

AN UNUSUAL BORDER CONSTRUCTION FROM PERU*

by

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ANCIENT PERUVIAN TEXTILES, as a group, probably contain a greater variety of techniques, and more variations within given techniques, than any other comparable group. For the most part,¹ all of the weaving was accomplished on a simple backstrap loom, consisting essentially of two sticks (or loom bars) with the warp lashed to them. To this basic "frame" were added a "shed rod" to maintain one shed and a "heddle rod" (or rods) with which to manipulate the alternate shed (or sheds). A wooden "batten" or "weave sword" was used to keep the shed open while the shuttle or bobbin was passed through and was also used to beat down the wefts after they were inserted. The women were probably the weavers.

The Peruvian weavers do not seem to have been handicapped by a traditional way of doing things, rather they were the most inventive of craftsmen — constantly trying new techniques and developing new ways of achieving known results. At times, they seem to have gone to needless lengths to achieve a rather simple product, but whether this was done for a specific reason or just to prove their skill as weavers we will never know.

An illustration of the variety of ways in which similar results could be achieved may be seen in the many types of border which were used to ornament garments. Borders may be worked in one piece with the garment or made separately and applied by means of sewing. In the former category are not only embroidered and brocaded borders worked directly on or into the ground fabric of the garment, but also tapestry and other weft-patterned borders which were woven on the warps nearest the loom ends, the same warps then being used for the plain (or patterned) weave of the body of the fabric. Warp-patterned side borders could also be woven in one piece with the garment.

Detached, separately-woven borders may be of many different types. The most common is probably a narrow tape of tapestry weave, or perhaps a plain weft-faced woven fringe, which is sewed along the edge of the

garment. Warp-faced, warp-patterned borders of many types also occur fairly frequently. In the case of detached borders used at the lower edges of garments, the warps of the borders would, as a rule, run perpendicular to those of the garments.

Plate II shows a textile (possibly a kerchief?) which utilizes both detached and continuous borders; the wide borders at top and bottom are tapestry woven on the same warps as the plain weave central portion, but the narrow side borders are warp-faced, warp-patterned bands which were woven separately and sewed to the side selvages of the textile.

Actually, any type of border could be made either as part of the garment or as a separate piece. This is well illustrated by the magnificent Paracas mantles in which the heavily embroidered borders are usually separately woven pieces, attached to the central field of the mantle by sewing, but on the other hand may be embroidered directly on the ground fabric of the mantle.

The borders with which this paper will deal are of the detached type, but they are all of such a nature that it would seem, from our point of view, much simpler to have woven them in one piece with the garment or fabric which they were to adorn. All of them are narrow fabrics in weft-faced techniques, but in each case the weft dimension is considerably longer than that of the warp. This represents an unusual concept of weaving. As a rule, when weaving a narrow strip or band, the warp runs lengthwise in the fabric. There are a number of Peruvian textiles in which the warp dimension is less than that of the weft, but these often consist of nearly square articles, and the difference is negligible. The longest warp in this group of borders is $5\frac{5}{8}$ inches. The weft dimension in the same textile is $17\frac{3}{4}$ inches!

We are fortunate in having one textile in this group which shows exactly how these bands were made. This textile, A1/P594 (Plate I, A, B), is in the collection of the Museo Nacional de Antropología y Arqueología in Lima. It is from the Central Coast site of Ancon, and probably belongs to either the Chancay (*c.* 1300-1438 A.D.) or Inca (*c.* 1438-1532 A.D.) Period. It is a long, narrow band, 81 inches in length (weft dimension), by about 2 inches in width (warp dimension, not including applied fringe). The long dimension is composed of three sections (each exactly 27 inches in length) sewed together. Yellow weft-faced woven fringe has been sewed along one edge of the border; the warps of this fringe run lengthwise, or perpendicular to those of the border itself. The border has a design of birds and interlocked bird or

