

TEXTILES FROM THE BURIAL PLATFORM OF LAS AVISPAS AT CHAN CHAN

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Introduction

A collection of textiles excavated from the burial platform of Las Avispas at Chan Chan provides the first sample large enough to permit definition of a late north coast textile style. Definition of such a style is crucial to the problem of distinguishing local styles on the Peruvian coast, and it is particularly useful to have material from Chan Chan for this purpose, since it was the capital of the Chimú kingdom (Kingdom of Chimor) which controlled the entire northern half of the Peruvian coast, an area including part of the central coast, in the Late Intermediate Period.

Substantial collections of late textiles from the central coast, especially from the Chancay Valley, provide a useful body of material for comparison with the north coast style, since it is the north and central coast styles that are most often confused. The ability to make local distinctions enables us to assign secure attribution to pieces without provenience and to identify the influence of one area on another.

The textiles discussed here were recovered in an excavation carried out by Thomas G. Pozorski, then an undergraduate student at Harvard University, in the summer of 1970 as part of the Chan Chan-Moche Valley Project under the direction of Michael E. Moseley and Carol J. Mackey.¹

Las Avispas (fig. 1) is a compound containing a burial platform, the best preserved of the nine burial platforms at Chan Chan. Within an outer enclosure wall, is the burial platform with an enclosure wall of its own, surrounding not only the platform but associated rooms and open courts. The platform was first built with open space around the back and sides, separating it from its enclosure wall; this original platform contained 14 burial chambers. Most of the space between the platform and the wall around it was subsequently filled in for the construction of 11 additional chambers. According to Pozorski, the additions were made in three stages, first chambers 8, 12, 15, 19, and 23; then 1-4, and finally 24 and 25. These additions need not have been made significantly later than the original construction.

Las Avispas is unusual in not being built within or attached to one of the *ciudadelas*. It is located outside of but near the northeast corner of the *ciudadela* Laberinto (fig. 2). The outer enclosure wall is built of the same kind of flat bricks with the same type of clapboard friezes that are found in the structures of Laberinto, but the burial platform itself is built of a different kind of brick which has a height:width ratio of 2:1. According to Alan Kolata's seriation, such bricks occur at the end of the sequence, while the flat type occurs at the beginning.² The burial platform, therefore, should be a later

construction than the outer enclosure wall and should date to the end of the Late Intermediate Period or the Late Horizon.

All the textiles described in this report were found in the burial-chamber area of the platform. About one quarter of the volume of the burial chambers was excavated, and only chamber 19 (containing textiles numbered 36 in the catalog) was completely excavated. Nearly complete remains of 13 individuals were found in this chamber, while the entire excavated area yielded evidence of the burial of 93 people. Probably many more were originally buried in the platform. According to Pozorski the individuals represented were all females and probably all between 17 and 24 years old. One plausible explanation for this type of selection in burials within monumental architecture is that the skeletons represent sacrificial victims.³

The quality of the textiles, as well as of the other artifacts recovered, suggests that the finest material may have been removed by looters. Abundant potsherds were found, primarily of plates and jars, including burnished blackware. Chamber 19 also yielded fish and crab remains (possibly food offerings), a quantity of gourd fragments, and 51 beads, some still strung, of seeds (Nectandra sp.). In addition, complete and fragmentary Spondylus and Conus shells as well as cylindrical shell beads were found in or near the chamber area of the platform. There were also a few miscellaneous objects of copper alloy and some of wood. Although some could not be identified, others either were or could be construed to be textile workers' implements: a copper needle, some wooden spindles with cotton yarn wound on them. There were also a number of flat notched sticks which might have been used in weaving although no yarn or partially completed weaving was found in association.

Both plain and patterned textiles were found as well as some quantity of both white and brown unspun cotton fiber. Unspun cotton fiber is known to have been used as padding in Peruvian mummy bundles from the central coast, although it is not clear that it was used for that purpose at Avispas.⁴ Many of the textiles were found either folded or rolled, as if they had served as independent offerings rather than as garments or mummy wrappings. Many of the fabrics had a hard black residue adhering to them, resulting from contact with decaying bodies. Although there were numerous plain-weave cotton textiles, undecorated or with monochrome weft stripes, there was also much decorated material, composing as much as 50% of the total recovered. An exact count is impossible because of the fragmentary condition of most pieces, especially those containing alpaca.

Many of the alpaca yarns had been woven as weft or warp stripes, and the opposing set of elements (of cotton) had rotted or broken so that only loose alpaca yarns remained without anything to hold them together. No detailed analysis was attempted of pieces in this condition. Analysis was done on a representative sample of plain cotton cloths as well as virtually all of the decorated pieces in which warps and wefts are well enough preserved so that the textile has some coherence, a total of 94 items.

The only Chimu textiles with definite north coast provenience previously published are those collected by Max Uhle and analyzed and published by Lila O'Neale.⁵ Those specimens are now at the Lowie Museum of Anthropology, University of California, Berkeley. Uhle found seven textiles at Chan Chan as well as collecting a number on the summit of Cerro Blanco in the Moche Valley.⁶ Menzel has dated the material collected by Uhle at Chan Chan to "the later part of the Inca occupation period,"⁷ and the shrine on Cerro Blanco to the latter part of the Middle Horizon, though the site continued to be used to a minor extent in later times.⁸ Most of Uhle's textiles from Cerro Blanco are white cotton plain weave with little, if any, decoration. Although it is impossible to be certain of the date of any individual textile in Uhle's collection, and it is likely that a fairly long time is represented, the number of technically uniform features found among them suggests a single coherent (Chimu) tradition.

O'Neale's analysis of this material reveals an emphasis on cotton rather than camelid fiber, with single overspun cotton yarns occurring most commonly. She also points out the use of plain weave with paired warps and loose battening of (single) wefts, monochrome weft-faced cotton stripes (in the Cerro Blanco textiles), liberal use of cotton in tapestry weaving, a brocading technique in which the alpaca supplementary weft is carried almost entirely on the front, and the extensive use of applied fringes.⁹

Of these features, also found in the textiles from Las Avispas, the analysis of plain weave is especially important in distinguishing north coast from central coast textiles of the late pre-Spanish period. However, most of the other features that she lists, while certainly valid, are insufficiently specific to be of help in attributing particular specimens. The analysis of the Avispas textiles has made it possible to refine these generalizations and has revealed additional technical features which provide further help in defining Chimu style textiles and in distinguishing them from central coast pieces. Such details can provide a more reliable guide than iconography alone, since some designs occur in both areas. Technical criteria are also more widely applicable, since iconography is not always present, even on very fine Chimu textiles. Few details are diagnostic in isolation, or occur on all pieces, so every possible useful feature has been considered. These features are described in detail in the sections that follow, each of which addresses a particular technical subject.

In order to highlight these specifically Chimu features further, reference will be made, in the sections titled "Comparisons," to general central coast practices. Data on the central coast derive primarily from textiles with some provenience information (mostly Chancay) in the Textile Museum collection. Studies of central coast textiles dating to the late Late Intermediate Period and with recorded archaeological associations do not yet exist.

The argument of this study requires that data on individual specimens be scattered in different sections. To facilitate the use of the Avispas evidence in future textile studies, a catalog is provided

following the text. In the catalog the specimens are listed in order of association. In most cases, full technical data are supplied in the catalog entries, but where a relatively complicated technical feature is found in a number of pieces, an abbreviated term is used in the catalog which is explained more fully in the text. Page references to the text are supplied in each such case. The text is written so that it can be read independently of the catalog.

The numbers used to refer to the textiles in both the text and the catalog are those assigned to them by the excavator, Thomas Pozorski. The number represents an excavation unit within the burial platform, in most cases an individual burial chamber. At the beginning of the list of textiles from each unit the unit is identified. The letters distinguish the textiles found within a single excavation unit. In general, specimens grouped under a single letter are thought to be fragments of the same original textile. In the excavation catalog each number is prefixed by H75U-7=...; H75 referring to the site of Chan Chan, U to the burial platform of Las Avispas, and -7 to the burial chamber area of the platform. The full specimen number of the first piece in the catalog is thus H75U-7=3A.

Terminology

The textile terminology used here is based on Irene Emery's book, The primary structures of fabrics (The Textile Museum, 1966). This work is exemplary in formulating clear descriptive terms for the various textile structures in preference to the jargon words, often with conflicting meanings, that are common in the older textile literature, including that of O'Neale. For example, Emery suggests using "slit tapestry weave" in preference to the term "kelim" borrowed (incorrectly) by O'Neale from oriental rug literature. Similarly, "plain weave with paired warps and wefts" makes much more literal and logical sense than "basket weave," the term used by O'Neale, since the weave has really nothing to do with baskets. Other O'Neale terms are simply not specific enough. There are many different structures which can be labelled "single-face" or "double-face," "brocade" or "pattern weave," and it is important to be able to distinguish among them. Emery's classification provides a logical system by which individual structures, even quite complicated and previously unnamed ones, may be clearly described.

O'Neale's terminology was based on usage current at the time she worked, and it is no criticism of a great pioneer scholar and teacher in the field of Peruvian textiles to suggest that the publication of Emery's revision of terms for textile structure nineteen years after O'Neale's death has rendered O'Neale's terminology obsolete, along with that of all her contemporaries.

In giving dimensions, length refers to the warp direction and width to the weft direction regardless of the actual proportions of a particular fragment. Length is given first unless otherwise specified. In the few examples which are woven of very tightly spun yarns, so the fabric is crimped, the measurement is taken with the yarns relaxed rather than stretched, since they no longer have the strength to sustain

stretching without damage.

"Alpaca" is here used to refer generally to camelid hair, which is most likely to be alpaca, although no specific analysis was attempted. Even when the yarns are discolored, it is usually possible to determine what the original colors were, and it is the original rather than the discoloration that is noted. "White" and "tan" cotton represent the natural colors of this fiber. There are many gradations of these colors and sometimes the choice of term was arbitrary, a further complication being that staining or bleaching may have altered the exact shade of the original. "Brown" cotton may or may not be dyed.

The letters S and Z refer to the direction of twist in the yarn, the direction indicated by the slant of the midsection of the letter. A "Z" yarn is a Z-spun single, unplied. The notation "Z-2S" refers to a yarn in which two Z-spun singles are plied in the S direction. A "Z-2S-2Z" yarn is one in which two Z-2S yarns have been replied in the Z direction. In other words, the first letter refers to the spin of the smallest component of the yarn, while the second refers to the direction of the plying and the number of components, and the third to replying.

