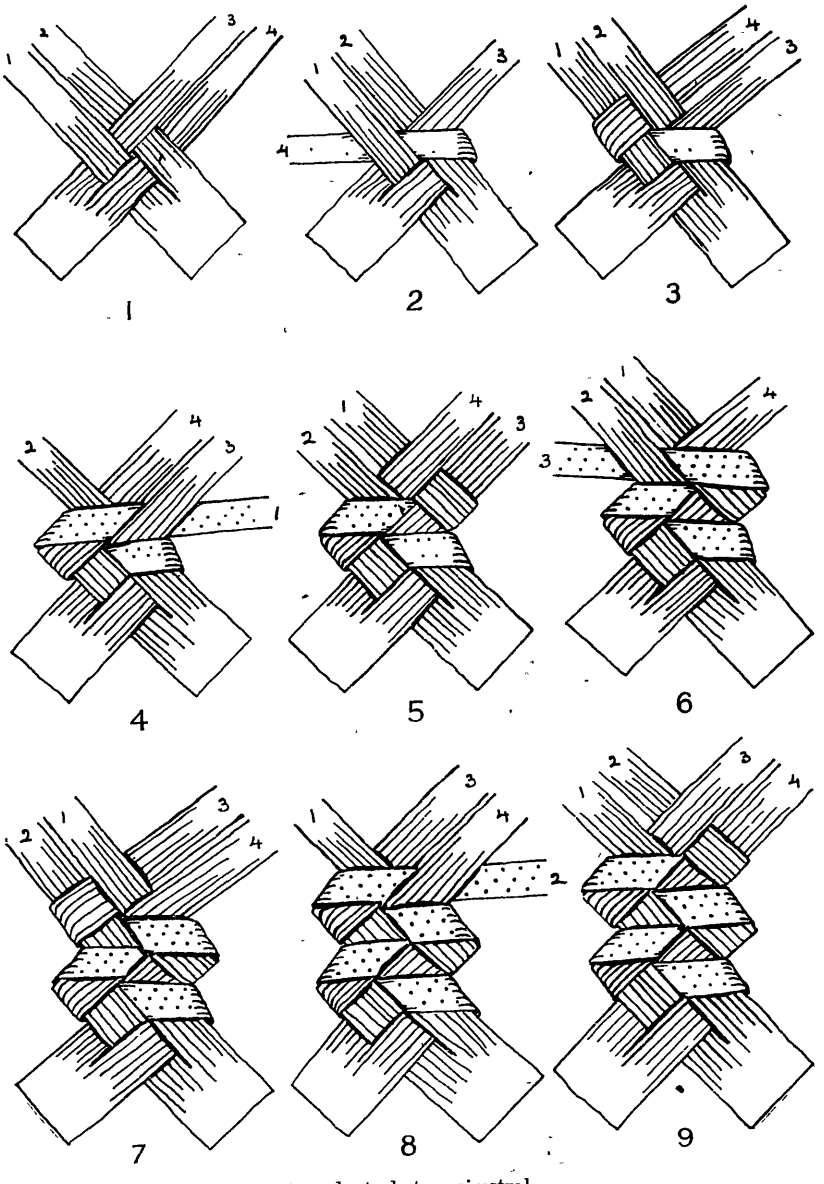


FIG. 1.—Wefts in position: two dextral, two sinistral.
FIG. 2.—Turn weft 4 to the left, and under weft 1.
FIG. 3.—Turn weft 4 diagonally to right, and under weft 2.
FIG. 4.—Turn weft 1 horizontally to right, and under weft 3.
FIG. 5.—Turn weft 1 diagonally to left, over weft 3 and under weft 4.
FIG. 6.—Turn weft 3 horizontally to left, and under weft 2.
FIG. 7.—Turn weft 3 diagonally to right, and under weft 1.
FIG. 8.—Turn weft 2 horizontally to right, and under weft 4.
FIG. 9.—Turn weft 2 diagonally to left, over weft 4 and under weft 3. This completes the cycle by bringing the numbered wefts back to the position they occupied in fig. 1. Carry on as from fig. 2, and continue until the required length is reached.

(*b.*) Belts.

Most of the Maori garments used as jupes or kilts had their own strings for tying round the waist. The waist-mat of the *piupiu* class, and the smaller aprons, or *maro*, were fastened on in this manner. Best (3) states that some of the *maro* were drawn between the legs and fastened behind to a belt. On ordinary occasions old woven cloaks were worn round the waist as a *rapaki*, or kilt, and such needed a supporting band or belt. A strip of flax, a cord, or a piece of rope was often all that was necessary.

The *kawe*, or burden-carrier, was often used by women as a belt. The usual way to carry a *kawe*, when not in immediate use, was to tie it round the waist. A single plaited band, of the same technique as one of the bands of the *kawe*, was also used as a belt. (See Plate 35, fig. 1.)

In addition to these, however, special belts were made. All belts come under the generic term *tatua*. The term *tu* was also applied to the belts used by warriors in battle. In old incantations referring to the preparations for combat the word *tu* is applied to the warrior's belt, and also to the special incantation recited when girding it on. Such a one is the following:—

Homai taku tu,
Homai taku maro,
Kia hurua,
Kia rawea,
Kia harapaki maua ko te riri,
Kia harapaki maua ko te nguha.
He maro riri te maro,
He maro nguha te maro,
He maro kai tata.

Give me my belt,
Give me my *maro*,
That they may be girded on,
That they may be fastened,
That I may be joined with Wrath,
That I may be united with Fury.
The *maro* is the *maro* of battle,
The *maro* is the *maro* of fierce anger,
It is the *maro* that destroys war-parties.

Men's Belts: *Tatua whara.*

These are plaited into a flat band, with white and dyed wefts of about $\frac{1}{8}$ in. in width. They usually have coloured designs worked in them. On the east coast of the North Island they are also called *tatua pupara*, whilst on the west coast they are called *tatua kotara*.

The plaiting is commenced in the same manner as the beginning of the best floor-mats of the *porera* class (4). The white and black wefts are usually in sets of six or more, united by an undivided portion of the butt end of the leaf. The undivided portions help to lock the wefts when the plaiting is commenced. It is usual to have all the black wefts running the one way, and the white the other. The beginning-edge is carried on for a length of from 36 in. to 38 in. In Plate 34, fig. 1, it will be seen that all the sinistral wefts are black and the dextral white. The undivided butt ends show up well, with the black ends forming the upper layer, and the white the lower. In the belt figured the black ends are much longer than the white. The plaiting is carried on in the usual way with a twilled stroke. In the belt in Plate 34, fig. 2, there are, from the bottom or beginning, five horizontal rows of alternate white and black.

The first row is composed of white twilled twos, then follow black twilled threes, white twilled twos, black twilled fours, and again white twilled twos. In the row of black twilled threes, as the name implies, each black weft crosses over three whites, and in the twilled fours each crosses over four. Thus variety is added to the design by making the black bands wider than the white. These horizontal bands are termed *pae* by the Whanganui people. Further variety is now introduced by "changing the stroke" in each succeeding weft of the same colour. Thus in the succeeding set of black wefts each alternate black crosses one weft whilst the others cross two, and check and twill strokes are combined in the same row to change the pattern. The next set of white wefts continues the alternate twill and check, or two and one, and before the bounding even line of white twilled twos is reached the intervening spaces are filled up with black threes and ones. The result is a regular series of small white figures set in a black background, bounded above and below by white bands. This design is called *kowhiti* on the east coast of the North Island, and *mawhiti* in the west. Amongst the Ngati-Porou the term *kowhiti* is applied to the plait in which check and twill strokes alternate as it does in the *kowhiti* design above. The technique is carried on to form three double rows of the *kowhiti* motive, separated by black bands of twilled fours. As a convenient width has now been reached, the upper portion of the plaiting is finished off in horizontal bands of alternate black and white.

The side-edges are formed by turning the wefts back into the body of the plaiting without reversing the surface as in floor-mats. Thus it will be noticed that on the left of Plate 34, fig. 1, after the black sinistral wefts which go to the left have passed the left marginal dextral weft going to the right, the black sinistrals have no further white dextrals to interlace with. But from below up, as each black sinistral comes to the left side-edge of the plaiting, it is turned back at right angles into the body and functions as a dextral weft. Hence both sinistrals and dextrals to the left of the left marginal white weft are black, and the plaiting of the triangular portion bounded by the left border, the upper border, and the left marginal white weft is completely black. For the same reason the triangular portion to the right of the right marginal black weft is completely white. These triangles of one colour can occur only when all the wefts of one colour go in the same direction at the beginning-edge. The width of the completed plaiting is about 6 in., and the result is a strip of floor-matting 38 in. by 6 in.

On the upper border the wefts are left long without fixing or cutting. The upper and lower borders are folded back so as to conceal the ends of the wefts. It is usual to fold down the four corners a little more than the rest of the border. The band is now folded or doubled on itself, and the ends of the wefts kept tucked away out of sight between the two layers. This reduces the width of the belt to about 2½ in. The free edges are drawn together with a strand of prepared flax-fibre. In these days they are usually sewn together with needle and thread.