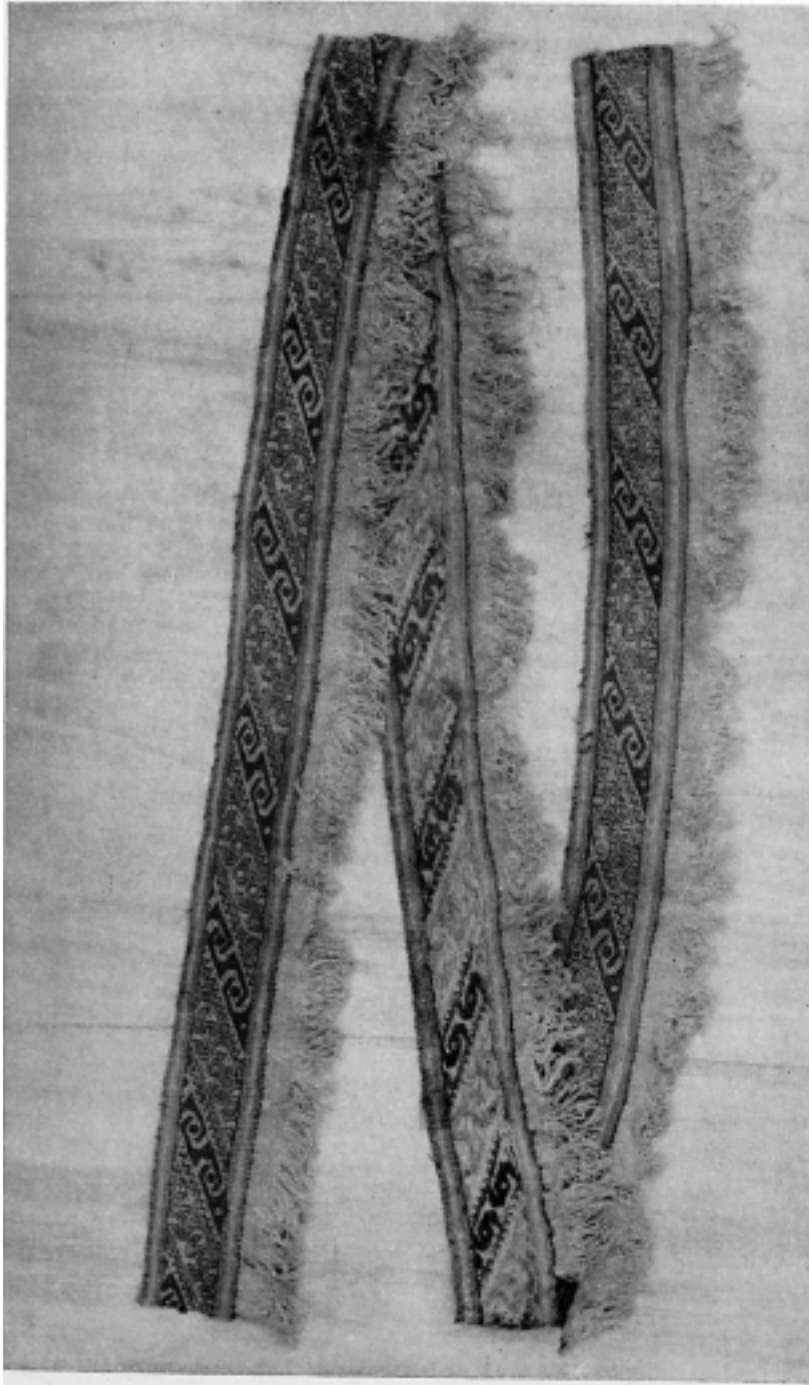


PLATE I, A

AI/P594, "CUT WARP" BORDER IN THE COLLECTION OF THE MUSEO NACIONAL DE ANTROPOLOGÍA
Y ARQUEOLOGÍA, LIMA, PERU.