Degree of twist is noted only in general terms. In hand-spun yarns, precise measurements are difficult to make and of questionable value. Often, the range of the degree of twist in a single yarn is considerable. The terms "loose," "medium" (about 45°), "hard" and "over-spun" (for creped yarns that tend to twist back on themselves) are sufficient to describe the variations found, and in many cases a range is indicated. In general, only the degree of twist for plying has been noted for plied yarns. In the alpaca yarns, the degree of twist in the component singles is similar to that of the plying, namely loose. In some cotton yarns which are loosely plied, on the other hand, the singles are spun hard and this fact has been noted, since it strongly affects the appearance of the finished yarn. In some of these yarns, especially those used for seaming, it is not completely clear whether a paired or plied yarn is employed. In more tightly plied yarns, the degree of twist in the component singles is less noticeable.

Yarn diameter is given in tenths of a millimeter. In handspun yarns, diameters are rarely uniform, and this feature is reflected in the ranges of size given. A set of warps or wefts .2-.8 mm. in diameter means that a single yarn will become as narrow as .2 mm. or as thick as .8 mm. With yarns this uneven, usually most of the length will measure approximately in the middle of this range. With relatively tightly twisted yarns or in loosely woven fabrics, the diameter measurement is the same whether a yarn within the woven area or a loose yarn is in or out of the fabric. In such cases, the measurements have been taken on yarns in the woven cloth, as compacted, since when combined with the yarn count the measurement gives a more meaningful indication of the texture of the cloth.

All yarn counts have been made by the centimeter. This practice is not only consistent with international standards, but is also

accomplished 2.5 times faster than counting by the inch and is no less informative, except perhaps in the case of extremely coarse fabrics. If the yarns are paired, it is the number of pairs that is counted (indicated by "pairs per cm.") and not the number of singles. Supplementary warps or wefts are not included in the basic counts. The frequency of these yarns relative to the ground warps and wefts is noted separately. In interpreting the yarn counts given, it should be remembered that the weaving is usually uneven and the figures, while valid as an average, may not hold in every part of the textile.

Yarns

In general it is necessary to discuss yarns in relation to their function in a textile, since different functions require different qualities in the yarns. Thus, a yarn spun for warp often differs from a yarn intended for use as weft, and the warps and wefts in a tapestry-woven textile usually differ from warps and wefts in an undecorated cotton textile. Yarns will therefore be considered within the context of fabric structure in this report, but one important point needs to be raised separately, namely, the differences between the treatment of cotton and alpaca which cannot be entirely accounted for by the natural differences in the properties of the fibers.

Cotton is the predominant fiber, used for all plain textiles and as the base for decorated pieces. This fact is not surprising, since cotton was extensively cultivated on the coast. It is also a logical inference that cotton was locally processed. Spindles with cotton yarn wound on them have been found, not only at Las Avispas but also elsewhere within Chan Chan and at many other coastal sites and graves.

There is also considerable variety in the yarns produced, not only for different purposes but also for fabrics of the same type. While most of the unplied cotton yarns used for the common warp predominant, plain-weave textiles in the Avispas material and in Uhle's north coast textiles are tightly S-spun, a significant number are Z-spun and there is a considerable variation in the degree of fineness as well. Yarns used in weft-faced weaving are quite different, those found as tapestry warps being S-spun and Z-plied, while tapestry wefts are spun and plied in the opposite direction from the warps and with a much looser twist. These spinning practices seem to be restricted to the north coast. Central coast utilitarian (balanced) plain-weave textiles of this period are made of yarns Z-spun and 2-plied S with a medium twist; tapestry warps are similar.

In contrast, the alpaca yarns in the Avispas textiles are remarkably uniform, virtually all of them being Z-spun and 2-plied S with a relatively slack twist. These same yarns are used as weft in tapestry weave or as warps in a warp-faced textile. Also, in spite of the fact that alpaca fiber takes dyes very well, a relatively limited color range is found in the Avispas textiles, primarily rose red, golden yellow, and golden brown, with an occasional pink or second shade of yellow. The alpaca yarns found in central coast textiles of the same

period are virtually identical. In addition, the yarns used for weft in Huari and Inca tapestry weaving are similar to these coastal yarns, only usually finer and with more color variation. Instead of being found on spindles, alpaca yarns from Las Avispas that were not yet woven were found wound into small bundles, characteristically 7-10 cm. long and about 1 cm. thick. The yarns seem to have been wound first lengthwise, perhaps around the fingers, and then secured by a series of crosswise wrappings.

Considering that alpacas thrive only in the highlands, it is reasonable to assume that the fiber was imported to the coast. But the extreme uniformity of the yarns and the lack of spindles with alpaca yarns at Chan Chan and other coastal sites suggests that they were also spun and dyed in the highlands for export purposes, and that this production was on an industrial scale and centrally controlled.

Structures

Plain weave (warp predominant)

Paired warps, single weft (3D,3F,3G,3M,3N,3O,3P,3Q,3R,3S,3T,3U,3V, 12E,12F,14A,19A,19B,19C,19I,19J,19K,19O,19P,31A,32A,32E,36C,36D, 36E,36F,36L,36N,46L,54E,54F,54G,55B,55C,55F,68A)

The most common type of plain-woven textile in the Avispas lot, of which 41 examples are listed in the catalog, is the one identified by O'Neale as being characteristic of the north coast, with paired warps and single wefts, using single tightly twisted cotton yarns. Such textiles may be completely plain, or have warp stripes, stripes with plain-weave-derived float weaves, applied feathers, weft-faced stripes (used as borders), or supplementary-weft patterning. In other words, any textile of average weight where the decorative structure is compatible with a predominant warp ground is usually woven with this variant of plain weave. Among the 41 catalog entries, there are 52 separate woven fabrics, of which 38 have selvages so that the identification of the warp direction is certain. Seven other webs have some decoration (warp stripes or supplementary wefts) which gives an indication of the warp direction. Thus, 45 of the 52 webs belong to this category with some certainty. The remaining seven pieces are plain and without selvages, but are listed here on the probability that the paired elements are warps (3R,3S,3V,12F, one web in 19B,19O,55C).

On the basis of our additional observations, details may be added to O'Neale's general description. The yarns are usually S-spun although some Z-spun yarns do occur, and two examples are woven entirely of Z-spun yarns (3S,12E). Nine examples in the catalog have predominantly S-spun yarns but include a few Z-spun warps. Of this group, four have the Z-spun yarns restricted to one-color stripes, but the areas with Z-spun yarns seem to be randomly placed in the others; one (19I) also has Z-spun wefts. There are two examples with S-spun warps and Z-spun wefts (12F,19P). Three examples have one S-spun warp and one Z-spun warp paired regularly; of these, two have S-spun yarns (19A,19J)

and one has Z-spun wefts (19B).

The degree of twist is uneven. It averages hard, but usually some parts of the yarn are more loosely twisted and other parts are over-spun. The wefts tend to be slightly less tightly twisted than the warps, less often having kinks from overspinning. Yarn diameters are typically .3-.6 mm., and yarn counts relatively low, 6-8 (sometimes up to about 10) pair of warps per cm., with an equivalent number of weft shots. Since the warps are paired and the wefts are not, the warps predominate in the finished fabric. Eight examples have somewhat finer yarns, .3 mm. in diameter or less, and correspondingly higher yarn counts, up to 24 pair of warps and 17 wefts per cm. (19P).

Seven examples of relatively coarse plain weave are white with narrow blue warp stripes in groups of three (3M,N,O,P;19I,J,K). Both 3M and 19I have a loom width of 48 cm.

Paired warps and wefts (3K,54C,54I,55A)

Four plain-weave textiles have paired warps and wefts, all with yarns similar to the paired warp with single weft examples but with relatively high warp counts. One piece has single warps and paired wefts used as ground for all-over supplementary wefts (32C).

Single warps and wefts (3C,12A,13B,19H,19L,32B,36D,36M,39A,46A,46B,46C-1,46C-2,46D,46E,46F,46G,46H,46I,46J,46K,46N,52B,54A,54B,55E)

There are 26 examples of warp-predominant plain-weave cotton textiles with single warps and wefts, constituting a significant portion of the sample. The yarns used are similar to the paired warp examples. Twelve examples (46A-46K; fig. 36) were all found in Chamber 6. They have brown and white warp stripes and brown wefts; one (46A) is plaid. The thread counts in these pieces are low, 6-10 warps and 5-6 wefts per cm. Nine specimens (46B-46I) have some stripes that consist of a white and a brown single yarn plied loosely Z (or S, in 46D), in addition to the solid color stripes of single yarns. Five (46C,E,F,G,K) have Z-spun rather than S-spun wefts; one (46J) has both. It seems likely that these fabrics were all made for the same purpose.

Of the remaining fourteen examples of plain weave with single warps and wefts, four (3C,19H,19L,55E) with exceptionally fine yarns (.1-.2 mm. diameter) have the plain weave combined with gauze and embroidery and so will be discussed in a separate section (p. 95). There are four others with equally fine yarns, of which three (12A,39A,54A) have fringe bands sewn along the edge but are otherwise unornamented except that one (54A) has weft-faced stripes. The fourth of this group (13B) is woven with fine warps but has the fine weft only in areas with supplementary-weft patterning and a heavier weft (.3-.7 mm.) in unpatterned areas. The remaining six examples with single warps and wefts have slightly heavier yarns (up to .6 mm.). Of these, four (32B,36D,36M,52B) have supplementary-weft decoration, one (46N) has alpaca weft-faced stripes and one (54B) is a small warp-striped rectangle. All of these

last fourteen specimens have a higher warp count than the pieces with paired warps previously discussed, an average of 16-20 warps per cm., though there may be as few as 10 or as many as 30 warps. The weft count also tends to be higher than in the paired warp examples, averaging 10-14 per cm.

Comparisons

All of these plain-weave textiles, of different fineness, with paired or single elements, S- or Z-spun yarns, and with different degrees and types of decoration, are woven of unplied yarns, the sole exception being in some of the stripes in fragments from Chamber 6, the yarns of which are plied to achieve a specific decorative effect. On the central coast in the Late Intermediate Period, however, the typical mummy wrappings and utility cloths are woven with plied warps and wefts, usually Z-2S, while only some sheer fabrics are woven of unplied (and unpaired) yarns, usually S-spun. The yarn count of central coast plain weaves is normally balanced rather than warp predominant.