The cords for tying are generally attached by passing a length of prepared fibre of the requisite thickness through holes piercing both thicknesses of the band at either end. The fibre is drawn through to the middle of its length, the two halves brought together, divided into three equal portions, plaited into a cord with a three-ply plait, and finished off at the end with an overhand knot. In length the cords are 18 in. and upwards.

The belt is worn with the sewn edge uppermost. At times the edges are not sewn together, and the belt is then used as a pocket for containing various articles. Best quotes the tradition of Taukata having brought the *kao*, or cooked and dried *kumara*, to New Zealand in such a belt. The Aotea tradition states that Rongorongo, the wife of Turi, brought the seed of the *kumara* in her belt from Hawaiki. From this historical incident arises the saying applied to the *kumara* in the Taranaki district, *Te tatua o Rongorongo* (The belt of Rongorongo). The width of the belt may be more than 2½ in., some saying that it was made much wider so as to protect the abdomen from hostile thrusts on the battlefield. The uncut ends of the wefts tucked between the folds of the belt further thicken it and give additional protection.

Best (3) mentions that similar belts about 4 in. wide were used by women, and that in them the *whakakokikoki*, or zigzag design, was a favourite one. I have described the *kowhiti* design above in detail, as it also seems a favourite one in old belts. Various other designs were used. Other variations were secured by using alternate dextrals and sinistrals of one colour. The *pingao* (*Scirpus frondosus*) was used in coloured designs because of its yellow colour. Thus the colours used were, as in floor-mats and baskets. white, black, and yellow. In modern times European dyes are freely used.

Women's Belts: *Tu.*

These consist of several plaited strands, as against the single wide band in the men's belts. The available information was collected by Mr. Elsdon Best (3) from the Tuhoe Tribe. He was fortunately able to get samples made for the Dominion and Auckland Museums, and thus save this class of belt from being irretrievably lost. The strands are plaited after the manner of cords (*whiri*), and are quite distinct from the plaited bands of the *tatua whara* class, which is true plaiting, or *raranga*. The *tu* are worn by women only. Best distinguishes three varieties, from the material used—viz., *karetu* (*Hierochloe redolens*), *maurea* (*Carex lucida* and *C. comans*), and *muka* or prepared flax-fibre.

(1.) *Tu-karetu.*—These consists of a number of plaited strands (*kawekawe* or *kawai*), which have a *tau*, or plaited cord of dressed flax-fibre, attached to each end for tying round the waist. The strands are plaited with wefts of the leaves of the *karetu*, which are from 1½ ft. to 2 ft. in length. The midrib (*tuaka*) is removed from each leaf, as it becomes very brittle when dried, and thus breaks easily. The wefts are about ⅛ in. in width. The length of the many-stranded part of the belt varies. In those obtained by Mr. Best for the Auckland Museum they are 29¼ in., 34½ in., and 49½ in. respectively. The number of strands varies, being usually about ten. In the three belts mentionrd they are eleven, ten, and five.

The *karetu* wefts are plaited into a continuous braid, the length of which depends on the length of the belt and the number of strands required. Thus in the ten-stranded belt above the plaited *karetu* braid is 28 ft. 9 in. in length. The number of wefts is twelve, and they are usually plaited in the *rauru* pattern, the technique of which will be described when dealing with ropes and cords. It forms a neat flat braid about ¼ in. wide. Fresh wefts are added during the course of the plaiting. The requisite length having been attained, the cord is looped backwards and forwards so that when the ends of the loops are stretched apart the total length of the braid is divided up into a number of strands of the required length for the belt.

The *tau*, or flax-fibre cord, is attached in the following manner: The length of flax-fibre sufficient for plaiting the cord is doubled on itself. The loop or bight so formed is passed through one of the loops formed by the doubling-back of the *karetu* strands, and the two ends of the fibre passed through the bight, as in tying a single lark's-head knot. The bight is drawn tight round the loop of strands, and thus the flax-fibre is fixed, and one end of the belt sharply defined. The two ends of fibre are divided into three equal portions and plaited into a three-ply braid. It is usually about 2 ft. in length. As it thins out towards the end the three-ply braid may be changed into a two-ply twist and finished off with an overhand knot. The same process is repeated at the other end of the belt. When the belt has an uneven number of strands an end of the continuous *karetu* cord will be at each end of the belt. They are usually incorporated in one of the divisions of the *tau*, and plaited in with it for an inch or so to fix them. With an even number of strands both ends of the *karetu* braid will be at one extremity of the belt. They are then usually knotted together with a reef-knot. The *tau* are usually of black-dyed fibre. Red-dyed fibre is sometimes used in addition to the black, in which case a length of one colour is looped round all the strands, whilst the other is looped round some of the

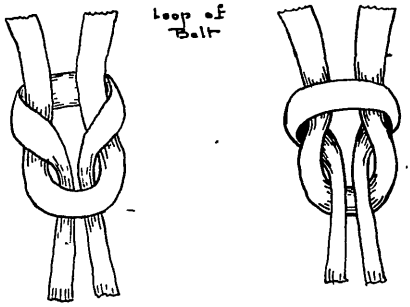


FIG. 10.—*Tu.* Fastening of *tau*.

strands, and usually crossed over the first loop. The plaiting of the *tau* is then of the *rauru* pattern. The black or red-and-black tying-cords lend contrast to the yellowish *karetu* strands, improving the appearance of the belt. The *karetu* has a sweet-smelling odour, which recommended it to the women. (See Plate 35, fig. 2.)

(2.) *Tu-maurea.*—This belt was sought after by women on account of the reddish-yellow colour of the *maurea* leaves when dry. It is made in exactly the same manner as the *tu-karetu*. The wefts are much narrower and more brittle. According to Best (3), they were strengthened by the addition of some flax-fibre. The *maurea* braid is about $\frac{1}{5}$ in. in width. The specimen in the Auckland Museum is 34 in. long, with black flax-fibre cords of 20 in. each, and it has eleven strands.

(3.) *Tu-muka.*—This is made altogether of *muku* (dressed flax-fibre). The one in the Auckland Museum has twelve strands, an equal number being red, black, and white. The strands are composed of round, thick cords about $\frac{1}{4}$ in. in diameter, and form a heavier, stronger, and better-looking belt than the previous two. The strands are prepared in a peculiar manner and, though not really coming under the heading of plaiting, Best's (3) description of the technique is included for the sake of completeness. The strands are composed of two cords, each of which has been prepared from

two threads twisted together by the *miro* process on the bare thigh. These two cords are then twisted together in a similar manner for a short section. "The operator then holds tightly the end of one of these cords and pushes the other back until, instead of enveloping the held cord in a long spiral, it appears to be *seized* round it at right angles." The same result would be achieved if one cord were stretched tight and the other twisted round and round it to make a close continuous whipping, but of course the Maori method is much quicker and simpler. The operation is carried on in sections. A section is twisted on the thigh (*miro*), and then pushed down (*koneke* or *pahuhu*); the next section is then twisted and pushed down, and so on until the required length is obtained. At the finish the pushed-down cord is knotted round the held cord. Each strand is prepared separately. The length of each strand is about 42 in. At either end of the seized strand there is a continuation of the two constituent cords. All those at one end are united by simply plaiting them on in a square plait to form the *tau*, or tying-cord. In the belt described the white cords are concealed under the red and black cords so that only the latter two colours show in the *tau*. Each *tau* is 26 in. long. As the *tau* thins out, the square plait is changed into a flat *rauru* plait, and the last 4 in. is finished off with a two-ply twist ending in an overhand knot. (See Plate 35, fig. 3.)

The many-stranded belt of the *tu* variety must be an old type, as it is found in Polynesia. The Niuean *kafa* is a belt composed of many strands of fine braid plaited from human hair. One in my possession contains sixty-nine strands, and is 35½ in. long. The hair-braid is continuous, and looped at either end of the belt to take the tying-cords. Percy Smith (5) mentions some as containing over a hundred strands. Similar belts are described from Tahiti.

Cooking-bands.