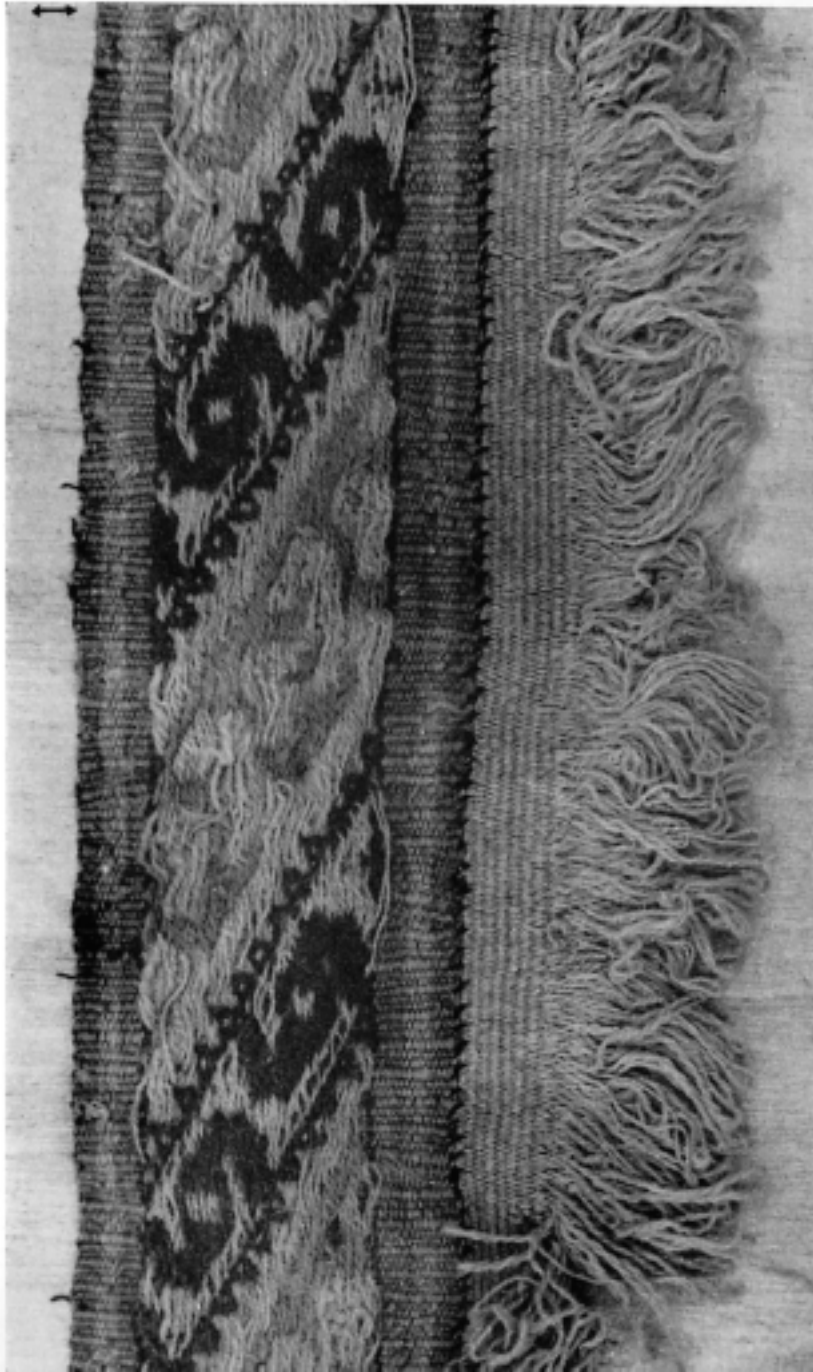


PLATE I, B

DETAIL OF REVERSE OF A1/P594, SHOWING THE HEAVY RIDGES MADE BY THE RUN-BACK WARP ENDS AND THE INTERLOCKED WEFTS OF THE PATTERN. ARROW INDICATES WARP DIRECTION.

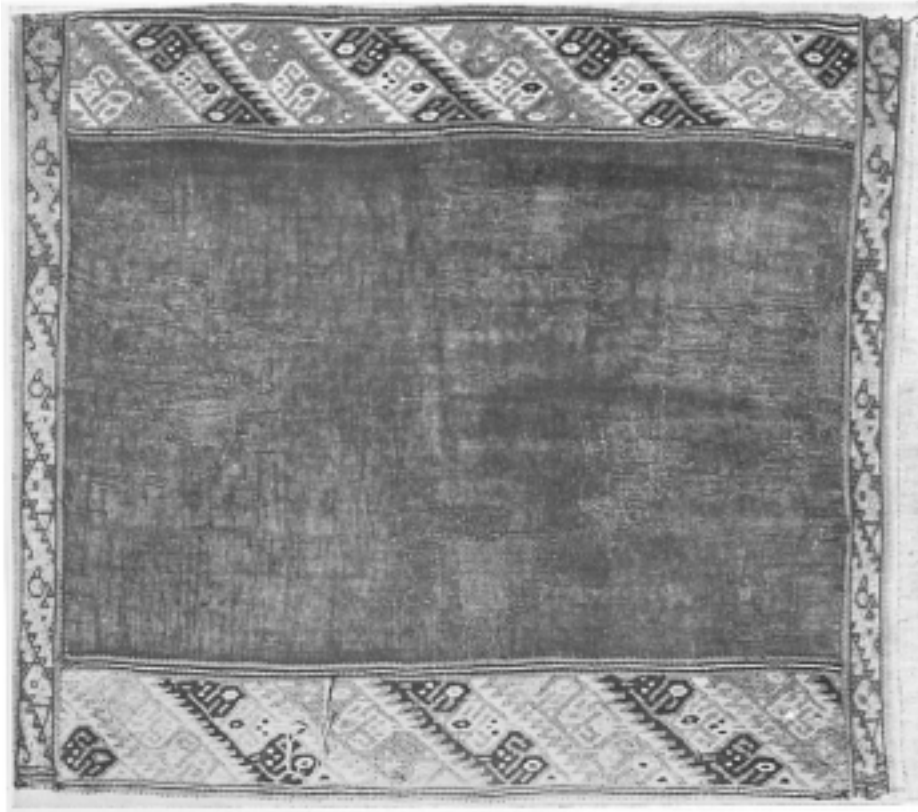


PLATE II

91.317, TEXTILE MUSEUM COLLECTION, A KERCHIEF (?) SHOWING THE USE OF BOTH CONTINUOUS AND DETACHED BORDERS IN ONE TEXTILE.