Weft-faced stripes (3Q, 19B, 31A, 46L, 46N, 54A, 54E, 55F)

There are eight examples of warp-predominant plain-weave fabrics with weft-faced stripes from Las Avispas. Only one of them (55F; fig. 42) fits O'Neale's description in having a yarn similar to the regular weft, simply used paired instead of single,¹⁰ and that only partially. Over half of the weft stripes in this piece are woven with paired wefts which are more loosely twisted than the wefts in other areas. The interlacing order (1/1) and number of weft shots per cm. is the same in these stripes as in the rest of the textile. More examples of this technique might have been found if all of the plain fabrics from Las Avispas had been analyzed, since many of the unanalyzed pieces had white cotton weft stripes.

More common in the catalogued specimens from Las Avispas, and also found in the Cerro Blanco material,¹¹ is a type of weft-faced stripe woven on grouped warps. Grouping the warps makes it possible to weave the wefts more compactly, so that in contrast to the preceding type the weft count in these stripes is much higher than in the surrounding areas. There are seven examples listed (3Q, 19B, 31A, one web in 46L, 46N, 54A, and the remaining weft stripes in 55F) in which three warps or pairs of warps are grouped. In each case, some of the warps are crossed, as in gauze weave, at the transition to the weft-faced area (fig. 3).¹² The most common type of crossing, found in five of the seven examples, is one in which the outer wraps in adjacent groups cross (fig. 3). Two other examples (54A, 46L) have two warps in one group crossing two in the adjacent group with the remaining warps in each group uncrossed (figs. 5, 6). In 46L, which consists of two different webs sewn together, the weft-faced stripe of the second web is woven on groups of two warps instead of three with a single warp crossing between two adjacent groups (fig. 4).

In four of the seven examples of this type of stripe (3Q, 31A, 54A, 55F), the yarns used in the weft-faced stripe are of cotton the same

color as the ground. These wefts are unplied but may be more loosely twisted than the other wefts and/or of slightly greater diameter. In 54A and 55F, the wefts are paired (fig. 38b). Weft counts range from 14 per cm. to 28-30. In three examples (19B, fig. 19; 46L, 46N), alpaca yarns of various colors are used in the weft-faced stripes. These yarns are spun in the standard manner for alpaca and are used 16-22 per cm.

A third method of producing weft-faced stripes is used in 54E, where a lower warp count for the stripe is obtained by interlacing alternate wefts 3/1 instead of 1/1 (fig. 7). The 3-span weft floats are in vertical alignment, and the intervening wefts continue to interlace 1/1. This procedure results in every fourth warp floating across the entire height of the stripe, on what was presumably the back of the fabric. The opposite face in turn has the appearance of 1/1 interlacing with alternate warp elements doubled. Since in 54E the warps are paired to start with, the result is that in the weft-faced stripes the interlacing order, counting each single separately, appears to be 4/2. The wefts in these stripes of 54E are also white cotton, in this case paired Z-spun singles. The weft count in the stripes is 9-10 pair per cm. as against 6-7 singles per cm. in the plain areas.

Comparisons

The use of monochrome cotton weft-faced stripes seems to be peculiar to north coast weaving in contrast to that of the central coast. However, weft-faced stripes woven of alpaca yarns on a cotton ground with grouped warps crossed at the edges of the stripes are sometimes found in central coast textiles, usually flanking an area patterned in some other way.

Supplementary-weft patterning (3D, 13B, 19A, 19B, 32A, 32B, 32C, 36C, 36D, 36E, 36M, 52B)

Three types of supplementary-weft patterning on a plain-weave ground are found in the textiles from Las Avispas. With a single exception (19A) only one appears on any given specimen. By far the most common type (ten of twelve specimens) is one involving the insertion, after each ground weft, of a supplementary weft which is employed in long floats on the front with the weft passing under only one warp (or warp pair) between floats. The floats in succeeding shots are in alternating alignment. In general, the designs formed with this technique are broad, so the float length is not dependent on the design. The actual float length varies, ranging from 5- to 7- to 13-span floats, and one example (36D sleeve, fig. 31b) has 17-span floats. Within a single piece, the length of the floats may vary in the weft direction. For example, in the tunic-body fragment of 36D, part of the interlacing order for a single supplementary weft is: 15/1/13/1/13/1/11/1/11/1/15/1/13/1/13/1/13/1/11/1. Nevertheless, succeeding alternate supplementary wefts line up exactly. In other words, alternate supplementary wefts all have the interlacing order given above, with irregularities repeated exactly. This feature suggests that some device may have been added to the loom to use in raising the warps for the supplementary wefts, but that the person setting up the loom did not always count the warps carefully when adding

this device.¹³ The back view of the specimen illustrates this aspect of the structure more clearly than the front (fig. 25).

The length of the floats and the comparatively large designs give these fabrics a rather crude appearance. This technique is a fast method of patterning large areas and one which is economical of supplementary yarns.¹⁴ It is most often used to produce horizontal stripes. In some cases (32A, fig. 25; 32B; 36D sleeve, fig. 31b; 36M) some or all of the stripes contain small motifs woven with discontinuous wefts of contrasting color which are substituted for the color of the stripe for just the length of the motif. Two specimens from Chamber 19 (36C, 36D; figs. 31, 32) have a large-scale checkerboard design. A more elaborate design, which is incomplete but appears to be the lower half of a human figure, occurs on 36E (fig. 33), while two fragments (32C, 52B) are too small for any design to be apparent.

Of the eleven examples of this supplementary-weft structure only one (32C, fig. 27) has only alpaca supplementary wefts, while five are decorated with only cotton yarn and five use both materials. The alpaca yarns are spun as described previously and mostly used paired. The cotton yarns are usually unplied and used paired, though in one example (36D sleeve) they are tripled and in another (36E) quadrupled. Two examples (13B, 19A) have cotton supplementary wefts which are plied Z-2S (like tapestry wefts, see below), and used either paired or single. These cotton yarns are usually larger in diameter than those used in the ground weave. A single specimen (13B) has a finer weft used under the supplementary yarns than in the rest of the piece. This piece was found in back dirt from the platform rather than in one of the chambers.

A different supplementary-weft technique is used in two examples (19A, 19B). In these cases small bird designs appear isolated on the ground weave and are formed using continuous wefts which simply float across the pattern area on the front and across the intervening ground area on the back (fig. 19). The bird motif is so small that the length of the floats is determined by the size of the motif in each shot (fig. 18). Since the birds are not close together, the floats on the back between them are quite long. In 19A, a single row of monochrome birds woven in cotton occupies a space demarcated by a pair of supplementary-weft stripes woven in the first technique described. The birds in 19B are woven in two colors of alpaca yarns and are disposed in several rows in a space flanked by a pair of weft-faced stripes in which the wefts are not supplementary. Among Uhle's textiles from Chan Chan is a piece which has rows of small birds woven in this same technique.¹⁵

The final example decorated with supplementary wefts (3D, fig. 14) is more complex technically than the others and appears to be part of a stepped corner decoration. The stepped edge (to the right on fig. 14) is outlined by two adjacent bands of color, the outer one red and the inner one brown which changes to black in the lower part of the piece. The inside is red, and the red wefts are floated across the back of the brown band to be used again in the outer red band. The horizontals in the outline bands are woven with the supplementary wefts in 5- or 7-span floats in alternating alignment. The verticals are woven by

taking the supplementary weft back and forth over and under 8, 10, or 12 warps. The weft interlaces only once before it changes direction. This technique covers the back as well as the front of the fabric. The wefts on the inside of the stepped area interlace mostly 5/1 but with the floats in diagonal alignment. The direction of the diagonal may be changed to form a design. Although the example from Las Avispas is too small for the design to be apparent, the general effect can be seen in more complete pieces, including two of Uhle's textiles from Cerro Blanco.¹⁶

Comparisons

All of these variants of supplementary-weft patterning seem to be specifically Chimu and may be diagnostic when combined with style and yarn types. Although central coast supplementary-weft patterning has not been described in comparable detail, some general comparisons can be made. For instance, in central coast pieces, background areas for small motifs are not covered with supplementary wefts, and small motifs isolated against the ground weave are generally woven with discontinuous wefts so that there can be horizontal color alternation, in contrast to the Chimu use of continuous wefts for such motifs. Large-scale motifs do not seem to be used on the central coast; instead the pattern usually consists of rows of small motifs isolated against the ground, or an all-over design with small motifs set in diagonal bands. In central coast pieces where the design is broader than the length of the floats, the floats appear in alternating alignment, but two succeeding supplementary wefts will have the same interlacing order before the alternation occurs, in contrast to the Chimu practice of changing the interlacing order in each shot.¹⁷

Featherwork (3F, 19C, 19P)

There are three examples of featherwork on a plain-weave ground among the Avispas textiles, all in very bad condition, and not very similar to one another. Two examples have the feathers sewn to the ground fabric. In 19C (fig. 20) red and yellow feathers with fine quills are placed around the edge of the fabric while in 3F black feathers with thicker quills cover the fragment. In both examples, the feathers are prepared for attachment to the fabric by folding the tips of the quills over a cord and tying each folded quill in this position with a second cord using an overhand knot.¹⁸

The strings of feathers so prepared are placed with the quill tips and knots facing toward the fabric and are sewn to it with a third yarn (figs. 20b, 21).¹⁹ This third yarn passes around the second yarn, the fabric under the quill, and the quill itself, ties in an overhand knot with itself and then moves on to the next feather.²⁰ In 3F a second stitch with an overhand knot is taken with this third yarn just below the first knot before moving on (fig. 21, right). The extra stitch, used for most although not all of the quills, is probably made because the quills of the feathers are larger than those in 19C. In 3F, which is a relatively small fragment, all the work is right to left (fig. 21), while in 19C, which consists of several larger fragments, some sections are done right to left as in fig. 21 (left), and others are done left to right as in fig. 20b. Sometimes, the yarns on which the feathers are initially

strung are larger than the yarns used to sew the feathers down, but for some of the bands in 19C all three yarns are about the same size. The fabric used for the ground in 3F is of average texture, while that of 19C is relatively fine, presumably taking into account that some of it would show.

In 19P (fig. 23b), which also has a relatively fine fabric as ground, there are no quills or sewing threads, practically all that remains of the featherwork in 3F. Instead, the feathers seem to have been cut and trimmed into small pieces, which are simply attached to the fabric with some kind of adhesive. The few remaining feathers are violet in color.