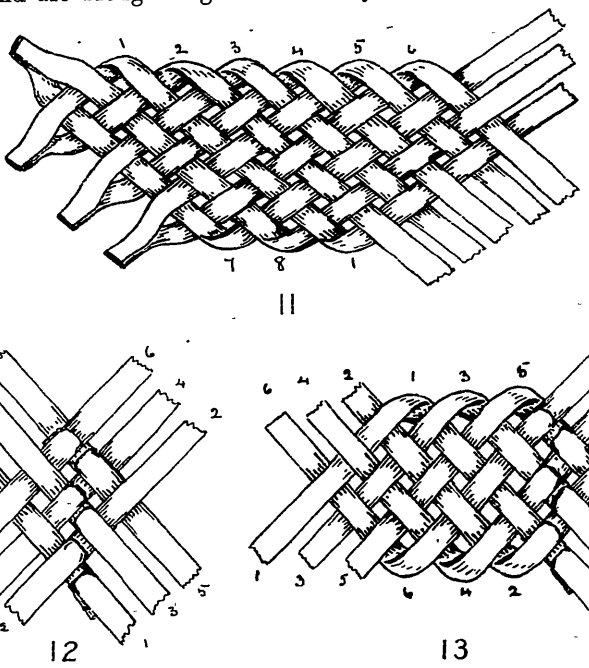
Bands used in connection with cooking are termed *paepae umu* (oven-bands) in regions on the west coast of the North Island. In other parts they are also termed *kopae, koropae, kopaepae, koropaepae, konae,* and *koronae.* They are used to place round the circumference of the *umu,* or *hangi* (earth-oven), to act as a raised rim, preventing the food heaped up on the heated stones from falling out. When the pieces of unburnt wood have been removed and the heated stones levelled, the *paepae* is placed in position, the food heaped in and covered with the *tapora* mats and a layer of earth to keep in the steam generated from the water that is sprinkled over the food. These bands may be divided into two kinds.

Paepae raranga: Plaited Band.

This a band 4 in. to 6 in. wide, made from green flax. The method is to take four full blades, remove the edges, bend the butts, and split down the blades to this bending, as in commencing the *kono,* or cooked-food basket. Each weft is thus a half-blade, and the wefts are in pairs connected by a portion of undivided butt. One pair of wefts is interlaced with a check stroke through the other three pairs, as shown in fig. 11. The upper left marginal weft, 1, is bent over at right angles to its course and interlaced through the others crossing it. The alternate wefts are separated into two layers to allow the crossing-weft 1 to pass between and continue the check pattern. The others, 2, 3, and 4, follow in order, the bending-over defining the upper border of the band. The lower border is commenced by the left lower marginal weft, 7, being bent upwards at right

angles and passing between the layers of alternate wefts. Weft 8 follows, and so the lower edge is defined. This process is continued, alternately working from the upper and lower borders, until the requisite length of 5 ft. or 6 ft. is reached. Fresh wefts are easily added by laying a fresh one over the shortening weft as it is bent back from the border and passed between the two layers separated for its reception, the butt end of the new weft being placed level with the border from which a shortening weft was bent back. The continuation of the plaiting locks the new weft in position. A simpler way is to push the butt end of the new weft back along the course of the shortening weft for the width of the band.

The ends of the wefts are cut short, and can be turned back and interlaced under crossing wefts to keep them in position. The two ends of the band are brought together and may be tied.



FIGS. 11–13.—Details of *paepae raranga* (plaited band).

The *paepae raranga* thus forms a continuous band which encircles the *umu*. It is set on edge, and is also called a *paepae whakatu* (upright oven-band). Being made of green flax, the wefts shrink and become loose after being used, at the most, twice, when they are cast aside and fresh ones made at no cost and little labour.

There is another variation of the plaited *paepae umu* made by the Ngati-Porou of the east coast. The full blades are bent at the butt as usual, but the two half-blades are opened out into a long single weft connected at the middle by the undivided butt portion. Six or more blades are used. Fig. 12 represents six blades laid down in the order of the numbers against them. They are crossed at their butt-junction in such a manner as to be alternately above and below—or, in other words, so as to continue a check plait. The plaiting is commenced with the six elements on

the left by defining the lower border of the band. Weft 2 is bent at right angles to its course by a half-turn backwards and passed under 4 and over 6. A half-turn forwards is just as good, but in the figure back-turns are shown. This weft must go under 4 and over 6 to continue the check plait. Weft 4 is now turned and passed under 6 (see fig. 13). The half-turns made define the lower border of the band. As there are no crossing-wefts for 6 to engage, some elements must be brought in from the upper set. The right one of the upper three, weft 5, commences the upper border just as the right one of the lower three commenced the lower border. Number 5 is given a half-turn forward and passed over 3 and under 1 as in fig. 13. Wefts 3 and 1 follow in a similar way, so that both borders and the width of the band are defined. The check plait is continued and the width of the band maintained as in the previous type described. Wefts reach the end in a point with an even number of wefts on either side: these are tied together to prevent the band becoming undone. The other half of the band is commenced by plaiting the six wefts on the right in a similar way. These wefts, it must be remembered, are the other halves of the flax-blades already used. Fig. 13 shows them in position, on the reader's right, ready for the start. Commencing at the lower border, it must be remembered that we are going in the opposite direction, and diagramatically the processes are reversed. Weft 1 takes a half-turn forward and passes in front of 3 and behind 5. Weft 3 follows suit and passes in front of 5. Weft 6 above takes a half-turn backward and passes behind 4 and in front of 2. This has to be done to keep up the same stroke. I have described it theoretically so as to follow the diagram and interest the reader with a plaiting problem. What really does happen on commencing the second side is that the plaiter simply turns the work over, when the wefts lie in the same direction as in the previous half of the work, and the work is done in exactly the same way. Thus, turn fig. 12 over mentally, maintaining the same upper and lower borders: the wefts to be plaited now lie to the left, and weft 1 will correspond to weft 2 in the previous half. It will take a half-turn backward and pass behind the first crossing-weft, which will be 3, and in front of the next, which will be 5. When the second half is completed the ends are tied together to correspond with the circumference of the earth-oven. Reference to fig. 12 will show that the plaiting was worked from right to left, whereas the other direction is that usually adopted. The woman I watched plaiting a *pae umu*, as it is usually termed in the east coast, plaited it in this way, and my notes and rough diagram naturally followed it.

This method aims at getting a longer weft and so avoid joining fresh wefts in, as in the usual west-coast method. The joining is done at the beginning, as it were. (See Plate 36, figs. 1, 2.)

A better class of band is plaited with narrower wefts which have been lightly scraped. The stroke used is often the *kowhiti*, where twilled twos and a check alternate. According to the plaiters, this thickens the band and assists it in standing on its edge. The twisted or braided band which follows was not used by the Ngati-Porou.

Paepae whiri: Twisted Band.

This variety is made from bundles of narrow wefts of flax, and plaited with a three-ply braid into a thick band of varying width. The wefts are of unprepared flax, and are narrower than the usual wefts for baskets.

Tipare (fillet for the head) worn by Rihipeti, the plaiting expert of Operiki, Wanganui River.

Face p. 352.]

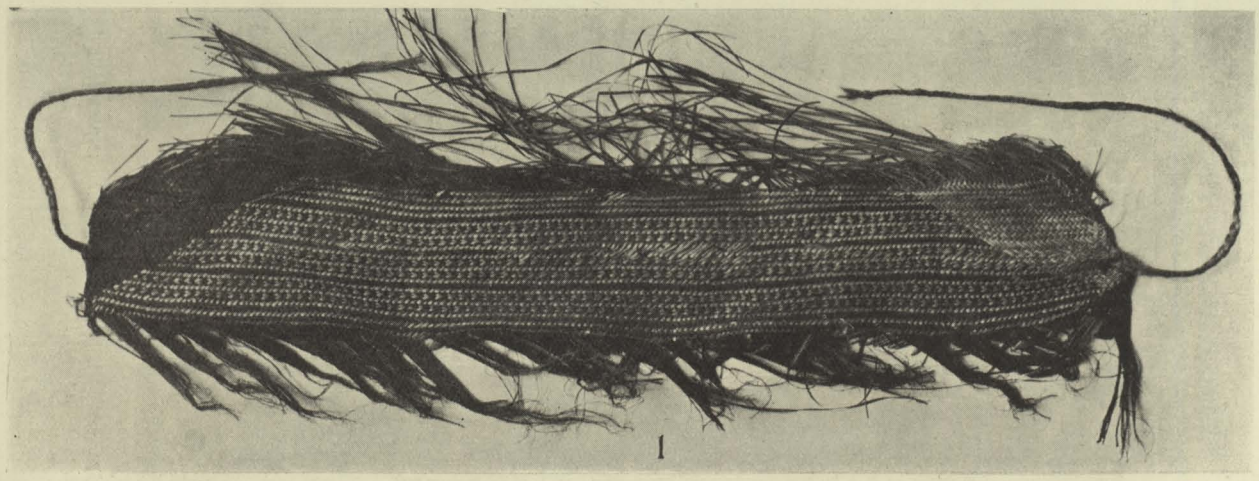


Fig. 1.—*Tatua whara* (man's belt), opened out to show technique of edges, &c.
Fig. 2.—*Tatua whara*, folded and edges tucked in as when worn.