snake heads in alternating diagonal rows. The colors used are two shades of golden-tan, cream, brown, and red. The weave is a single-faced weft-patterned weave, in which the pattern wefts float on the reverse when not in use on the face. The brown and one shade of golden-tan threads interlock on the reverse; the others are simply carried along from selvage to selvage (*see* Plate I, B). However, we are more concerned with the method of construction on the loom than with the specific type of weave.

We will label the sections A to C, from left to right, in the completed band (Fig. 1). Section A has cut edges at both top and bottom. Sections B and C each have a cut edge at the top and a loom end at the bottom.

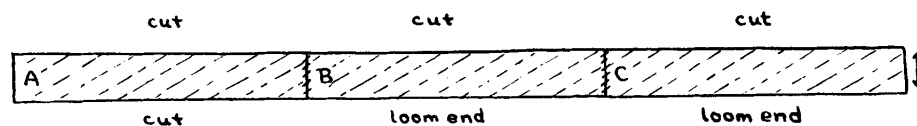


FIG. 1

THE ORDER IN WHICH THE SECTIONS OF AI/P594 (PLATE I) ARE JOINED TO MAKE A BAND.
DIAGONAL LINES INDICATE PATTERN DIRECTION; ARROW INDICATES WARP DIRECTION.

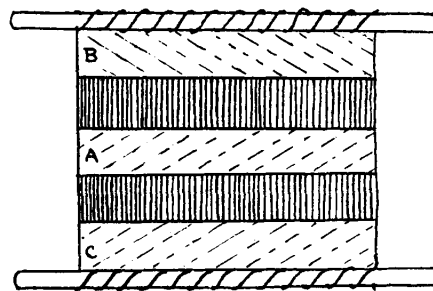


FIG. 2

THE POSTULATED MANNER IN WHICH AI/P594 WAS CONSTRUCTED ON THE LOOM.
DIAGONAL LINES INDICATE PATTERN DIRECTION.

We have noted above that each section is exactly 27 inches in length. Figure 2 shows how this textile must have been constructed on the loom. Sections B and C, each with a loom end, form the top and bottom of the loom set-up; while Section A, with its two cut edges, is the central portion. An unknown length of bare warp was presumably left between sections. It is quite possible that there were more sections between B and C; in fact, the completed border has traces of stitches at the free ends, possibly indicating that they were either joined together to form a circular band or that other sections were seamed to them.

An interesting feature of this band is that, in the finished piece, the design of all three pieces, as joined, is right-side-up. At the same time, the loom ends on the two sections which have them are both on the lower edge of the completed band (*see* Fig. 1). This means that, in the finished textile on the loom, the design of one of the two sections — either B or C — had to be upside-down.

Now the customary procedure in Peruvian weaving was to weave textiles with four finished selvages. In order to achieve this, the weaver began the weaving at one end of the loom, wove for a short distance, turned the loom, and began again at the other end. When she reached the section where the weaving was begun, she filled in the remaining space by inserting a few wefts with a needle. In most Peruvian textiles it is possible to detect this finish area by the fact that the cloth is less compact in such areas or by paired wefts inserted to close the gap.

In weaving A1/P594, the same procedure of turning the loom and starting at each end was obviously followed. In such a case, though the design of one of the sections was upside-down in relation to the others in the overall set-up, the weaver always had the design right-side-up while weaving. For instance, she could begin with Section B, complete it, then turn the loom and weave Sections C and A, in that order. It would have been unnecessary for her to fill in a finish area, for the warps were left bare between the sections.

After the bands were woven, leaving areas of bare warps between bands, the warps were cut. These cut warp ends were then run back into the edge of the band as follows: taking three adjacent warp ends, warps 1 and 3 were run into the textile alongside warp 2 (the central warp of the three); warp 2 was then cut off close to the edge of the fabric (*see* Fig. 3). This

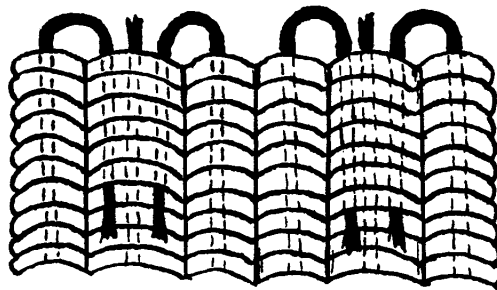


FIG. 3

THE METHOD OF RUNNING CUT WARP ENDS BACK INTO THE TEXTILE
(SEQUENCE USED IN A1/P594 [PLATE I, B] AND 91.72 [PLATE IV, A]).