Comparisons

The Textile Museum collection includes no central coast featherwork with provenience information, nor are any examples described in the available literature.²¹ The paired-warp plain-weave ground is certainly one distinctively north coast aspect of the featherwork, however. Some late featherwork with sewn feathers is done on extremely coarse ground fabrics, a feature which might be characteristic of some other area, since Chimu featherwork seems to be done on average to fine fabrics. The technique of gluing cut feathers is probably a specifically Chimu one.²²

Beadwork (19P)

The piece with glued feathers also has a beaded fringe (19P, fig. 23b). The beads, no more than 2 mm. in length or diameter, are of a fine-grained, black volcanic rock, probably basaltic. They are cylindrical and the holes are straight drilled.

The construction of this beaded fringe is unrelated to the weft-faced fringe bands to be discussed later. The beads are strung on heavy replied cotton cords. At the end next to the fabric, the cord is divided into its component two plies, each of which is individually secured successively to each of two holding cords which lie parallel to the edge of the fabric (fig. 23a). Each yarn is looped twice around the holding cord and the end put through the loop in front to secure it. The cut ends of all the beaded cords can be seen above the second holding cord. The fabric is in three layers, each of which is folded 2 cm. from the end next to the fringed edge. The holding cords of the fringe are placed between these folds and the folds sewn together, one stitch between each fringe cord.

All of the fringe cords of 19P are broken at the lower ends. However, a more complete example of a Chimu beaded fringe suggests the probable method of securing the ends.²³ In this piece, the fringe cord appears to have been put through the hole of the first bead before being replied. After this bead is strung, the cord is doubled and replied and then the rest of the beads are strung. The first bead thus appears perpendicular to the rest.

This type of beaded fringe is very likely to be distinctively Chimu. Comparable examples do not occur on the central coast.

Plain-weave-derived float weaves (3G, 3K, 3T, 36L, 36N)

Five warp-striped fabrics in the Avispas material have float patterning in some of the stripes in a plain-weave-derived float weave. The plain-weave sections of these fabrics resemble the paired-warp plain-woven fabrics previously discussed.

Plain-weave-derived float weaves are simple weaves in which the floats are made by omitting some interlacing in plain weave.²⁴ Floats are most frequently 3-span, the result of omitting one interlacing on a loom set up for plain weave, but may be a higher odd number. The floats are aligned in some rectangular arrangement, as opposed to the diagonal arrangement characteristic of twill weaves. A warp float on one face of the fabric results in a weft float on the opposite face and vice versa. In the Avispas examples, where the warps predominate in count, the warp floats appear to be intended to give the pattern and the weft floats occur on the "wrong" side of the fabric. While these weaves are common among textiles throughout the world, no standard terminology has been developed for them. Many structural variations are possible, and the most precise method of description is to give the interlacing order.

No two of the Avispas examples are identical. In four of them, the patterned stripes have alternate warps of contrasting color. In 3K (fig. 8) only one of these colors floats, in 3-span floats aligned in alternate pairs, while the other color interlaces 1/1 throughout as in plain weave. In 36N (figs. 9, 35), one color interlaces 3/1/1/1 with the 3-span floats in horizontal alignment, while the second color interlaces 1/1 on one side of the stripe and 3/1/1/1 opposite to the first color on the other side of the stripe. The interlacing order of 3G is more complex, involving both 3- and 5-span warp floats of both colors and can best be understood by referring to fig. 10. While in 3G, the alternate warps (of the opposite color) do interlace 1/1 under the floats, in 36L both colors float side by side in some areas (fig. 11). There are enough irregularities in the weaving, however, so that further generalization about 36L is difficult.

The float pattern in 3T is more unusual (fig. 12). The basic warp striping is an alternation of four pair of brown and four pair of white warps. The floats occur only in the white stripes. At intervals all of the white warps float 5/1. Adjacent floats are slightly offset because of the basic alternating sheds. The wefts float across the whole stripe in 5-span floats on the back. There are three 5-span floats for each warp pair and then a comparable interval of plain weave. Three successive white stripes have these float sections parallel to each other. The float and plain weave sections form a checkerboard in the fabric as a whole.

As with featherwork, there are not enough data to indicate that any of these structures is confined to the north coast. Again, it

is the paired-warp plain-weave ground that is distinctive.

Plain weave with supplementary-warp inserts (55A)

One example of this structure is present from Las Avispas (55A, fig. 40). The fabric appears basically as a warp-striped plain weave, but the warps of one of the two colors of stripes float on the back at intervals to form a solid color design on the front. In this case, four pair of brown ground warps alternate with four pair of tan supplementary warps, and it is the tan warps which occasionally float on the back.

Comparisons

This structure has been described in previous works dealing with textiles from other parts of the coast,²⁵ so it is only the paired-warp plain weave of unplied yarns that marks 55A as a north coast piece. The central coast examples employ Z-2S yarns used individually.

Embroidery, gauze, and supplementary diverted warps (3C, 19H, 19L, 55E)

This group of obviously related fragments was found in three separate chambers (13, 17, 18) in the platform. This distribution could result either from looting or from the production of duplicate garments for burial or as offerings. All of the fabrics are composed of two types of fabrics, a very sheer cotton fabric and an alpaca and cotton warp-faced, warp-striped fabric. The warp-faced band is applied on top of the edge of the sheer fabric in the manner of a border. Some of the fragments have fringe bands abutting the edge (3C, fig. 13; 19L) and some do not (55E, fig. 41). The only example that survives in enough detail to reconstruct the original garment is 19H (fig. 24), which appears to be the sleeve from a tunic (see discussion under Garment Types below). The sheer fabric is sewn into a tube, with a portion of the border on one end and a portion of the main body of the tunic on the other (compare fig. 43). The sheer fabric is plain weave with embroidery alternating with squares of gauze weave in a checkerboard arrangement. The squares are the size of one side (half) of the sleeve. It is possible that the sheer fabrics in the rest of the fragments also had this type of patterning but the fragments are too small to determine the original arrangement of the pattern. The other fragments show the warp-faced band in more detail but the seaming present is not suggestive of any of the known garment types.

The sheer base fabric of these specimens represents the finest spinning in the entire lot, both warps and wefts being only .1-.2 mm. in diameter, hard-spun singles. The twist is sometimes S and sometimes Z. The warp counts are only slightly higher than the weft counts, ranging from 10-20 per cm. The warps as well as the wefts are used singly. The gauze weave is complex alternating gauze, with five shots of plain weave between the shots where the warps are crossed.²⁶ There seem to be no examples of gauze among Uhle's textiles from Chan Chan and Cerro Blanco, but this exact variant is found in a tunic and hat from the Viru Valley (figs. 43, 44) in the collection of the Textile Museum. In these examples also, gauze occurs in rectangular areas in a checkerboard arrangement.

The plain-weave areas of the sheer fabric have embroidered decoration which contrasts markedly with the fineness of the spinning and weaving. The embroidery is done with standard alpaca yarns and white cotton which is spun Z-2S like the alpaca and is up to a millimeter in diameter. These yarns are often used paired, and the size of the stitches is relatively large. The design is simple and not very coherent. Undulating lines are formed with running stitches that are long on the front of the fabric, passing under only one thread of the ground fabric at a time. Discs of various sizes, composed of concentric circles in different colors, are made with cross-knit loop stitch.²⁷ Since the stitches are worked in a single line in circles, the manner in which the threads lie is very similar to chain stitch, although the working direction is opposite in the two stitches. Chain stitch is not used in any known pre-Spanish Peruvian textile, while cross-knit loop stitch is common. That the stitch used here is cross-knit loop stitch and not chain stitch can be determined from the manner in which the work is begun. A small straight stitch is taken in the fabric for the first loop to pass around, a feature unnecessary in chain stitch. Also, in cross-knit loop stitch, it is easy to catch a little of the ground fabric as the needle is passed through the previous loop, a peculiarity that is impossible in chain stitch but occasionally found in the embroidered circles in these fragments. The circles are of varying sizes and are not placed in any observable pattern, but seemingly at random. On the sleeve (19H) where this pattern is best preserved, the circles are placed within the shape outlined by the running stitches. There are also a number of such circles that have become detached from their original context because the ground fabric has become so rotted that it serves only to hold the embroidery yarns together.

The borders of these fabrics are unusual in having some alpaca yarns used as warps. These borders are more warp-faced than any of the other Avispas textiles, with 16 warps and only 4-6 wefts per cm. The edge of the border that is adjacent to the sheer fabric has five warp stripes, each about 1 cm. wide. Beginning at the edge and proceeding towards the middle, these stripes are lighter and darker brown cotton (of paired, unplied yarns), white cotton (plied like the alpaca yarns), and brown and yellow alpaca (figs. 13,41). On the edge of the border on the inside (next to the yellow alpaca stripe) is a single 5 cm. wide stripe composed of red alpaca warps. This stripe is patterned with brown cotton diverted supplementary warps, made of paired unplied yarns. These supplementary warps are spaced, and are diverted back and forth in a zigzag, adjacent warps converging and diverging to form a diamond grid (figs. 13,41). They are caught down by alternate passages of the weft and there are five or seven warps between the side points of each diamond. The warps float straight on the back of the fabric where not being used for the design. This portion of the fabric is best preserved on 3C and 55E, where a simple bird design is visible. The weft in these bands is a very fine cotton thread. One further example of the use of supplementary diverted warps occurs in the Avispas lot. Some fragments from Chamber 17 (catalog number 3), in which the wefts were so disintegrated that it was impossible to measure them or analyze them completely, had yellow alpaca supplementary warps against a ground with red alpaca warps.

The fringe bands attached to these fragments are similar to others found at Las Avispas and are included in the general discussion of fringe bands, below.

Comparisons

It may be possible to define a distinctive north coast variant of gauze weave on the basis of these four specimens. The characteristics of this variant are that five or more wefts of plain weave are used between the gauze wefts, no design more complicated than a checkerboard is formed, and the yarns are extremely fine. At any rate, the gauze-weave variant described here differs in the respects noted from the central coast gauze type described by O'Neale and Clark.²⁸ These authors describe pieces which have relatively complex designs in gauze in a ground of plain weave and have only three plain-weave wefts between the gauze wefts.

The use of standard alpaca yarns for warp in a warp-faced textile is not necessarily a north coast feature. Narrow bands of alpaca warps woven in complementary-warp weave occur on the central coast.²⁹ The combination of cotton warps spun and paired in the north coast manner with such alpaca warps, however, is distinctive, although apparently not common. There are no examples among Uhle's Chimu textiles. The technique employing diverted supplementary warps is also unusual, but central coast examples are known.³⁰ The spinning and grouping of the yarns in the ground weave is thus again the most distinctive north coast feature of textiles in this technique.