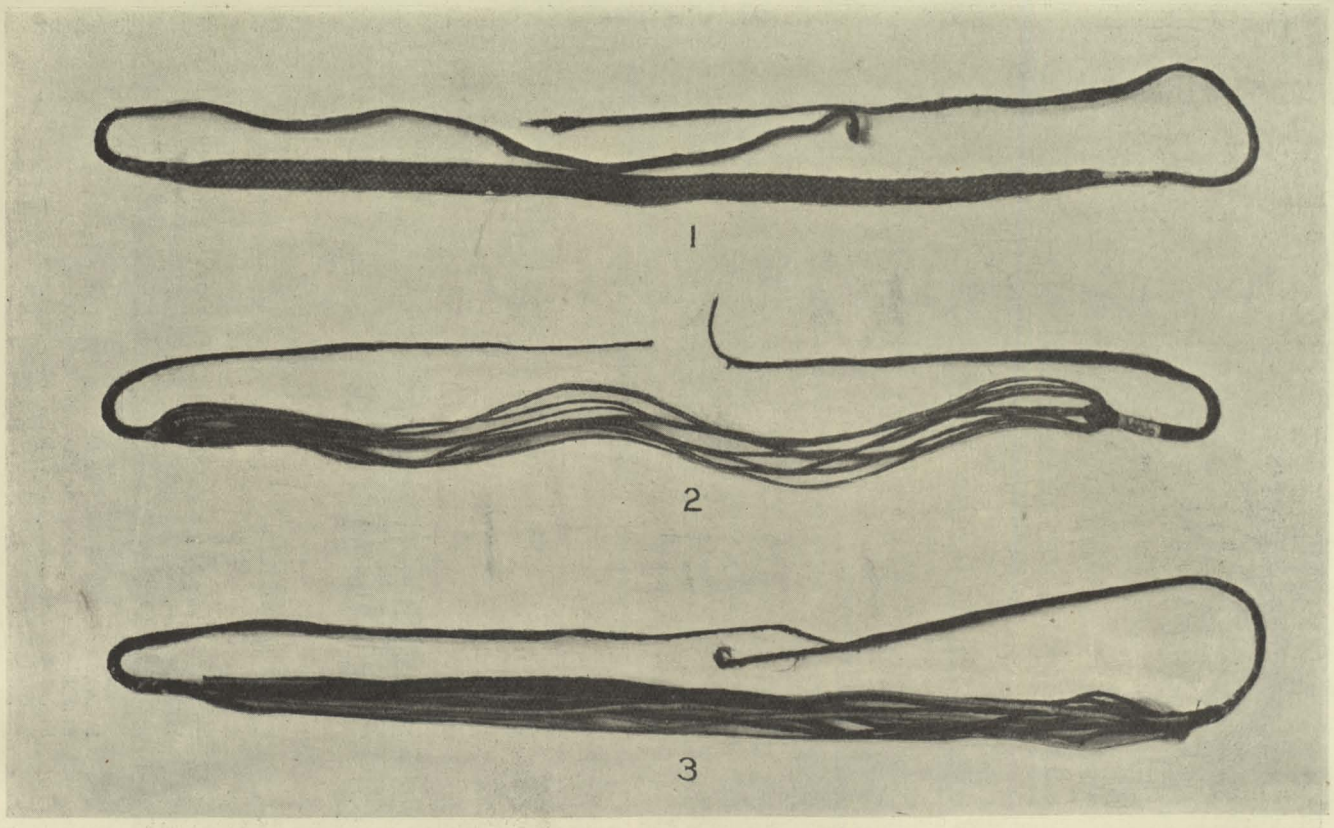


Fig. 1.—Belt of single band of same technique as band of *kawe*.
Fig. 2.—*Tu-karetu* (woman's belt) made from leaves of the *karetu*.
Fig. 3.—*Tu-muka* (woman's belt) made from scutched fibre of the *Phormium tenax*.

FIG. 1.—*Paepae raranga* (oven-band). The completed band.
FIG. 2.—The band holding the food in position.
FIG. 3.—*Paepae whiri*, the twisted oven-band.

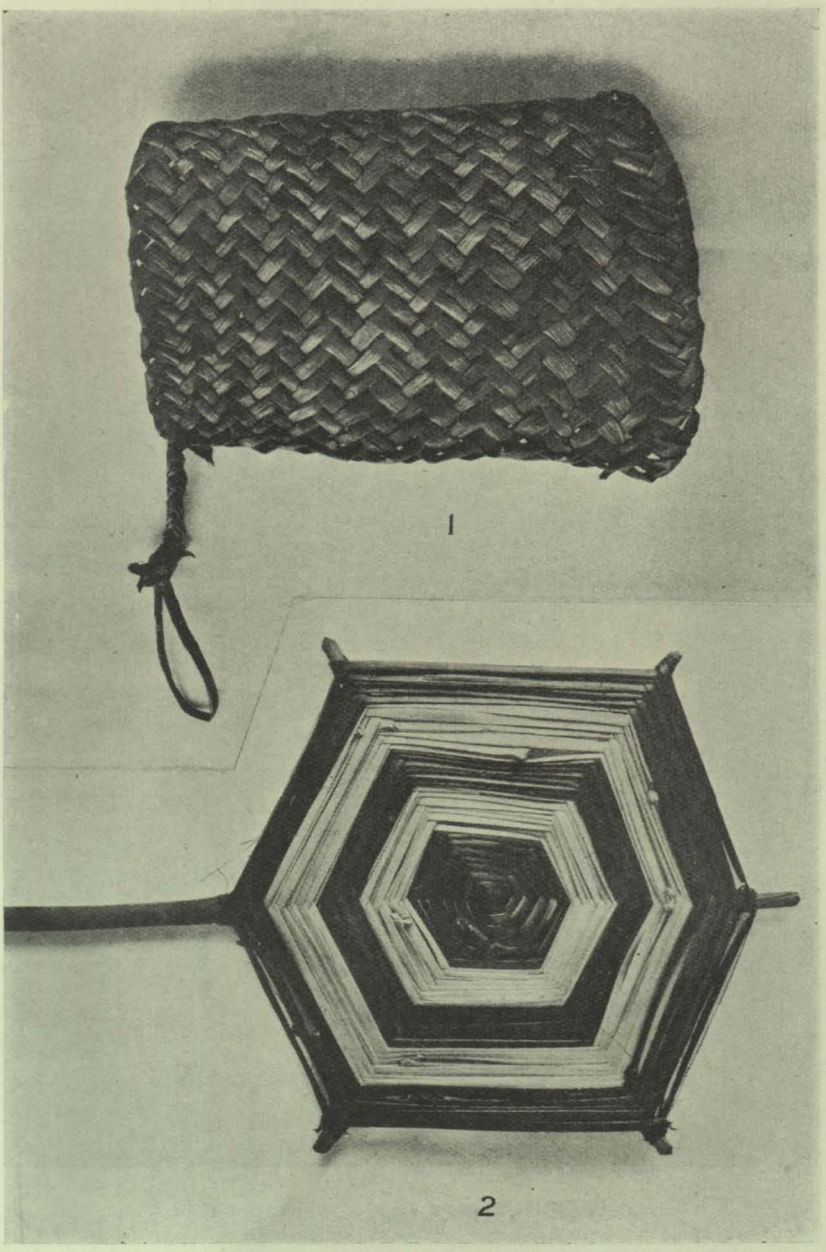
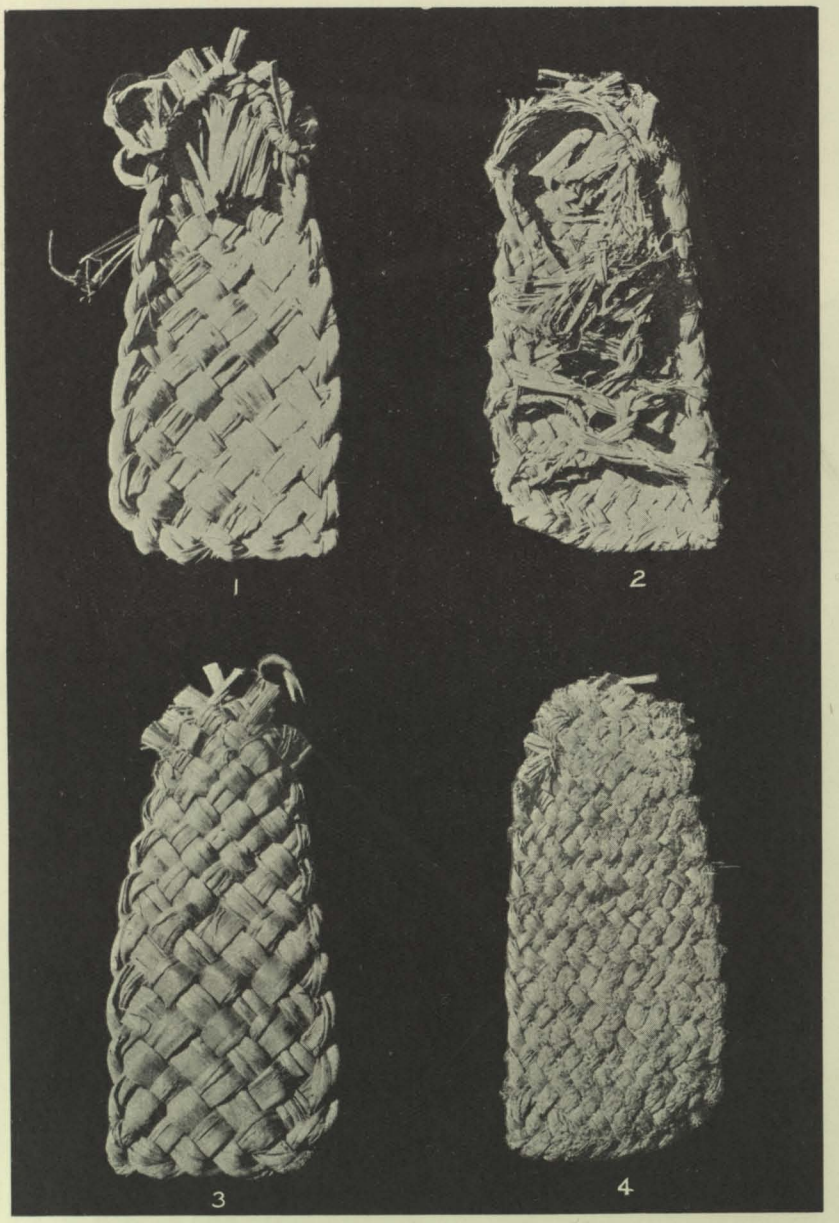