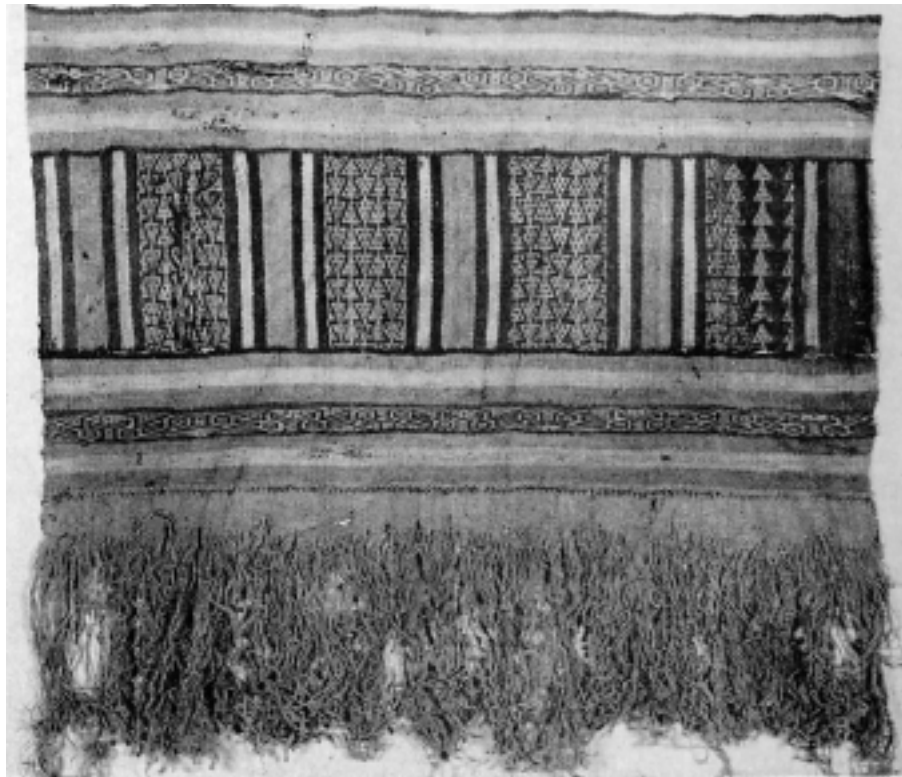


PLATE III

91.468, TEXTILE MUSEUM COLLECTION, A FRAGMENTARY BORDER
UTILIZING "CUT WARP" BANDS.

leaves heavy ridges every third warp (*see* Plate I, B). The two warp ends which were run back into the fabric prevent the weft from raveling out.

When one is weaving a long, narrow band in the conventional manner, that is, with the warps running lengthwise in the fabric, the length of the finished product is limited only by the length of the warp on the loom. In the process described above, one could achieve quite a long band on a fairly short warp; and the entire band, A1/P594, could have been woven on a warp set-up of not much more than 10 inches in length and about 27 inches in width — producing a finished band 81 inches long! In weaving such a band, the entire weaving process could be accomplished without rolling the completed area on the loom bar as the weaving progressed. Other than the advantages of having the warp set-up confined to a limited and workable space, it is difficult to determine why the weaver constructed a border in this way. It could easily have been woven as part of the garment, thus eliminating the necessity of cutting the warps, running them back into the border, and sewing the border sections together. Obviously there was some advantage to having a separate border. Perhaps it was done so that when the garment to which it was sewn was worn out, the borders could be easily detached and used again (as we might save laces or other trims from a discarded garment). Or, it may have been advantageous to have a supply of separate borders ready for use on unadorned garments.

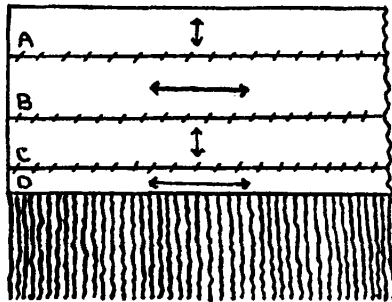


FIG. 4

THE SECTIONS OF 91.468 (PLATE III) AS JOINED TO FORM A BORDER.
ARROWS INDICATE WARP DIRECTION IN EACH SECTION.