Tapestry (3A, 3B, 3H, 3J, 13A, 19E, 19F, 19M, 22B, 36G, 36H, 46M, 52A)

There are some thirteen tapestry-woven fragments or groups of fragments excluding the technically related fringe bands, discussed below. The exact count is unclear, since poor preservation prevents certainty about which fragments are part of the same original fabric. The warps are rotted in many cases, and other pieces suffer from general darkening and discoloration. Several examples are so small that the designs cannot be read. Except for the narrow bands (3B, 36G, 36H; figs. 29, 30), none of the fragments is complete enough for the original function of the fabric to be apparent. Several examples (3H, 3J, 19E, 19M, 52A; fig. 16) have a series of weft stripes, each about 1 cm. wide, below the design area.

The warps are cotton, and the count ranges from 6 to 9 per cm. The spin of the warps in the majority of pieces is S-2Z with a medium to hard twist. Two examples (3H, 3J) have S-3Z warps and one (19E) has some S-3Z warps in addition to the 2-ply ones. Three examples (3B, 36G, 52A) have some Z-2S warps in addition to the S-2Z ones. Uhle's Chan Chan tapestries also have S-2Z warps. Both alpaca and cotton are used as weft, with cotton used for white and blue design areas and alpaca for red, yellow, and brown areas. The alpaca yarns are the standard type, and most of the cotton weft yarns are also spun Z-2S, opposite to the warps and more loosely, presumably to match the alpaca yarns. Nevertheless, in many examples the cotton yarns are noticeably coarser than the alpaca

ones. Some examples (22B,52A) have the alpaca wefts paired in places but not consistently; 19M and 22B have some Z-spun unplied cotton wefts.

There is a wide range in the fineness of the weft insertion in the Avispas tapestry fragments. Bands 3B and 36G represent the coarsest quality, with 11-19 cotton wefts and 10-32 alpaca wefts per cm. The warp coverage and rendering of the design in these pieces is also very irregular (fig. 29). The examples with large-scale designs (13A,22B) are also relatively coarse, with 20-22 cotton wefts and 20-30 alpaca wefts per cm., although the designs (fig. 17) are more carefully woven than in 3B and 36G. The finest examples are 46M (fig. 37), which has 38-50 wefts per cm., with the cotton wefts as fine as the alpaca ones, and 3H and 3J (figs. 15,16) which have no cotton wefts and a count of 44-48 wefts per cm.

The weave is slit tapestry. Very long slits seem to be avoided in the design of most examples, but those in 46M are sewn closed. In the Avispas tapestries, a few eccentric wefts may be used to define diagonals in the design but often similar diagonals are stepped. It is noteworthy that the wefts are not neatly finished off on the back of the tapestry but float across the back from one design area to another of the same color (see fig. 30b). Some weft ends simply hang loose on the back. This feature is also found in Uhle's Chan Chan tapestries.

Only one tapestry fragment (22B) has an end selvedge preserved, and it has the warps cut and turned to interlace diagonally with the neighboring warps.³¹ One of Uhle's Chan Chan textiles (cat. no. 4-70d) is a tapestry-woven piece with cut warps interlaced diagonally on one end and the regular alpaca wefts simply beaten into the warp loops without any apparent heading on the other end.

Comparisons

Although central coast tapestry weaving also uses slits and features the same type of alpaca wefts on plied cotton warps, there are a number of features in the north coast examples that seem to be distinctive. The direction of spin in the warps, with in every case at least some of the warps spun S and plied Z, is one such feature. Central coast tapestry is generally woven with Z-2S warps. Also distinctive are the loose wefts on the back of the north coast pieces. In central coast tapestry-woven textiles, both sides of the fabric are generally, although not invariably, neatly finished. In addition, the longer slits in central coast pieces are often closed by occasional dovetailing rather than the sewing found in north coast pieces.

On the other hand, in spite of O'Neale's suggestion, the use of some cotton wefts in tapestry weaving cannot be considered a distinctively north coast feature because the practice does occur in central coast pieces, although it may be slightly less common. However, there are also central coast pieces woven entirely of cotton.³² It appears, moreover, that selvedges cannot be used to distinguish between north and central coast tapestries. Both plain selvedges and the cut and diagonally interlaced finish are found on some central coast pieces.

Painted weft-faced plain weave (28A)

Only one example of painted plain weave was found and it cannot be taken as characteristic of north coast painted plain weaves (28A, fig. 26). It is a narrow band in weft-faced plain-weave cotton. The yarns used, S-2Z warps and Z-2S wefts, are like those in tapestry-woven pieces, but the weft count, 65-70 per cm., is higher than in any of the tapestries in the sample. The band itself is a typical north coast product (see the section on Garment Types below) but it is unlikely that such bands are the most common foundation for painted decoration among Chimu textiles. It would be expected that the usual type of paired-warp plain weave would more often serve this purpose, and painted examples of such plain weave do exist.³³ The design on band 28A is a row of simple birds painted in brown. Presumably this is a dye (chemically bonded to the fiber), as is usual in Peruvian painted textiles, and not a pigment (superficial layer of color). Comparisons of the details of the various birds in this piece indicate that the design was painted freehand, as in most Peruvian examples of this technique, and not printed (e.g., with a wood block).

Fringe bands (3C, 3D, 12A, 14A, 19A, 19B, 19L, 22B, 32C, 32D, 36A, 36D, 36J, 36N, 39A, 46L, 54A, 55F, 68A)

There are 30 separate fringe bands included in 19 catalog entries among the Avispas textiles. Three of these (32D, 36A, 36J) are isolated bands and the rest are sewn as borders onto larger textiles. Since most of the fabrics to which the fringes are attached are fragmentary, it is difficult to determine how they were used. Some small items on which they occur may be noted, however, namely sleeve ends (19A, 36D, 54A) and tie ends (55F) (see also figs. 43, 44). The disparity in count between the number of fringe bands and catalog entries results from the fact that several separate fringe bands may be sewn to the same piece, sometimes matching one another and sometimes not, sometimes coinciding with a seam in the main fabric and sometimes not. Apparently there was no preoccupation with having a single continuous fringe band on a given edge, and often several shorter bands were sewn side by side, the four bands in 36N being the most striking example (fig. 35). Even very fine pieces may have a series of different fringe bands (fig. 43). Sometimes the ends of the bands are simply abutted, whether the warps are cut or not; sometimes a few overcasting stitches hold two bands together; but the most distinctive join is for the warp ends of the two bands to be tied together, the top warp of one to the top warp of the other and so on with all of the warps, or most of them if the number of warps is different in the two bands, as is sometimes the case. In one example, (32C, fig. 27) four contrasting fringe bands are sewn one on top of the other, overlapping.

These fringe bands are related to tapestry weave, since they are woven in weft-faced plain weave and often employ discontinuous wefts, either for structural purposes or color patterning or both. The types of yarns used are also similar to those used in the tapestry-woven pieces. The majority have S-2Z cotton warps; seven have S-3Z warps (3D, three of the four fringes in 32C, 36J, 39A, 54A); three have Z-2S warps

(two of the four fringes in 36N and one of the two in 46L). The alpaca wefts are of the standard type, and the cotton ones are usually also Z-2S. The exceptions to the spin of cotton weft yarns are 19B, 55F, and one of the colors in one of the bands in 46L, which have S-2Z wefts, while 19A, the two bands in 32C and one band in 46L have paired unplied wefts, either S- or Z-spun.

The usual construction of the fringe bands is that of a simple weft-faced narrow band having most of the wefts extended beyond the warp on one side. Usually some wefts turn back close to the warps instead of extending into the fringe, preventing the warps from spreading apart. The discontinuous wefts that secure the warps may occur as often as every other time the weft is woven to the fringe side or less often. In the few examples where none of the wefts is discontinuous (54A, 68A) the warps do have a tendency to spread apart toward the bottom of the band. Sometimes two groups of warps are separated by a space (here termed a double fringe, see fig. 28) and again the warps can be held in place with discontinuous wefts (19L, 36A, one and a half bands in 36N), though in some examples they are not (3C, one and a half bands in 36N). In all of these fringe bands the wefts that form the fringe are cut apart at the end. The free ends are not treated in any other way.

A number of fringe bands have all alpaca wefts in a single color, either red (3C, 19L, 22B, 36N) or yellow (32C, 32D, 36J). These bands have 4-8 warps. Most have a relatively low weft count, 12-20 per cm.; 22B and 36N have slightly higher counts of 24-30 wefts per cm. Some of the red bands are double, and these have a slightly larger number of warps in the upper part of the band than in the lower part. The wefts usually extend only 1.5-2 cm. beyond the warp, though a few examples are wider (36J has an 8 cm. fringe and one of the bands in 36N has a 5 cm. fringe).

Four of the fringe bands (3D, 12A, 14A, 36A) have simple tapestry patterning. A zigzag color change dividing the band into triangles or stepped triangles is the favorite motif (fig. 14). The part of the band with the patterning is wider than in plain bands, with 10-16 warps. These bands also have a higher weft count than the plain bands, one comparable to regular tapestry pieces. The wefts are either cotton or a combination of cotton and alpaca. One fringe band (19B, fig. 19) is monochrome cotton but has a design formed by discontinuous eccentric wefts.

The remaining fringe bands (except 68A) have all cotton wefts. Some of these have simple weft striping (19A, 46L; although 68A is also weft striped, it includes alpaca) and some are plain (32C, 36D, 39A, 54A, 55F). These bands have on the average a lower warp count than those with alpaca wefts, none having more than six and some having as few as two or three (46L, 39A). Most of them also have a low weft count, with 12-20 wefts per cm., except for 39A and 54A which are attached to fabrics woven of very fine yarns. Although 36A has very little alpaca, no all-cotton double fringes occur in the Avispas textiles, but such fringes are known (see figs. 43, 44).

Two of the narrower fringe bands (39A and one band in 46L) have a method of securing the warps different from the rest. In these bands the weft loops are not cut and adjacent wefts (loops) are twisted together opposite to the ply direction of the yarns, in effect replied. In 46L there are also some discontinuous wefts, though in 39A there are not. Some of the fringe bands in Uhle's Cerro Blanco material are also of this type, having only 2 or 3 warps, secured by replying adjacent wefts and with weft loops uncut.