FIG. 1.—*Piupiu ahi* (fire-fan). FIG. 2.—*Patungaro* (fly-flap).



Paruerae (sandals). Upper surface of sandals for right foot.

FIG. 1.—Check stroke, *taki-tahi :* lacing-strands turned back to show detail of heel; upper elements of double wefts twisted over knotted strand back on to upper surface of heel-part; lower elements show cut-off ends projecting beyond heel-margin.

FIG. 2.—Twilled-two stroke, *torua :* lacing-strands in position and tied.

FIGS. 3, 4.—Under-surface of figs. 1, 2.

Sandal in position: the heel-band, three side-loops, lacing across loops, and the tie show clearly; the lacing-strands are frayed through age.

Ra, or *mamaru* (sail); from *Museum Bulletin No. 2*.

The butt ends are not specially scraped, though they show a tuft of fibre from the *takirikiri* process of tearing the strips off the butt end of the leaf. The strips are allowed to dry a little, so as to avoid subsequent shrinkage. The whole bundle of strips is divided into two equal parts. The strips composing one part are knotted together at their thin ends, corresponding to the narrower tip end of the leaf, with an overhand knot. The strips are then separated into three equal parts, and, commencing from the knot, are plaited in three-ply braid. As the strips increase in width the band naturally thickens and widens. The plaiting is continued for about 11 in., when the three equally divided parts of the other half of the strips are added, one to each ply. The strips are reversed, the wider butt ends of the added strips being plaited in first. The added strips materially increase the thickness of the band, until the butt ends of the first set are reached, when the band gradually tapers off until the tip ends of the second end are reached and finished off with an overhand knot. The total length of the band I am describing is 46 in. Its width in the middle is $2\frac{1}{2}$ in. and thickness $1\frac{1}{4}$ in. The part of the band between the tapering 11 in. at either end maintained the fairly even width of $2\frac{1}{2}$ in., and therefore the business part of the band is roughly 2 ft. in length. It was thus necessary to have two or three bands to encircle the oven, the tapering ends, being too low, being overlapped by the wider parts of the neighbouring bands. (See Plate 36, fig. 3.)

These braided *paepae* lasted a long time, and were hung up in the cooking-houses after use. They make a strong serviceable band, but owing to their narrower width the food is more likely to flow over than with the wider-plaited bands. On the other hand, they save the trouble of seeking out fresh flax before cooking each meal.

5. FIRE-FANS: *PIUPIU AHI.*

Fans, which must have been well known to the Maori in Polynesia, were soon forgotten and discarded in the colder climate of New Zealand. So far as one can gather, there were no fans used for directing a current of air towards the heated face. The sole representative of the well-made and artistic fans of the various Polynesian islands was a rectangular strip of plaited flax used for fanning a smouldering fire into flame. To avoid the repeated use of the fire-plough, with its somewhat strenuous exertion, the coals of a fire which had completed its immediate work were covered over with ashes so as to keep them alive. To restart the fire the ashes were parted, and the coals, which had smouldered slowly, were fanned into a glow as the kindling-wood was added. The banking-up of fires was an ancient and important method of preserving a light, and is illustrated in the following incident. One of my tribal ancestors, who had been reduced to weakened circumstances owing to the untimely death of his six elder brothers and their warriors, was subjected to a series of annoyances by a neighbouring sub-tribe. This was done in order that he might be constrained to leave the district without an actual declaration of active hostilities. When he went inland, his previous day's catch of fish, hanging up to preserve, were surreptitiously removed. When he went afishing, his stacks of fern-root, drying in the sun, were similarly appropriated. The limit of forbearance was reached when the live coals of his banked-up fire were abstracted. The coals were not put out with water, as active signs of interference would have been noticed; but, like the fish and the fern-root, they simply disappeared—they faded away. The sole survivor of

powerful family, realizing his impotence, spake bitterly and said, "*Ko te moko ta kau i au; mehe ko te moko i a Rangi-nui-te-Ao, e mana ana te kohatu, e mana ana te tukituki*" ("Alas! the tattooing of my face was in vain; were it but the tattooing on the face of Rangi-nui-te-Ao, then the stone club and the stone pounder would be backed by the authority of power"). Rangi-nui-te-Ao was the eldest of the seven brothers. This saying reached the ears of Tukutahi and Rehetaia, the powerful kinsmen of the helpless one. Inquiries and explanations led to the advent of a war-party, which effectively—but that is another story.

The *ahi-ka-roa*, the fire that has been alight for a long period, is a well-known term in establishing claims to land. It takes its origin from the custom or necessity of not allowing the fire to become extinct.

Apart from the method of rekindling a cooking-fire, charcoal fires were the ordinary means of heating the *wharepuni*, or dwelling-houses. The lack of ventilation prohibited the use of wood, owing to the nuisance created by smoke. The charcoal as it burnt down was covered by a deposit of ash, which was usually gently waved off with the fire-fan ere a fresh supply of charcoal was added.

The necessity for a fire-fan was further occasioned by the general repugnance of the Maori to blowing a fire with the breath. This took its origin from the prohibitions imposed by the law of *tapu*. If a chief blew on an ordinary fire, the breath, coming as it did from his sacred or *tapu* head, impregnated the fire with *tapu* and prohibited its use for cooking purposes. Food is *noa*, or common, and at the opposite extreme to *tapu*, and food could not be cooked on such a fire. If cooked inadvertently, the *tapu* affected those who partook of it, and the act thus transgressed the chief's *tapu*. The act of cooking food on such a fire was also a direct insult to the chief, and it is probable that the abstaining from cooking was due not only to fear of the supernormal guardians of the chief's *tapu*, but also to fear of active human reprisals. Thus the principle of blowing a fire with the human breath was dangerous, and was avoided by using a mechanical contrivance, the fire-fan. In these degenerate socialistic days the fear of *tapu* has vanished to a great degree, and the fire-fan has lost its monopoly. Two generations ago, however, every old woman had her fire-fan, which, when not in use, was kept under the edge of a floor-mat flanking the fire.

The fire-fan is generically known as *piupiu ahi*. The many words used to express fanning a fire were also used for the fan. Such are *towhiriwhiri*, *kowhiuwhiu*, *powaiwai*, and *powhiri*. The technique of the fire-fan is quite simple. Ordinary wefts of green flax are plaited, usually with a twilled-two stroke, in the manner of a miniature floor-mat of the *taka* variety. The one figured in Plate 37, fig. 1, is 8½ in. long by 5 in. wide. The beginning-edge may be done by plaiting the butt wefts with a three-ply braid as in the *taka* mat. The *kopetipeti* finish is often used with the *hiki* plait as well. In the fan figured, the beginning was simply commenced by interplaiting the wefts for a short distance and then using the *kopetipeti* finish to secure them. The last wefts of the finishing-border are sometimes continued into a braid to form a loop by which the fan may be hung up; though, as mentioned, it is usually kept under the edge of a floor-mat.