A similar textile, 91.468 (Plate III and Fig. 4), in the Textile Museum collection, makes a slightly different use of the same type of band. The completed textile measures 15½ inches in length by 13 inches in width (including fringe). The length, however, is incomplete, since the textile has been cut along one edge. This border consists of four sec-

tions sewed together (*see* Fig. 4). From top to bottom, they are: (A) a band similar to A1/P594 — of the same general technique and color range and having a loom end at the top and cut warp ends run back in at the bottom; (B) a narrow, weft-faced band with the warps running lengthwise in the band; (C) a band identical to “A” with the edge with cut and run-back warps at the top and the loom end at the bottom; (D) a weft-faced woven fringe with the warps running lengthwise.

It is unfortunate that the textile was cut, since we are unable to determine the loom width of the “cut warp” bands, A and C, or to know whether other bands of the same type were seamed to them.

In portions of the edges of these bands the cut warp ends are run back into the textile in the same way that they are in A1/P594; in the remainder, warp ends 1 and 3 are run in alongside warp 2, and warps 2 and 4 are cut — this leaves a ridge every 4th warp.

It should be noted that in this textile the design has no right- or wrong-side-up; therefore, this example would not demonstrate to us the way in which the loom was turned and the weaving begun at each end. Nevertheless, the process was undoubtedly the same in both examples. The colors, design, and technique of 91.468 are all similar to those of A1/P594, and it is likely that they are of the same period and general area.

Two other borders in the Textile Museum collection are made with cut warps. Both of these are slit tapestry.

The first, 91.72 (Plate IV, A), is 20 inches in length by 2-7/16 inches wide. Like the preceding examples, it has a yellow, weft-faced woven fringe sewed to it. From the remnants of sewing thread along its side selvages (or ends), it is apparent that at least two other widths of tapestry were sewed to it, to make a long narrow band like A1/P594. The bottom edge of the band is a loom end, while the top edge has the warps cut and run back into the fabric in the same manner as A1/P594 (*see* Fig. 3). The fact that this band is tapestry gives rise to new problems. The Peruvians rarely wove narrow bands (having a conventional, lengthwise warp) with a weft-float or single-faced weft pattern, apparently preferring to use this technique for horizontal border areas where a continuous running pattern could be utilized. It was occasionally done (*see* Section B of 91.468, Plate III and Fig. 4), but the pattern was very restricted by the width of the band. On the other hand, however, the Peruvians often wove narrow tapestry bands with the warps running lengthwise (*see* Plate IV, B), tapestry being somewhat more suitable for the spot patterning necessary in such bands. The only logical reason for weaving this tapestry band

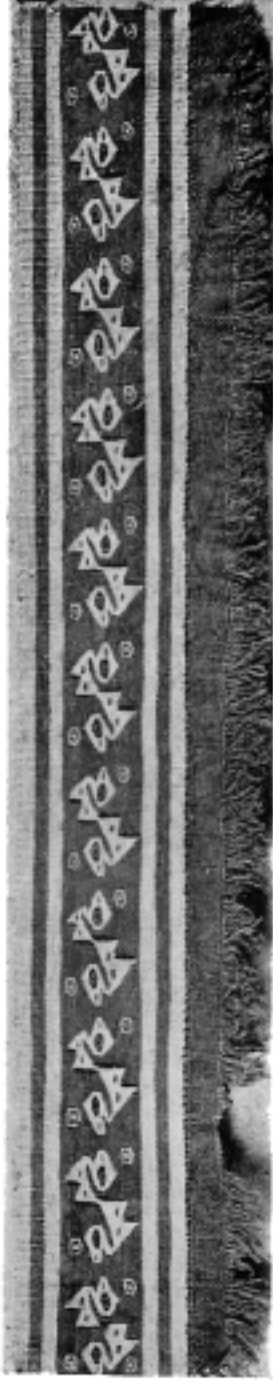


PLATE IV, A

91.72, TEXTILE MUSEUM COLLECTION, SLIT TAPESTRY BORDER WITH CUT WARPS.
 ARROW INDICATES WARP DIRECTION.



PLATE IV, B

91.157, TEXTILE MUSEUM COLLECTION, A CONVENTIONAL SLIT TAPESTRY BORDER.
 ARROW INDICATES WARP DIRECTION.