Comparisons

Although O'Neale characterizes Chimu textiles as making relatively extensive use of fringe bands, this feature alone will not serve to distinguish north from central coast textiles. Fringe bands do occur on some central coast pieces (noted also by O'Neale), and some of these bands are very similar to some of the Chimu ones. The central coast fringes are usually not as complex as many north coast ones, however. Double, tapestry patterned and layered fringes do not seem to occur on the central coast, nor does it seem to be common to put a simple fringe band on a plain cotton textile as on 39A and many of the Cerro Blanco textiles. The central coast fringe bands most similar to Chimu bands are simple ones with a single color of alpaca wefts, either red or yellow. However, they usually differ from their northern counterparts in having Z-2S warps and in many examples the weft loops are uncut. Many Chancay fringes are significantly longer than any of the Avispas ones, 12-18 cm. in the weft width.³⁴ Other types of fringes, unrelated to the north coast ones, are also sometimes found in central coast textiles.

Tassels (3W, 5A, 12D, 32E, 36G, 36I, 54B, 54C, 54H, 68A)

The tassels from Las Avispas consist of a series of tufts arranged in tiers on a foundation cord with the lowest tier longer than the rest. Five tassels (3W, 5A, 12D, 36I, 54H), only one probably complete (54H), were found detached from their original fabric. Of those found attached, one is on the corner of a plain weave fragment which has a fringe band along one edge (68A); one is attached to a narrow piece of plain weave of indeterminate function (32E, incomplete); one specimen is a small rectangle with a tassel attached to each of two corners (54B, fig. 39); and two examples are narrow bands with a tassel attached to each half of the bifurcate ends. One of these (36G, fig. 29) is a long, incomplete tapestry-woven band and the other (54C) a short (27 cm. long) complete warp-stripped band. Of the attached tassels only three (on specimens 36G, 54B, 68A) are either complete or complete enough for reconstruction. Those attached to rectangles (54B, 68A) are relatively short, 5.5 cm. with 3 or 5 tiers, while those on narrow bands are longer: 20 cm. with 7 tiers, complete (36G), and 12 cm. with 5 tiers, incomplete (54C). In the long tassels the lowest tuft is markedly longer than the others. Several of the incomplete tassels are also long: 16.5 cm. with 12 tiers (5A) and 12 cm. with 16 tiers (36I).

The tassels in Uhle's Chan Chan and Cerro Blanco material confirm the uses and proportions suggested by the relatively meager data from Las Avispas. For instance, from Cerro Blanco there is a complete

square of plain-weave cotton, 25 x 27 cm., which has a fringe band all the way around it and a tassel at each corner (cat. no. 4-2262). The tassels, with three short tiers and one very long one, are 20 cm. long. A pillow from Cerro Blanco (4-2294), 25.5 x 19 cm., has a tassel at each corner, each 7.5 cm. long with two short and one long tier. There are two weft-faced bands with bifurcate ends among Uhle's Chan Chan pieces, one plain and the other with tapestry patterning. On the plain one (4-70h) the tassels are 33.5 cm. long with 13 or 14 small tiers and one of 21 cm. at the bottom. The tassels on the tapestry-woven band are 42 cm. long, with 20 short tiers and one of 18 cm. at the bottom.³⁵

Six of the Avispas tassels are made entirely of cotton, at least three of these with alternating white and brown tiers (5A, 12D, 54C, possibly 54B and 54H which are now discolored, and 32E which has only one tuft remaining). Three tassels combine cotton and alpaca tiers, in alternating colors (36G, 36I, 68A). A single tassel, which has only two tiers remaining, consists entirely of alpaca (3W). The alpaca yarns are standard. The cotton yarns in the tufts are mostly Z-2S, but one example (36I) has some S-2Z yarns and several examples have S or Z unplied yarns. Sometimes yarns of different spin are combined in the same tassel or even the same tuft (12D, 54C).

A thick cotton cord is used to unite all the tiers. This foundation cord also varies in spin from one piece to another, but in six examples it is spun S and plied Z. It may be 2-ply (5A, 68A), 4-ply (36G, 36I, 54C) or even 8-ply (32E, 36G). In 5A, five S-2Z yarns are used together. One example uses a Z-2S yarn (54B), one uses a replied yarn (S-2Z-6S, 54H) and one a series of S-spun yarns simply grouped together (12D).

The tassel is made starting at the bottom. The middle of the foundation cord is tied in an overhand knot around the middle of a bunch of yarns that will become the lowest tier. The two ends of the foundation cord are then tied together several more times, merely to add length, and then around another bunch of yarns for the next tier, and so on. The next step is to bend the yarns in each tier double, pointing downwards, and to wrap the top of each tier just below the uppermost knot of the foundation cord. A fine binding yarn is wrapped around each tier of the tassel several times. The binding yarn is usually an S-spun yarn or one similar to that used in the tufts. Each tier is about 2 cm. long by itself, but the tiers overlap in the finished tassel so that the wrapped tops are not usually visible.

Comparisons

Chimu tassels differ considerably from those of the central coast in both form and use. Central coast ones often consist of a single long tuft the top of which is usually decorated in some way, for example, wrapped for a distance and the wrapping embroidered, or covered with a small tapestry medallion. Even tiered tassels usually have decorated tops and generally there is some difference in the construction of the tiers from that used on the north coast, although there is no clearly standard method. Tassels are seldom used on the corners of rectangular textiles on the central coast, but rather mainly on the ends of narrow

bands or hanging from the bottoms of bags. Unlike Chimu bands, central coast bands do not have bifurcate ends, so the number of tassels attached, if any, may be one or several.³⁶

Garment Types

Loincloth

The garment found in the most complete condition was a single large loincloth (55F, fig.42). It consists of two loom widths, 42 and 47 cm. wide and 201 cm. long, sewn together along the side selvages and with a tie band sewn across one end. The present length of the tie is 219 cm., and it is broken off at both ends, although the extremities of the bands, with fringe bands sewn to the ends were found as separate fragments. The tie band is made of a fabric 21.5 cm. wide which is folded in half parallel to the warp. The sides are not sewn together except in the middle where they are attached to the loincloth. The entire garment is woven of undyed cotton and the only decoration consists of some weft-faced stripes. These occur at the end of both webs of the loincloth near the tie, in lesser number at the opposite end of one of the webs, and at the end of the tie band.

It is not clear exactly how such a large loincloth was worn. Although it has the same general shape as the smaller garments from the central coast that more obviously perform this function, this loincloth and other north coast examples cited below are clearly larger than would be practical to wear in exactly the same way. They may have been draped relatively loosely providing a skirtlike effect. With so much fabric, the draping possibilities are many.

Tunics

Although no complete or nearly complete tunics were found at Las Avispas, there are several pieces which appear to be sleeves from tunics, from which the existence of tunics can be inferred. Sleeved tunics are known from the Early Intermediate Period on the north coast.³⁷ There are two sleeves from Las Avispas (19A, fig. 18; 36D, fig. 31b) in which complete lengths are preserved. Both are relatively coarsely woven, with supplementary-weft decoration and have a fringe band sewn to one end. Sleeve 36D also has a bit of the body of the tunic attached to the other end, the warp in this section oriented perpendicular to that in the sleeve as one would expect in a tunic. Another fragment (fig. 31a) is probably part of the same tunic since it matches the small section sewn to the sleeve. This fragment seems to be from the neck area of the tunic, although the 16 cm. gap left in the center seam is too small for practical use; it is possible that the garment was meant only as an offering and not to be worn. The two sleeves are similar in proportion, being made from a nearly square fabric folded in half parallel to the warp, and sewn up the side selvages. At 20.7 cm. long (excluding fringe), 36D is somewhat smaller than 19A (26 cm.). Indeed, 36D is almost too small (22 cm. circumference) to be of practical use for any but the smallest person, a feature analogous to the length of the neck

slot in the other fragment. The 7.3 cm. fringe of 36D is unusually long, while that of 19A is a more normal 3 cm. Moreover, 19A has end selv-edges, as one expects in Peruvian garments, whereas 36D has the ends of the fabric cut and folded under where seamed to the fringe band and to the body of the tunic, evidence of unusually hasty construction.

Of much more finely woven fabric is 19H (fig. 24), which also appears to be a sleeve, although its length is incomplete. It is made of a slightly wider fabric (30 cm.) with the sides sewn together as in the coarser sleeves. If the incomplete border of this fragment was originally similar to the complete ones in the technically related fragments (of unknown garment types) 3C and 55E, as seems likely, the sleeve would have been 9 cm. longer than it is now, i.e., 22 cm., and had the warp stripes of the border running parallel to the weft of the sleeve. Like 36D it has some fabric from the body of the tunic sewn perpendicular to the warp direction of the sleeve on the end not covered by the border. All the sleeves have some stripes parallel to the weft at the outside end, and both 19H and 36D have checkerboard patterning.

Another tubular specimen, which may possibly be a sleeve is 54A (fig. 38), although in contrast to the others it was made by sewing two loom widths (22 cm. each) into a tube. It does, however, have weft-faced stripes and a fringe on one end. The other end is broken and therefore lacks any evident seam, preventing verification of its original function. Its present length is similar to the complete length of the others (22.5 cm.).

Fig. 43 provides an idea of what a complete Chimú tunic with sleeves of this type is like. This extremely fine tunic, along with a number of other textiles all woven entirely of white cotton, is said to have been found in the Viru Valley. Its close technical similarity to the Avispas textiles makes this provenience information plausible. It is woven of S-spun single yarns, .1 mm. in diameter, with 14-16 warps and 11-16 wefts per cm. The principal decoration is a checkerboard arrangement of the same type of gauze as in 19H and plain weave with birds (pelicans) brocaded in 5-span floats in alternating alignment with S-2Z yarns. The borders at the ends of the sleeves and along the lower edge of the garment have weft-faced stripes on warps grouped in threes with crossing at the edges flanking a row of small birds very similar to that on the Avispas sleeve 19A. The fringe bands on the sleeve ends and lower edge are also closely similar to Las Avispas ones and are made up of several lengths, with the warps knotted together at some joins. Some of the fringe lengths along the lower edge have two sections of warps and some have three. The warps are S-2Z or S-3Z and the wefts Z-2S. The warps are not secured at the edge of the weaving. The sleeves of the Viru tunic have slightly more squared proportions than the Avispas ones, with a length of 16 cm. (excluding the fringe which is 3 cm. wide) and a loom width of 34 cm., a much more practical size for wearing than 36D. The body of the Viru tunic is made of two loom widths, each 39 cm. wide and about a meter long. These are sewn together along the side selv-edges leaving a space of 31 cm. in the center for the neck slit. The resultant width was then doubled over at the shoulders and the side seams and seams and sleeves sewn. The fringe on the lower edge is 8-9 cm. wide.