6. FLY-FLAPS: *PATUNGARO.*

The fly-flap, or fly-whisk, of Polynesia again finds a modified representative in New Zealand. The *fuifui lago* of Niue and *fue* of Samoa are

made of braided sinnet, a number of strands being tied to a handle and the free ends left unplaited. They resemble the horse-hair fly-whisks used in Egypt. In many of the Pacific islands, Niue especially, swarms of flies similar to the house-fly frequent the highways and byways, and swarm round undefended human beings in myriads. In Niue it is rare to see Natives walking about in the daytime without leafy branches constantly in motion to prevent these pests from alighting on them. To a man with any feeling of pride in himself the fly-whisk is an indispensable part of his everyday equipment. In New Zealand the protection of the living from flies was unnecessary, and the fly-whisk of Polynesia disappeared. I have heard members of the Aupouri Tribe of the far North say that their high chiefs were so *tapu* that dire results took place if a fly that had alighted on their sacred heads subsequently alit on food. One man stated that to prevent such calamity attendants were careful to prevent flies from alighting on such chiefs. The immunity of the living Maori, however, was not shared by the dead. In olden times one of the weaknesses of the Maori was that of keeping their dead above ground for as long as possible: a too-hurried burial was looked upon as a disrespect to the dead. Grief must be allowed a considerable time to demonstrate its intensity. Even in these more enlightened days, owing to the desire of distant relatives or mourners to view the corpse, a good deal of trouble is sometimes experienced by the Department of Health in obtaining speedy burial in cases of death from infectious diseases. By-laws have had to be enacted under the Maori Councils Act to ensure burial in four days in the winter, three days in the summer, and twenty-four hours in the case of infectious disease. It can be understood, therefore, that in ancient times a corpse before being finally disposed of attracted more than the usual number of flies. To meet this the fly-flap, that had been discarded for the living, was retained or reinvented for the dead. Sinnet and horsehair not being available, and dressed flax-fibre causing more trouble than seemed necessary, the Maori form of fly-flap underwent a complete change. It has no connection with the fly-whisk of Polynesia except in part of its function.

The object was to attach to a handle a flat surface of sufficient area to ensure swatting a fly that had alighted on a corpse. As the appliance was only for the one corpse, and was not kept afterwards, no great care was taken in material selected or art displayed in the making. A thin rod 2 ft. to 3 ft. in length, of *manuka* or other wood, formed the handle. A short piece of similar wood from 5 in. to 6 in. long was placed across the long rod about $2\frac{1}{2}$ in. to 3 in. from one end. This formed a cross with three equal limbs, the fourth long limb forming the handle. A strip of lightly scraped flax about $\frac{1}{4}$ in. wide was then used to form the flat striking-surface of the flap. It was crossed over the middle of the front piece of wood, and then, working from this centre outwards, was wrapped in succession round each of the four limbs of the cross. Reference to fig. 14 will show that the flaxen strip is crossed over the anterior surface of the limb, wrapped completely round it, and crossed over itself on its way to the next limb. Thus the stroke used is a wrapped stroke identical with that used in the decorative panels of houses (6). As each turn of the strip follows the shortest distance between two limbs of the cross, it follows that the figure developed is a square set on an angle, and thus appearing somewhat lozenge-shaped. This stroke was continued until the strip reached the ends of the three short limbs of the cross, when the end was tied. As each turn between the limbs was made, the strip of flax overlapped the outer edge of the previous turn, and

so presented a close surface. The completed figure maintained its lozenge-shaped appearance from the long axis of the handle passing diagonally through opposite corners of the square. It is interesting to note that the name of the fly-flap, *patu ngaro*, is given to some of the lozenge motives in the decorative lattice-work of house-panels. The Ngati-Porou of the east coast called a fire-flap a *hauhau rango*. Occasionally a strip of flax dyed black was alternated with the white to give a decorative effect. Occasionally, too, there might be two cross-pieces instead of one, this producing a six-sided figure. (See Plate 37, fig. 2.)

Though practically confined to use in connection with corpses, the fly-flap has on occasions been used for the destruction of flies in a living-room. Some years ago, when Maori political prisoners from Taranaki were confined in the Wellington gaol, the number of flies disturbed their slumbers in the summer mornings. Thirty men of the Ati Awa Tribe made fly-flaps and successfully conducted a campaign of extermination. The news of their

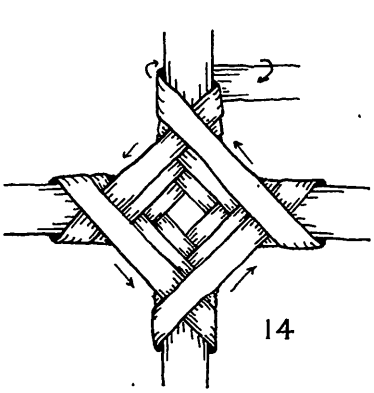


FIG. 14.—Fly-flap: front.

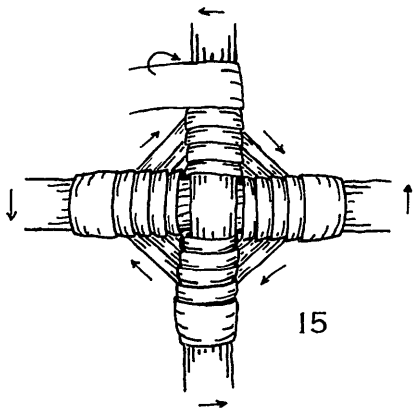


FIG. 15.—Fly-flap: back.

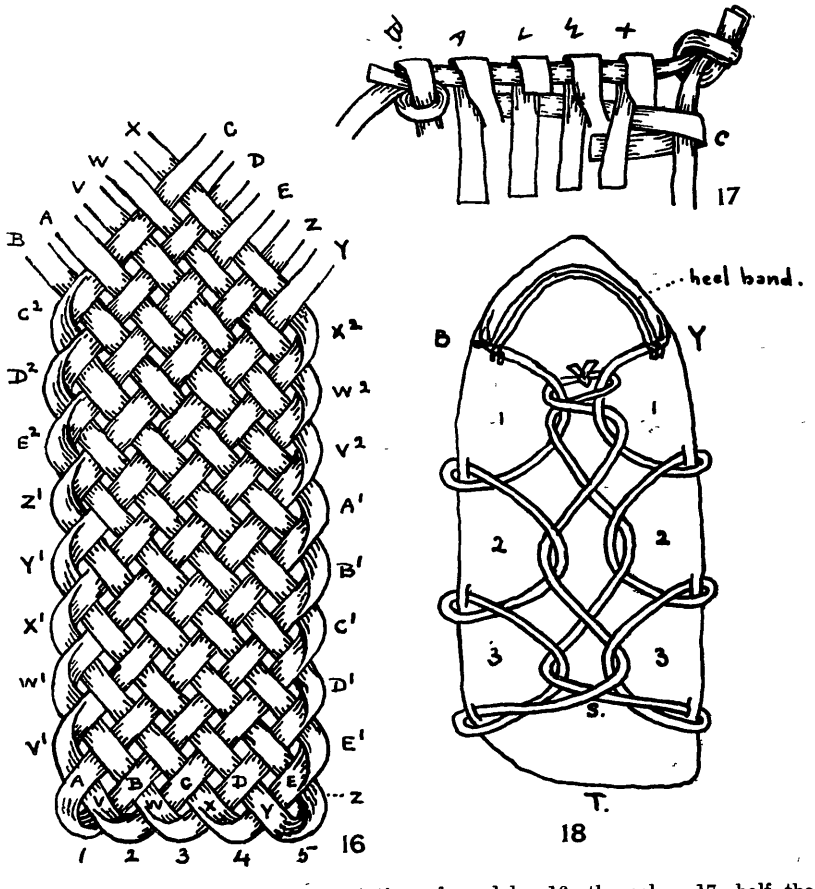
Fig. 15 shows that the flax strip crosses the posterior surface of the arms of the cross horizontally or vertically, whereas on the anterior surface it crosses diagonally.

success reaching the neighbouring Ngati-Ruanui Tribe, a formal invitation conducted with all the etiquette appertaining to ancient warfare was sent to the Ati Awa. The thirty warriors, fully armed, obeyed the summons, and conducted the attack so vigorously that in a short space the Ngati-Ruanui tribal prison-cells were utterly cleared of the enemy. Ceremonial speeches were then made by the indebted tribe, and a large (for a prison) quantity of tobacco handed over with due observances to the victorious war-party. It was one of these successful veterans who constructed the fly-flap above described. Thus the temporary incarceration of my own tribe has resulted in the recording of an ethnological item of some small interest.

Flat ornaments made like the fly-flap were used on the ends of the plumes (*hihi*) of a canoe. They were also called *patu ngaro*, from the origin of the motive. The same motive is also used in some fish-traps, such as the *torehe* and the *tutoko*. They were used as bait-rests, a strand of flax or fibre being passed over the bait and round the projecting arms of the cross to secure it in position. The Whanau Apanui Tribe, of the Bay of Plenty, term the bait-rest of the *torehe* trap a *pouraka*.