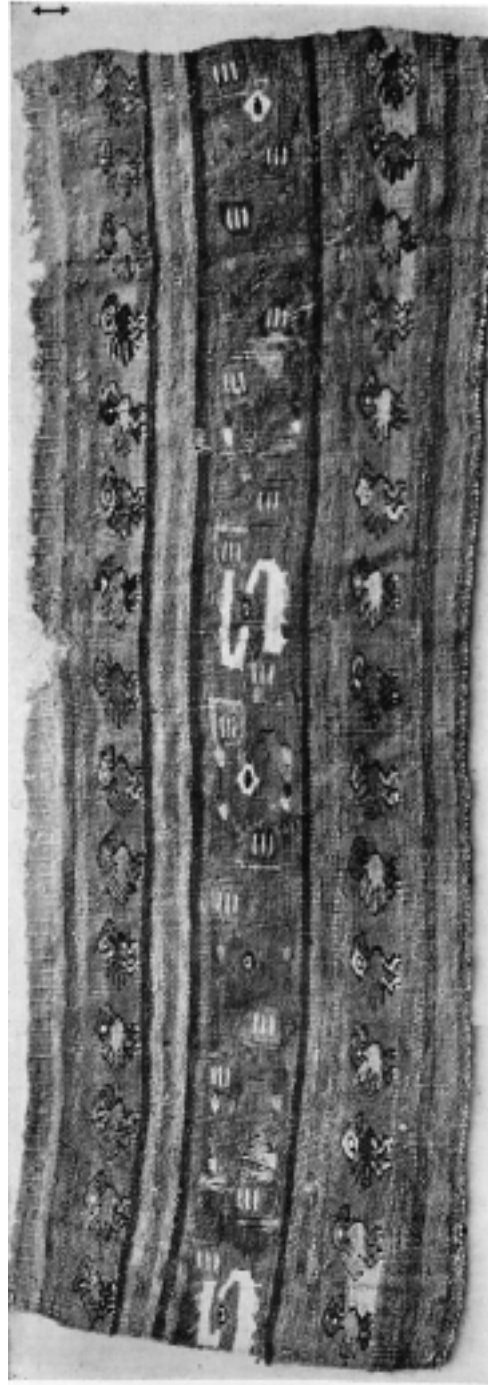


PLATE V

91.103, TEXTILE MUSEUM COLLECTION, A SHAPED SLIT TAPESTRY BORDER WITH CUT WARPS.
ARROW INDICATES WARP DIRECTION.

with the warps running in the short direction is one of design. It is the only way to achieve horizontal stripes and vertical tapestry slits. In other words, the band may have been woven in this fashion to achieve a desired visual effect.

There is another possibility here. Tapestry bands with cut warps could have been originally woven in one piece with a garment, and then, when the garment wore out, cut free at a point above the border. The wefts of the garment could have been unraveled, and the loose warp ends run back into the border. Although this method could also have been applied to the other weft-patterned borders with cut warps, AI/P594 gives conclusive evidence that, in that instance at least, it was woven separately from the garment it was intended to adorn, and that the cut warps were an intentional and necessary feature of the construction method. Lacking a similar tapestry band with the construction method inherent in its make-up, we cannot determine whether the tapestry bands with cut warps were woven separately or in one piece with the garment. If, however, they *were* woven in one piece with the garment and then cut free, this procedure may have suggested the separate construction method to the weaver — possibly as a labor-saving device.

The second tapestry band, 91.103 (Plate V), in the Textile Museum collection, is, perhaps, more likely to have been woven in one piece with a garment and later cut free. This band is the widest of the examples, being about $5\frac{5}{8}$ inches in the warp direction. It is shaped, with a length (or loom width) of 16 inches at the top edge and $17\frac{3}{4}$ inches at the bottom. The number of warps at the top of the border is 342, and that at the bottom is 418 — a difference of 76 warps. The additional warps were put in, or subtracted, in pairs at irregular intervals at a point about $\frac{1}{4}$ inch below the top edge (the edge which has cut and run-back warps²). It seems probable that the warps were subtracted at this point rather than added, since, for the most part,³ the extra warps were simply cut off and the cut ends buried under the covering wefts (*see* Fig. 5). This is the only place in the textile where shaping occurs through the addition or subtraction of warps — by this means the weaver decreased the dimension of the top edge of the textile about $\frac{1}{4}$ inch. The other inch and a half reduction was achieved by gradually increasing weft tension as the weaving progressed. This leaves us with two possibilities. The first is that the weaver discovered, when the border was nearly completed, that it was necessary to further decrease the measurement of the top edge of the border so that it would fit a completed garment and accomplished this by cutting off

some warps so that the last quarter inch of the border would be sharply constricted. The second possibility is that the border was being woven as

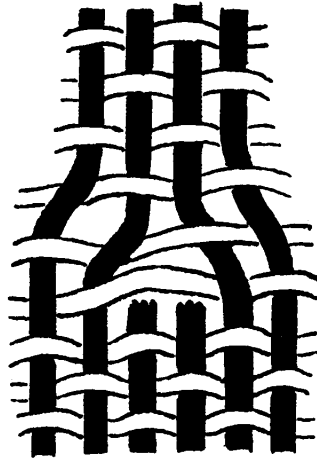


FIG. 5

DIAGRAM SHOWING THE ELIMINATION OF WARPS
FOR THE SHAPING OF 91.103 (PLATE V).

part of a garment and that the warps were subtracted (as part of a pre-conceived plan) at a point just below the place where the weave of the garment (probably a plain weave) was to begin. If this was the case, the border was cut free from the garment at a later date, and the warps run back into the textile.