Hats

A third garment from Las Avispas seems to be a hat. There are two relatively complete examples with remnants of ties (36C, fig. 32; 36F, fig. 34) and another piece that seems related (36E, fig. 33). They are similar in finished form but were constructed differently.

The most common technique for constructing a hat may be that represented by the checkerboard patterned hat, 36C. Construction of this hat started with a nearly square fabric (42 x 46 cm.) which was folded in half, unspun cotton fibers placed within the fold, and the edges sewn together. The rectangle thus formed was then folded in half again perpendicular to the first fold, and the side edges were sewn together, leaving the top and bottom open. The cotton padding gives the hat body and also causes the layers of fabric to stick together better than they otherwise would. Supplementary-weft patterning is found only on the part of the fabric which is on the outside of the hat. The remains of one tie end are attached to one corner. The tie end is made from a fabric 10 cm. wide folded in half and sewn up the sides.

Among the textiles Uhle collected at Chan Chan there is a hat constructed in the same way (cat no. 4-70c), although it is not padded. It is relatively small, 16 x 24 cm., and has brocaded patterning on the outside. The tie ends are fragmentary, made of 12 cm. wide fabric folded in half, and sewn to the inside of the hat. There is also a padded hat in the Viru Valley lot at the Textile Museum (fig. 44), made from fabric woven in the same way as the tunic. The Viru hat is larger than the other examples and taller in proportions, 35.5 x 27 cm., plus tie ends 87 cm. long including 11 cm. of a double fringe band sewn to the ends. The lower 42-44 cm. of each tie end is patterned to match the hat. The Viru hat is more thickly padded than the others and even the ties are slightly padded. The ties are made from a fabric 12 cm. wide folded in half and sewn up the sides. The ties are sewn on abutting the lower corners of the hat.

In contrast, the other Avispas hat, 36F (fig. 34) is made from a long rectangle, 84 x 21 cm. It is folded in half parallel to the weft once and then in half again in the same direction to form a tube. It is unpadded. The remains of both tie ends are present, with a loom width of 7-8 cm. unfolded. The fabric of the tie ends is folded in half but not sewn up the sides. The ends of the ties are sewn inside the hat instead of dangling from the corner as in 36C. The remaining length of the longest tie end is 25.5 cm.

36E (fig. 33) is a padded tube, longer in its incomplete length of 26 cm. than the other Avispas examples. The width is similar, at 22 cm. It appears to be made of two separate fabrics, on the outside a supplementary-weft patterned fabric and on the inside a more loosely woven plain fabric as lining, with cotton fiber padding in between. The ends of both fabrics are cut and folded under and sewn together at the bottom. Although it is possible that the hat was constructed from scraps, the loom widths of both fabrics are present and match each other. It is perhaps more likely that the weaver was turning out hats hastily,

perhaps more than one on a single loom set up, and so did not bother to make end selvages. No tie ends remain on the piece which would confirm its intended use as a hat.

Bands

One further garment or accessory remains to be described. A number of weft-faced bands with bifurcate ends and long tiered tassels have been mentioned, among both the Avispas textiles and those Uhle collected at Chan Chan. The Viru lot also includes such a band (fig. 45) woven entirely of white cotton without any patterning. The woven area is 5.5 cm. wide and 205 cm. long. The bifurcation extends 29-30 cm. from each end. The halves are joined again for 2 cm. at 13.5-15.5 cm. from the ends. The painted band from Las Avispas, 28A (fig. 26), also has this kind of interruption in the bifurcation and is likely to have originally been the same type of band. The tassels on the Viru band are 54 cm. long, with the last tier occupying 34 cm. of this length, the remainder consisting of 28-32 short tiers. The Viru band is not unique in being unpatterned, since one of Uhle's from Chan Chan and one from Cerro Blanco are also plain (cat. nos. 4-70h, 4-2266). Tapestry patterning seems to be equally characteristic of bands, however, as suggested by the Avispas band 36G (fig. 29) and the other one of Uhle's from Chan Chan (4-70g). The tapestry band 36H (fig. 30) may also be an example of this type of band, though the only fragments are from somewhere in the middle. These fragments were found folded in half parallel to the warp with the right side out. There are some undocumented bands with such apparently Chimu features as bifurcate ends and long tiered tassels which are also folded in this manner.³⁸

There is no solid evidence to suggest exactly what these bands were used for. One possibility is that they were used either to wind around the head, a use documented for Inca women, or to bind up the hair. Many Guatemalan Indian women today use weft-faced bands to bind up their hair in various complex ways, although there seems to be no documentation of such a practice in South America.

Garment sets

It appears that the large loincloth, sleeved tunic, and padded tubular hat with ties might form a complete suit of clothing, with the tunic and hat matching. The Viru lot, which includes many plain fabrics as well as the decorated ones mentioned here, does not include a loincloth, which is a puzzle, and it does include a large (3 loom widths) supplementary-weft patterned mantle of a type which does not appear to be represented at Las Avispas.³⁹ Nevertheless, some confirmation for the validity of the loincloth-tunic-hat garment set is provided by a set of matching miniature garments found by Uhle at Cerro Blanco which includes a loincloth (4-2267), sleeved tunic (4-2268), two padded hats (4-2295, 4-2296), and a pillow (4-2294) large enough for a figurine wearing the garments to lie on. All of these pieces have the same type of applied band decoration. The applied band is merely open plain weave in a color more reddish than the rest of the garment. The bands are applied to the lower edge and sleeve ends of the tunic, to the tie ends of

the loincloth and the end of the loincloth opposite the tie, to the ends of the ties on the hats and to the outside edges of the pillow. The only noteworthy difference from the Avispas garments is the position of the major decoration on the loincloth.

Another set of Chimu garments with north coast provenience in the Textile Museum collection is technically identical to the Avispas material and includes a large loincloth, two three-loom-width mantles, and two sleeved tunics similar in their proportions to the Viru tunic.⁴⁰ These garments are all tan cotton plain weave (unplied yarns, paired warps, and single wefts, or single warps and wefts). Their only decoration is weft-faced stripes woven on warps grouped in threes and crossed at the edges, together with fringe bands 2.5 cm. wide made with two warps and adjacent wefts replied to secure them. The loincloth in this lot is made from two loom widths 49 and 51 cm. wide and 245 cm. long with a tie band 36-37 cm. wide and 435 cm. long. The tie band is folded and sewn to the loincloth in the same way as on the Avispas loincloth. It has three groups of three weft-faced stripes at the end near the tie band (and on the ends of the tie bands) and one group of three weft-faced stripes includes a 2-3 cm. wide stripe flanked on either side by 1 cm. wide stripes. There are fringe bands on the ends of the tie bands and on the lower end of the loincloth.

Ordinarily, one would interpret these garments as masculine attire. Finding them in a burial with presumably female skeletons thus seems strange, although it is possible that they were meant as separate offerings, as is also suggested by the fact that some at least were found folded. Alternatively, perhaps not all of the victims were female. Women's clothing seems to be harder to recognize in an archaeological context than that of men. The evidence for Inca women's costume and Chancay women's costume, which is the best we have, suggests that larger, plainer fabrics were used as well as less complex seaming.⁴¹ Even if such fabrics are found complete, they may not be readily identifiable; 36N, for instance, might have been a woman's garment. Resolution of this question must await further evidence.

Comparisons

Of the garment types described, the padded tubular hat and the weft-faced band with bifurcate ends and long tassels are distinctively Chimu and not easily confused with central coast material. It is less easy to isolate Chimu features in tunics and loincloths since these garments are also basic to central coast costume and take many forms depending on date, status, etc., for which few data are available. As a generalization, however, it is probably correct to say that sleeves are more characteristic of north coast than of central coast tunics and similarly that large loincloths are more characteristic of the north coast than of the central coast. However, small loincloths and sleeveless tunics are also found on the north coast. The Viru lot, for instance, includes a small sleeveless tunic, 35 x 55 cm., coarsely woven and patterned only with warp stripes (T.M.1969.39.13). This tunic is clearly not as fancy a garment, however, as the white sleeved tunic. The most useful clues to the place of origin of any given garment remain the

specific types of yarns and techniques used in its manufacture.

Iconography

Not a great deal can be said about iconography on the Avispas textiles. The great majority of them do not bear any designs and many are either not at all distinctive (for example, the checkerboard designs in 36C-D) or are so unusual that there is nothing to compare them with (13A, 36H).

The most common representational motif is birds. Bird designs are ubiquitous on textiles from all parts of the coast at this time. The simplified form with from one to three triangles for the body is especially common, and the fact that it occurs in the Avispas textiles (3C, 55E, 19E) as well as in friezes in the ciudadela Tschudi at Chan Chan means little. It is possible, however, that the simple but slightly more realistic birds with body, tail, and two legs found on several of the Avispas textiles (19A, 19B, 28A, 32B, 36M, 46M; figs. 19, 26, 37) are more distinctive to the north coast. Similar birds are also found in Uhle's textiles from Chan Chan and Cerro Blanco,⁴² as well as on the borders of the Viru tunic and the tie ends of the Viru hat. The larger birds on the tunic and hat are somewhat more elaborate. Those on the tunic are recognizable as pelicans, while those on the hat have an elaborate tail and a spread wing rising from the back, like those in the friezes in the Tschudi compound at Chan Chan,⁴³ and hold a trophy head in their beak.