7. SANDALS: *PARAERAE.*

Sandals were plaited from flax, or the leaves of the *Cordyline australis*. They seem to have been quite common in the South Island. Skinner (7) mentions that on the Poutini coast they were also made of mountain-grass, and that in expeditions from five to twenty pairs were carried by each individual. They were quickly worn out in rough stony country or in swamps, and when a halt was made more were manufactured from whatever material was available. In the North Island the use was not so universal. The Whanganui and East Coast people know nothing of them,



FIGS. 16–18.—Diagrammatic representation of sandal: 16, the sole; 17, half the heel; 18, the lacing.

and regard them with scepticism. In Taranaki, however, they were worn until fairly recently by old men at Parihaka. They say they were used to protect the feet from the frost as well as the rough stones on the beaches. They were also used in the Taupō and Moawhango districts, where they were termed *parekereke*. Best (3) states that in the Tuhoe country special ones were plaited from the *tumatakuru* shrub (*Aciphylla squarrosa*) for crossing the Huiarau Range. A rough kind of combined sandal and legging is named

tumatakuru after the plant *Aciphylla.* In the South Island the name *tumatakuru* is applied to the wild-irishman (*Discaria toumatou*—" matagowry "), the name for the various species of spaniard (*Aciphylla*) being *taramea.* In Tuhoeland, according to Best (3, p. 653), *Aciphylla squarrosa* is *tumatakuru, A. Colensoi* being *taramea.* Shortland (11, pp. 209–10) when journeying up the coast of Canterbury in January, 1844, used sandals, which he said were made of leaves of flax or *ti* (*Cordyline australis*), the latter being the tougher. The ordinary sandals were *paraerae;* a double-soled kind, called *torua,* were used on the stony beach, and lasted several days. " They no doubt," writes Shortland, " owed their invention to the necessity of protecting the feet from the snow, and the sharp prickles of the small shrub ' tumatakuru ' (*Discaria toumatou* Raoul), which is very common on the plains, and often lies so much hidden in the grass, that you first become aware of its presence by your feet being wounded by it." In the interior of the plains the plant is a tree 14 ft. or more in height.

Mr. D. McKee Wright found two pairs of these sandals in a cave in the Upper Taieri, Otago, with other material proving that they were of old manufacture. Hamilton figures them in vol. 29 of the *Transactions of the New Zealand Institute.* Through the kindness of Mr. F. V. Knapp, of Nelson, in whose possession they now are, I have been able to figure them for this article. The wefts are double, and the thick butt ends of the blades are used as much as possible. One pair, plaited with a check stroke, *taki-tahi,* had not been used, and the flaxen strips for tying them on the feet were wound round the sandals and across the instep. They were 11 in. long, $4\frac{3}{4}$ in. across the toes, and narrowed down to $3\frac{1}{2}$ in. across the instep and 3 in. across the heel. Fig. 16 is a diagrammatic representation of one, but reference to Plate 38 shows that by tightening the wefts the part that corresponds to the little toe is rounded off and so approaches more nearly the shape of the foot. The wefts are $\frac{3}{4}$ in. to $\frac{7}{8}$ in. in width. Five long double strips are used, and these, by being bent in the middle, form ten wefts. The technique may be followed by referring to fig. 16. Commencing at the big toe, 1, the first strip is twisted on itself in the middle and runs diagonally from the big-toe corner towards the right to form two dextral wefts, A and B. The second strip, 2, has one part, V, passed through the loop of the first strip, above B and below A. It goes to the left and functions as the first sinistral weft. The other part, C, is twisted forward at right angles to V and runs parallel with A and B to act as the third dextral. The third strip, 3, has one part, W, passed over C, under B, and over A, thus continuing the check stroke and acting as the second sinistral. The other part, D, is twisted forward at right angles to W and runs parallel with C to form the fourth dextral. The fourth strip, 4, is treated in a similar way. The left portion, X, acts as the third sinistral, and continues the check by passing above D and B and under C and A. The right portion, E, runs parallel with D and completes the five dextrals. It will be observed that there are now five dextrals and only three sinistrals. This is due to the first strip, 1, having been twisted round so that both parts run parallel to one another to form two dextrals. The fifth strip, 5, is now treated in a similar manner to the first, only in the opposite direction. The left portion, Y, carries on as the fourth sinistral by passing over E, C, and A, and under D and B. As the appropriate width of the sandal has been reached, the remaining portion, Z, must be twisted back into the body of the article. It is therefore twisted back to run under E C and A, and over D and B, and to lie parallel with its first limb as

the fifth sinistral. Thus is the tale completed. The strips 1 and 5, by being doubled round, lock the wefts in position on being tightened. They not only mark the ends of the toe-border, but commence the two side borders. Thus, on the left side, the first weft to project beyond the side edge commenced by A is the first sinistral weft, V. This is now twisted back into the work at V^1 to function as a dextral. To continue the check stroke it must pass above the first crossing-weft that it meets—namely, W. The rest follows automatically. The next left-hand weft to emerge beyond the border thus defined is W, and it is twisted back at W^1. On the right-hand border the first weft to emerge beyond the defining weft Z is the last dextral, E. This is twisted back at right angles at E^1, passes under the crossing-weft D to continue the check, and carries on as the sinistral. So the plaiting proceeds, wefts being turned back as they reach the side borders. Thus V, which started as a sinistral weft, by the turn at V^1 becomes a dextral, and at V^2 on the opposite side becomes a sinistral again. It will be noticed that the turns at the edges are made with a backward turn on the left and with a forward turn on the right. It is immaterial which way the turn is made so long as a similar one is made on each border for the sake of appearance. As the plaiting continues the wefts are drawn together more tightly, so as to narrow the sandal towards the instep and the heel. After eight turns at either border the sandal is long enough. Without any further twists at the side, the crossing-wefts are interlaced to continue the check stroke, and the plaiting ends at the point made by the crossing of the two marginal wefts, C and X. Five wefts are left on either side.

The sole being completed, the fastenings are attached in the following manner: Two strong strips of flax are knotted together at the butt ends with an overhand knot. The knot is laid upon the apex where C and X cross in fig. 16. The two strips are diverged so as to lie upon the marginal wefts, C and X (fig. 16). The wefts that entered into the construction of the sole have been double wefts throughout, one element lying upon the other. In the following procedure the upper elements alone are used, the lower elements being disregarded for the time being. The left marginal weft, C, is crossed over the right strip of flax and brought round and under it back on to the upper surface of the sole, as shown in fig. 17. The right marginal weft, X, is treated in a similar manner with regard to the left strip of flax. This fixes the point of the heel. Note that no half-hitches or knots are used. Following down the five projecting wefts on the left, W, V, and A are treated in the same way as X. B, the last of the series, is simply tied to the strip with an overhand knot as in fig. 17. Referring to fig. 16, the wefts D, E, and Z on the right are treated in the same manner as C; and Y, being the last of the series, is tied to the right strip with an overhand knot. The heel-margin is thus defined, and the wefts fixed. The lower elements of the ten wefts are simply cut off close to where they emerge from the last crossing-weft. Fig. 17 is purely diagrammatical. Plate 38, fig. 1, shows the weft-ends close together and projecting in over the heel-area for about 2 in. This side, done last, naturally forms the upper layer.

To complete the heel part, two or three strips of flax are tied to the two flaxen strips at about 1 in. above the knots at B and Y. They are tied with simple overhand knots on either side, and are about 4 in. in length. The ends of the cross-strips are tied close together, and form a heel-band to secure the heel part by passing across the tendo Achillis above the point of the heel. (See fig. 18.)

The lacing arrangements over the foot were admirably shown in the second pair of sandals in Mr. Knapp's collection. In these the twill stroke, *torua*, had been used, and they had been worn, as is proved by the condition of the under-surface of the sole. The lacing-strips were in actual position, with the ends tied. Plate 39 shows one of the sandals in position on the foot. The foot, being small, was slipped in without disarranging or untying the lacing-strips. Fig. 18 shows the technique. It will be seen that the two long flaxen strips which helped to fix the upper layer of heel-wefts, and to which the heel-band was attached, are carried down on either side-border in three loops formed by passing the strips through these weft-turns at the edges, the third loop being the strip next to the toe-border, The strips are now simply interlaced through the loop on either side, and tied together in front of the ankle as shown in fig. 18 and Plate 39. At times a short strip of flax is passed through the middle of the toe-border at T and tied round the two lacing-strips where they cross to the third loop at S. The loop and lacing-strips being continuous, the former can be adjusted to any size of foot.

Besides *paraerae* and *parekereke*, Williams gives *parahirahi* as a sandal made of flax. Hamilton (8) states that there were three kinds of sandals made in the South Island. One kind was made of a single layer of plaited flax-leaves, and was called *paraerae hou*, or *kuara*, or *parekereke*. Both *paraerae* and *parekereke* are North Island names for sandals in general, whether made of flax or *ti* (*Cordyline*). *Paraerae hou* seems to me to mean sandals made from fresh leaves, whether of flax or *ti*. His second kind, named *takitaki*, seems to be a misprint for *takitahi*. *Takitahi* is the North Island term for the check stroke, and is applied to a sandal to indicate the technique employed. His third kind, *torua*, is also used in the North to indicate the stroke used—viz., a twilled two; but according to Shortland, quoted above, it may have been the name in the South for the sandal with double sole.

Best mentions that combined leggings and sandals were made. Besides *tumatakuru*, the names *rohe* and *papari* are given by him for this article. He also mentions toe-caps, called *paenaena*, and leggings, called *parenga-renga*. Of their technique I have no knowledge.