Judging from the dimensions of the border and the fact that there is no evidence (such as remnants of sewing thread) for its having had other sections joined to it, this textile was probably intended as the border for a loincloth. Such garments, as a rule, had a border on the lower edge only, and they were often shaped.

If we accept the first possibility and assume that the border was woven as a separate entity, it is unlikely that more than one section was woven. It would have been almost impossible to weave more than one band of this type at a time, since the extra warps were probably cut when that point was reached, and the weaving was continued on fewer warps.

At any rate, it was necessary for this border to have been constructed with the warps running in the shorter direction. It would have been difficult, if not impossible, to achieve the desired shaping with warps running the length of the textile, and there is also the fact that, again, the weaver

was apparently interested in achieving a horizontally oriented design.

There are probably many more of these "cut warp" bands than is now realized. The immediate impression which one receives from any narrow band is that it was woven with the warps running lengthwise; it is not until one examines them more closely that the "cut warp" bands can be detected. The simplest means of detection is to look for the cut warp ends run back into the textile on the reverse side and the resulting heavy ridges spaced along one or both edges of the band.

We have suggested that the construction method may have been an economy measure to facilitate re-use of borders, and that it may have been inspired originally by cutting borders off worn garments, but there are undoubtedly many other possible explanations.

All of the bands discussed here ⁴ are from the late periods (*i.e.* between 1300 and 1532 A.D.) of the Peruvian coast, and all could be from the Central Coastal region. It is even possible that all are from the site of Ancon. To the best of my knowledge, none occur from the early periods.⁵ It would seem, therefore, that this construction method was a late innovation.

These borders constitute only one of the many examples which prove how adaptable the Peruvian weaver was, and how little limited by the confines of a very simple loom. It is not surprising that the ancient Peruvians have been classed among the finest weavers of all time.

FOOTNOTES

- * The basic research for this paper was carried out under a grant from the Penrose fund of the American Philosophical Society. The author also wishes to thank the director and staff of the Museo Nacional de Antropología y Arqueología, Lima, Peru, for their cooperation in making specimens available for study; Miss Irene Emery of the Textile Museum for suggestions incorporated in this paper; and Mr. Charles R. Wicke who photographed the specimen belonging to the Museo Nacional.
1. Three types of looms were probably used in Pre-Conquest Peru: the backstrap loom, a staked-out horizontal loom, and a vertical frame loom. The backstrap loom is generally considered to have been the most widely used type.
 2. The cut warps were run back into the textile in the following sequence: warps 1 and 3 were run into the textile alongside warp 4; warps 2 and 4 were cut off close to the edge. The resulting heavy ridge occurs every 4th warp. Like 91.468, there are areas where the sequence is varied somewhat. The cut warps on one side of the edge seem to be run into the textile alongside the 4th warp to the left; while those at the opposite side are run in alongside the 4th warp to the right. This would seem to indicate that the craftsman did not work consistently from left to right (or vice versa), but either at random or from the sides toward the center.
 3. In one or two spots, only one warp is cut, while the other of the pair is woven together with the adjacent warp in the last $\frac{1}{4}$ inch of the textile.
 4. The fiber make-up of these borders constitutes a further proof of their essential homogeneity:

	<i>Warp</i>	<i>Weft</i>
A1/P594	Cotton: Z-spun, S-plied.	Alpaca: Z-spun, and Z-spun, S-plied; Cotton: Z-spun, S-plied.
91.72	Cotton: Z-spun, S-plied.	Alpaca: Z-spun, and Z-spun, S-plied; Cotton: Z-spun.
91.103	Cotton: Z-spun, S-plied.	Alpaca: Z-spun, and Z-spun, S-plied; Cotton: Z-spun.
91.468	Cotton: Z-spun, S-plied.	Alpaca: Z-spun, and Z-spun, S-plied.

5. Many, if not all, of the Tiahuanaco Period tapestry garments are composed of panels with a weft dimension longer than that of the warp and the warps of one loom end cut and braided. However, no explanation for this use of short warps has yet been suggested, and no cut warp borders have been found from this period.