carried he would unhesitatingly reply, "On the shoulder." The literal meaning of the phrase is, "I carry up on my shoulder this my axe." Similarly, if a piece of firewood is carried on the shoulder the word *amo* is used. If firewood is carried on the back the word *waha* is used. To ask a man to shoulder his axe by using the words "*Me waha to toki*" would be quite wrong. There is a special word for shouldering, which is *amo*. Another Maori word for carrying on the back is *pikau*. *Waha* and *pikau* refer exclusively to carrying on the back, *hiki* to carrying in the arms, and *amo* to carrying on the shoulder. The Samoans have a similar word for carrying on the back, *fafa;* whilst the Tahitians use *vaha* and the Hawaiians *waha* with a similar meaning. The two methods of carrying are here distinguished by different words; but in Samoa and Tahiti *fafa* and *vaha* apply more to carrying persons on the back than ordinary burdens.

It is clear from these comparisons that, though the balance-pole does not now exist amongst the Maori, they have preserved in the word *amo* and its present meaning the old original use of the word. But, in addition to this, we have a trace of the survival of the old use of the word as applied to the balance-pole itself. For the transport of sick or wounded men, and also of the dead to their last resting-place, a litter or rough stretcher was made of two poles, which were carried on the shoulders of two men. One name for the litter was *kauhoa*, but equally common names were *kauamo*, *whataamo*, and *amo* without any prefix. Whilst the litter itself was called *amo*, there can be no doubt that to use the word *amo* in connection with the act of carrying, the shoulder had to be associated with it. Maori stretcher-bearers, carrying the wounded on the ordinary military stretchers during the late European War, when they wanted to give their arms a rest would say "*Me amo*," and the handles of the stretchers were unhesitatingly hoisted up on to their shoulders. "*Me amo*" meant "Let us shoulder it." Sometimes, when time pressed and material was not immediately available, a wounded man was slung to a single pole carried on the shoulders. Furthermore, heavy burdens of food were often carried in this

way. In the story of Wairangi, carefully written-down verbatim from a tattooed warrior of the old school, mention is made of large eels being carried on a pole held horizontally on the shoulders of two men. In more modern times a pig was often carried in this manner. To this the term *amo* was applied. Hence we see that the pole and the shoulder are associated together naturally in the mind of the Maori.

What better evidence can we get in these days to support the fact that the balance-pole was known to the Maori at some period of his past? How came it to be abandoned? Dr. Brigham, in explaining the use of the notches on the ends of the *auamo*, or Hawaiian balance-poles, gives what seems to be the key to the problem in New Zealand. In comparing the Hawaiian *auamo* with the Chinese bearing-stick, he points out that the latter "is without notches, though one or two pins were inserted to answer the same purposes as notches. It is easy enough to keep the suspended baskets from slipping off in the flat country of China or most Chinese towns, but the Hawaiian had to climb most difficult paths in his native islands, and *it would often be impossible to carry the pole perfectly horizontal.*" The italics are mine. Let us consider the paths the Maori had to climb in his native islands. We know that the Maori dwelt on fortified hilltops. The forts on the flat, protected by stockades, were so comparatively few as to be not worth consideration. The steeper the hill, the better for defensive purposes. These hills were terraced, so that, in addition to their natural steepness, the communication between successive terraces was rendered artificially steeper. The cultivations for *kumara*, *taro*, and gourds were on the flats below. Fish and shell-fish from the rivers, lakes, and sea, birds, berries, roots, and all food-supplies, firewood, and water had all to be carried up the steep hillsides and through narrow, tortuous, and still steeper communication-ways between tiers of terraces, embankments, and palisades to their homes. The balance-poles, with burdens fore and aft, would be the worst possible means of portorage. Where the Hawaiian in his own land found it "*often* impossible to carry the pole perfectly horizontal," the Maori in ascending the paths to his hill fort would find it *always* impossible; and no notch or even hole could do away with the disadvantages of the balance-pole. New conditions with insuperable difficulties led to the abandoning of the ancient method of carrying burdens. The balance-pole could not survive in Maori New Zealand. This in itself is sufficient to account for the introduction of a new method. The Maori had sufficient mentality to cope with the situation and evolve the *kawe* without outside assistance.

There are, however, so many things peculiar to the Maori as distinguished from the rest of Polynesia that there is a growing opinion amongst New Zealand ethnologists that these seeming anomalies are derived from a wave of pre-Maori people with Melanesian characteristics. Mr. Elsdon Best—than whom no one has gone into the matter more deeply—considers that, apart from the difficulties in the way of the balance-pole, the finding of a better method was rendered easy by accepting that already in vogue amongst the *tangata whenua*, or pre-Hawaiki and pre-Toi people. It is now accepted in most quarters that when Toi and his grandson Whatonga came from eastern Polynesia, two centuries before the Hawaiki migration, the country was fairly thickly populated. Both before and after this latter colonizing wave, also from eastern Polynesia, war was waged against the *tangata whenua* by the eastern Polynesians and their allies by intermarriage. Some tribes of the latter were exterminated, and others driven out of the

country, to find a temporary haven of peace in the Chatham Islands. Many of the men were spared to become slaves, and many of the women were taken in marriage. In fact, though all the tribes of the present day proudly trace their ancestry back to canoes from Hawaiki, we know that the crews of those canoes were comparatively few in number, and the blood of the *tangata whenua* tribes enters in some cases very largely into the existing tribes. Of the people absorbed, a large proportion must have been women, as very few are recorded in the passenger-lists of the famous Hawaiki canoes. Though the eastern Polynesians, by their higher mentality and aristocratic and warlike character, must have imposed their higher culture upon the resultant race, the bulk of the menial tasks in the cultivating of food and carrying of supplies into the hill forts must have fallen upon the slaves and womenfolk. What more natural, then, as Best suggests, than that they should carry the burdens for their lords and masters in their own way—namely, on the back by means of the burden-carriers, or *kawe*. The obvious advantages of the *kawe* over the balance-pole would be so apparent that the *amo* would speedily be relegated to the limbo of things forgotten, but the name, with its original meaning, remained as a memory of the past. Judge Maning describes, in *Old New Zealand*, a dilemma that occurred to the last canoe setting out on an expedition. When the food-supplies were to be transported down to the canoe it was found that all the slaves and commoners had departed in the other canoes. Not one of the chiefs or warriors could carry food on his back, and a catastrophe was only averted by a bright mind suggesting the brilliant idea of carrying the burdens down in their arms. Thus was the *tapu* avoided. May there not be some trace in this of the early clash of two systems? The proud and aristocratic eastern Polynesians, whilst allowing slaves, commoners, and women to adopt the new method, disdained to use it themselves, and *perhaps* perpetuated their conservative prejudice through succeeding generations by extending the anatomical boundaries of *tapu* from their sacred heads to their burden-rejecting backs. *Ko wai ka mohio.*

Acknowledgments.

I have to acknowledge my indebtedness to Messrs. Andersen, Best, and McDonald, of the Dominion Museum ethnological expedition, for every assistance and encouragement. Still pictures and cinema films were taken by Mr. McDonald, and the plates with this article are from photographs taken by him. I am also indebted to him for making my rough diagrams more intelligible.

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