Sandals and shoes made of narrower white wefts and of dressed fibre are to be seen in our museums, but they must be regarded as modifications originating in post-European times.

8. SAILS: *RA*, OR *MAMARU*.

Though plaited sails were used in pre-European times, and are described by Forster in vol. i of "Cook's Voyages," there are no specimens in New Zealand to enable us to describe the technique. Brigham, in his paper on mat and basket weaving, quoting from Mr. Stokes's essay on the "Mat Sails of the Pacific," gives a little detail of the sails made in Micronesia. The Marshall-Islanders made them of pandanus-leaf. A lap-board of bread-fruit wood was used. Long strips of sail-mat were plaited, and then strips were placed together with the edges overlapping. These were sewn together with coconut-fibre. The strip figured by him is 4·7 in. wide, and the width of the wefts from $\frac{3}{32}$ in. to $\frac{1}{8}$ in. The sail was twice as heavy as an ordinary mat and a little heavier than canvas. A few strands of dyed hibiscus-fibre were worked in by overlaid plaiting to run diagonally across the strip of matting. The picture in Brigham's paper shows that a twilled-two stroke was used. Stokes records that the Hawaiian sail was

made in strips, but that of Tahiti seems to have been composed of several large mats sewn together.

Fortunately a Maori sail survives in the British Museum, and has been figured by Hamilton. (See Plate 40.) It is triangular, with the base upwards, and has loops for the mast and sprit. From the posterior edge near the top a flag-like appendage juts out. The edges of this and of the top of the sail are decorated with tufts of feathers. Double zigzag coloured lines run vertically down the sail. Hamilton says that the material is either flax or *kiekie*. From the narrow width of the wefts as shown in the photograph (Plate 40), it is evident that the material is one of the two mentioned by Hamilton. Edge-Partington figures the same sail in his *Ethnological Album*, 3rd series, p. 162, and gives the dimensions as follows: Length, 14 ft.; width at top, 6 ft. 4 in.; width at bottom, 12 in.; length of play, 3 ft. 6 in.; width of play, 8 in. The width at the top, 6 ft. 4 in., is wider than the usual section of a floor-mat, and it is probable that in the upper part there is a join. The line running down the middle looks like a crease due to folding. Close-up photographs of the sail should be obtained from the British Museum and replicas plaited for our own museums. This could be done quite easily. Sails have been so long out of date that the possibility of obtaining such a copy of an authentic old-time sail should not be neglected. The only authentic copies that our museums possess of the *kotaha* (throwing-stick) were made and carved by Anaha, of Rotorua, from measurements and casts kindly supplied by Edge-Partington from those in the British Museum. The one vestige of information concerning anything approaching the old-time sail that I could obtain was an incident narrated to me by Paratene Ngata, of Waiapu. During the Hauhau war on the east coast in 1865 the friendly Maori captured seven canoes at Tokomaru. Using ordinary rectangular floor-mats of the *porera* class, they rigged them up like main-sails, but with a Maori diagonal sprit, or *titoko*, instead of the pakeha lower boom. A rope was tied to the lower posterior corner. With mats hoisted, this curious fleet successfully sailed to Tuparoa.

ACKNOWLEDGMENTS.

To Mr. J. McDonald, of the Dominion Museum, are due most of the plates, and the figures of the *tipare;* Mr. H. Hamilton supplied photographs of belts, fly-flap, &c. From Mr. Best's article on "The Art of the *Whare Pora*" much has been learned, and free use has been made of its information. To many women of my own race in the east and the west I owe thanks for their unfailing patience and readiness to supply information and demonstrate technique. The women of my own tribe were at first loth to encourage me in what they considered was not man's work.

In conclusion, this and the former article make no pretension to having exhausted the art of plaiting. There are tribal differences in commencing, joining, and finishing floor-mats, and quite a number of different varieties of baskets and minor articles yet to be described. They will receive attention as opportunity occurs. I hope, however, that sufficient of the Maori technique of plaiting has been recorded to form a basis for comparison with the same art in Polynesia and along the route the Polynesians travelled in the past.

ERRATUM.

In the article on "Maori Plaited Basketry and Plaitwork," *Trans. N.Z. Inst.*, vol. 54, p. 714, under fig. 1, instead of "Commencement of weaving a *taka* mat," read, "Commencement of plaiting a *taka* mat . . . ."

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The Passing of the Maori.

By Te Rangi Hiroa (P. H. Buck), D.S.O., M.D.

[*Read before the Auckland Institute, 16th October, 1922; received by Editor, 31st December 1922; issued separately, 8th July, 1924.*]

Introductory.

"The passing of the Maori." These words have a sad and mournful sound. They almost convey the idea that in order to do justice to the subject we should bind our brows with wreaths of *kawakawa* leaves, lacerate our flesh with obsidian flakes, and raise the wail of the *tangi*, for "a race that's speeding sadly onward to oblivion." Such seems to have been the attitude of most writers in the past.

In 1881 Dr. Newman (1, p. 477) stated: "Taking all things into consideration, the disappearance of the race is scarcely subject for much regret. They are dying out in a quick, easy way, and are being supplanted by a superior race." Thus he relegates us to the Shades, and we cease to be as important as the carvings our brains designed and our hands executed.

In 1884 Sir Walter Buller (2), in speaking before the Wellington Philosophical Society, said that it was a "fact that the Maori race was dying out very rapidly; that, in all probability, five and twenty years hence there would only be a remnant left." He quotes Dr. Featherston as saying in 1856, "The Maoris are dying out, and nothing can save them. Our plain duty, as good, compassionate colonists, is to smooth down their dying pillow. Then history will have nothing to reproach us with."

In 1896 (3) and 1902 (4) Hill struck a less pessimistic note by enumerating various proposals by which rapid extinction might be retarded.

In a paper read before this Institute in 1907, Archdeacon Walsh (5), after ably summing up the exterminating factors introduced by civilization, sounded our requiem in a more soothing and sympathetic manner, in keeping with his cloth. He said: "The Maori has lost heart and abandoned hope. It [the race] is sick unto death, and is already potentially dead." He quotes von Hochstetter as observing, in 1865, "The Maoris . . .

look forward with a fatal resignation to the destiny of the final extinction of their race. They themselves say, 'As clover killed the fern, and the European dog the Maori dog, as the Maori rat was destroyed by the *pakeha* rat, so our people also will be gradually supplanted and exterminated by the Europeans.'"

From Featherston in 1856 to Walsh in 1907 is half a century. The cumulative experience and study of half a century led the writers quoted above to see the Maori race facing nothing but rapid extinction. In view of the fact that these writers gathered the procurable data of their day and subjected them to careful analysis, their conclusions must be treated with respect. The Maori race should show more active signs of becoming extinct; yet in spite of the hopeless outlook expressed to von Hochstetter by the victims of the Taranaki War, the present generation refuses to comply with the picturesque but illogical simile of following the way of the vanished Maori rat and the extinct Maori dog. They do not appear to belong to the same class of mammal. The native fern does not seem to be tamely giving way to the European clover. In this respect the Maori has more in common with the flora than with the fauna.

The quick and easy death prescribed by Dr. Newman has not been availed of as he led us to expect. Sir Walter Buller's twenty-five years grace expired in 1909. The race that Archdeacon Walsh said was already potentially dead in 1907 should be literally so in 1922.

Of the five papers quoted above, four have been published in the *Transactions* of this Institute, whilst the fifth was read before the Wellington Philosophical Society. Since the last address was delivered fifteen years have elapsed. It is therefore fitting that the present condition of the Maori race should be reviewed, to see how far the sad prognosis of the past has been borne out by the facts of the present.

POPULATION.

Cook estimated the Maori population as 100,000. As pointed out by various writers, this estimate could have been only a very rough guess, formed from the coastal tribes that he saw.

The west coast of the North Island he never explored. Northern Taranaki, from the evidence afforded by the denseness of the terraced hills, must have supported a very large population. Whakatane, the Waimana Valley, and the Tauranga district show innumerable signs of close occupation. In the Oruru Valley, in the north, the forts were so close together that they were termed *Oruru pa karangatahi* (Oruru with the forts aroused by one call). Consider the huge garrisons that must have been required to man the crater-forts near Pakaraka and Ohaeawai, in the Bay of Islands, and the many terraces extending over acres of ground in the Tamaki forts, on Mount Eden, and One Tree Hill. If the present Maori population of Orakei and the villages about Onehunga and Mangere were gathered to man the reconstructed parapets of Maunga-kiekie, how many terraces would they occupy? And yet there were other forts in this same district occupied at the same time. Furthermore, the population was not confined to the coast-line and its immediate vicinity. Occupation depended on food-supplies, and, incidentally, of course, on the ability to hold the territory producing them. The larger rivers and inland lakes produced fish in abundance in their due seasons. This supply was not confined to eels, but smaller fish, not considered by Europeans, made up for their lack of size by their quantity.