The designs in 3H, 3J, and 36E are the only ones from Las Avispas which seem to relate to Chimú religious iconography. That on 36E appears to represent the lower part of an anthropomorphic figure (fig. 33), 3H the upper part of a similar figure (fig. 15), and 3J a face with a plume coming out of the top curving in one direction and a body and fish tail, drawn to resemble the plume, curving out of the bottom in the opposite direction (fig. 16). All three figures have stacked triangle appendages, a feature which seems likely to be important iconographically. The crescent headdress of the figure in 3H is found in many Chimú representations of important or mythical personages in all media. The design in 3J occurs in many variations on unassociated textiles, for example one of Uhle's from Chan Chan (cat. no. 4-70a). Versions of it are also occasionally found on Chimú objects in other media, sometimes with an animal rather than a human face, sometimes with a more complete figure.⁴⁴

Summary and Conclusions

In summary, the techniques found in the Avispas textiles which appear to be distinctively Chimú as opposed to central coast in style are: warp-predominant plain weave with paired warps and single wefts using unplied tightly twisted cotton yarns; monochrome cotton weft-faced stripes; large-scale designs woven with supplementary wefts with long floats in alternating alignment; supplementary-weft-patterned stripes interrupted at intervals by small motifs woven with a substituted

discontinuous weft; supplementary-weft patterning with the floats in diagonal alignment and the pattern formed by diagonal lines in the ground; glued featherwork and beaded fringes; a type of complex alternating gauze weave with five or more shots of plain weave between each row of gauze, woven in very fine cotton unplied yarns; in a checkerboard arrangement; slit tapestry weave with S-2Z or S-3Z cotton warps, long slits sewn, few eccentric wefts, and wefts not finished off on the back; fringe bands with S-2Z or S-3Z warps and cut ends; double, tapestry-patterned, and layered fringe bands; multiple-tiered tassels on a knotted foundation cord and with the last tier longer than the rest. In addition there is the use of fringe bands on plain cotton fabrics; the use of short tassels on the corners of plain fabrics and long ones on the ends of narrow bands; long tiered tassels on a type of long weft-faced band with bifurcate ends; a padded tubular hat with ties; sleeved tunics and large loincloths. In design, the appearance of a small bird drawn with body, tail and legs seems to be distinctive, as well as the more obvious crescent headdress and stacked-triangle appendages. These features are also found in Uhle's textiles from Chan Chan and Cerro Blanco and in two groups of north coast garments in the Textile Museum collection. It should be kept in mind, however, that exceptions can occur, and that therefore a combination of several of these features is a much more secure basis for attribution than any single one.

The Avispas textiles and those Uhle found at Chan Chan and Cerro Blanco form an internally consistent group with no obvious trade pieces or foreign influence.

Although the majority of the textiles found at Las Avispas may be characterized as coarse rather than fine, the quality is variable. There are some quite fine plain weaves (3R, 12A, 19P, 39A), tapestries (3H, 3J), and pieces with patterns in supplementary weft (3D, 19B), and the painted weft-faced band (28A) and one of the featherwork fragments (19C) are also fine. There are also very coarse plain weaves (3M-P), tapestry bands (3B, 36G), and pieces with patterns in supplementary weft (36C, 36D), as well as several examples of hasty construction involving the cutting of warp ends instead of weaving to the warp loops (36D, 36E, 36N). Certainly, if the Viru Valley textiles represent the pinnacle of Chimu weaving, as they seem to, it must be admitted that the Avispas textiles are not the best available.

No attempt has been made in this study to confront the question of chronology, since none of the associated textiles can be dated securely. When more evidence is available on north coast textiles, it may be that the Avispas textiles can be used to give a more precise date for the burial platform.

The sample now available from Las Avispas is too small to justify serious discussion of possible chronological differences among the burial chambers. In the present sample only four chambers are represented by more than ten specimens. These are 13, the central chamber in the original burial platform; 17 and 6, also in the original platform, and 19, one of the outer chambers in the first addition. While the pieces from Chamber 6 are mostly brown and white striped plain weave, and thus

not useful for comparisons, those from Chamber 19 are distinctive in some ways. For instance, all the tubular hats, much of the large-scale patterning in supplementary weft, and a disproportionate number of very coarse pieces were there. Nevertheless, the tapestry band fragments (36G) from this chamber are virtually identical to 3B from Chamber 17, and the sleeve (36D) is similar in many respects to 19A from Chamber 13.

What this study of the textiles from Las Avispas has made possible is the establishment of some criteria for identifying Chimu textiles, criteria applicable even to fragments of undecorated material. The comparisons made were with specimens from the central coast, and some characteristics of "late" central coast weaving have also been established in consequence. Although many problems remain, a picture of local differences in coastal weaving is beginning to emerge.

We can now see some of the sources of the confusion that has plagued previous attempts to sort out local differences. One of these is the number of features common to both central coast and north coast textiles: the use of the same kind of alpaca yarns, both in makeup and in range of color; the use of slit-tapestry weave as a primary medium for iconography; and the extensive use of simplified bird designs. Another source of confusion is that both Chimu trade pieces and Chimu influence occur on the central coast and even further south.

It is now possible to attribute more securely those north coast textiles in museum collections which lack provenience information, as well as to identify Chimu trade pieces and influence on textiles from other parts of the coast. Also, in spite of the fact that chronological placement of these "late" textiles is not very precise, the materials described provide a basis for comparison with earlier examples.

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CATALOG

Specimens are listed in numerical order according to Pozorski's catalog numbers. The corresponding excavation unit is given at the beginning of the list of textiles from each unit. Letters were assigned to individual specimens before the analysis was done, which resulted in some lack of consistency. In cases where a letter is omitted from the listing, the item originally assigned the missing letter was combined with another entry because the two pieces were found to belong to the same original (3E, 3L, 36B, 36K, 55D) or else the item was omitted because it was merely an agglomeration of yarns with no apparent woven structure (3I, 12B, 12C, 19D, 19N, 22A, 54D). In one case (46C) fragments of two different textiles were found to be stuck together, and were later designated 46C-1 and 46C-2.

The overall dimensions provided for each specimen are given disregarding seams, with the length (warp direction) preceding the width (weft direction). Loom lengths or widths, if present, are noted

separately. If the fragment includes a fringe band, the overall length measurement refers to the warp direction of the web, no matter how small, to which the fringe band is attached plus the parallel direction of the fringe band. The width of the fringe band itself is given separately. The measurements represent the maximum dimensions ascertainable.

A detailed explanation of the yarn analysis is given in the Terminology section beginning on p. 84. With reference to yarn counts, in examples where the total number of warps is close to 1 cm., as in fringe bands or stripes, the total number is given, followed by the width of the item.

Where end selvages are present, the composition of the wefts in the heading area is noted, usually a multiple of the same yarn used for the wefts in the rest of the piece. Side selvages are described only when they are distinctive, which they usually are not. This description generally consists of a thread count for the outer centimeter of the fabric, indicating that the warps are more closely spaced there than in the rest of the fabric. In plain-weave fabrics with no selvages and one set of paired elements, it is assumed that the paired set is the warp, an assumption that appears to be justified on the basis of the many pieces which do have selvages. Similarly, if a striped plain-weave fabric lacks selvages, the stripes are assumed to be in the warp direction.

All of the seams are sewn with simple overcast stitches, about 5 mm. apart. Since this feature is universal in the Avispas textiles, it is not separately noted in each case.

The description of weave structure is designed to be brief but clear to anyone who has read the preceding text. For those less familiar with the material, page references to the text are included.

The following abbreviations have been used to describe degree of twist (see p. 85 for explanation): l = loose, m = medium, h = hard, os = overspun. Thus, h-os means hard-overspun.

H75U-7=3 (Chamber 17)

3A. Tapestry-woven fragments (p. 97)

Two fragments sewn together along side selvages. Design too incomplete to be deciphered; motifs are placed on a red ground. Weave is slit tapestry with loose wefts on the back. Dimensions: 24 x 7.3 cm.

Warp: white cotton, S-2Z(m-h), .5-.8 mm., 6 per cm.

Weft: red, 2 shades yellow, brown alpaca, Z-2S(l), .4-.5 mm., 36-42 per cm.

white cotton, S(m), .3-.7 mm., 24 pair per cm.

Seam: white cotton, S-2Z(m), .5 mm.

3B. Fragmentary tapestry band (pp. 97-98, 109)

Design is of nested squares, yellow in the center, then red, then white, on a yellow ground. Weave is slit tapestry with loose wefts on the back; weaving and pattern formation are very uneven. Very similar

in yarns, technique, and design to 36G (fig. 29). Dimensions: 24.5 x 5.5 cm.; 5.5 cm. is the loom width.

Warp: blue cotton, S-2Z(1-m), .7 mm., 7 per cm.

tan cotton, Z-2S(1-m), .7 mm., 3 used instead of blue on one edge.

Weft: red, yellow alpaca, Z-2S(1), .5-.7 mm., 16-31 per cm.

white cotton, Z-2S(1), .6-1.8 mm., 12-19 per cm.

3C. Sheer embroidered fabric with warp-faced border (fig. 13; pp. 88, 95-96, 99-100, 104-108)

Six webs sewn together: two warp-faced, warp-striped borders; two sheer plain-weave fabrics; two fringe bands. Each warp-faced border overlays one of the sheer fabrics. Each sheer fabric is folded under 5 cm. from the end selvedge and the fold sewn to the side selvedge of one of the warp-faced bands. The other side selvedge of the warp-faced band is also sewn to the sheer fabric which originally extended beyond the warp-faced band but is mostly now broken off. The end of each warp-faced band is cut, folded under 1.5 cm. and sewn to the side selvedge of its sheer fabric. A fringe band is sewn abutting the folded edge of each sheer fabric (side edge of the warp-faced band). The ends of the two warp-faced bands with their sheer fabrics are juxtaposed but not joined. The fringe bands are joined by having the warps cut and knotted together. Remains of one disc (1 cm. diam.), embroidered in cross-knit loop stitch, occur on the sheer fabric. Four similar discs (5 cm. and 1.5 cm. diam., and 4.5 x 2.7, 2.5 x 1.5 cm.; originally 3L) detached from their original ground fabric, were also found in this excavation unit. Striped fabric is warp-faced plain weave with a bird design in supplementary diverted warps. Dimensions: 45 x 12 cm.

Sheer fabric

Warp: tan cotton, S(h), .1-.2 mm., 15-16 per cm.

Weft: tan cotton, Z(h), .1-.2 mm., 13-14 per cm.

End selvedge: 3 shots of 2 wefts.

Side selvedge: warps more compact for 2 mm., about 8 yarns.

Embroidery: red, light-brown alpaca, Z-2S(1), 1 mm., red paired.

2 shades yellow, brown alpaca (on detached discs only), Z-2S(1), .7-1 mm., paired.

Warp-faced fabric (loom widths 9 cm. and 8.5 cm.)

Warp: brown cotton, S(m-os), .3-.5 mm., 15 pair total (1 cm.).

dark-brown cotton, Z(m), .3-.5 mm. 12 or 14 pair total (.8 cm.).

white cotton, Z-2S(1), .7-.8 mm., 16 total (.6-.8 cm.).

brown alpaca, Z-2S(m), .5-.7 mm., 14 total (.7 cm.).

yellow alpaca, Z-2S(1), .7-1.1 mm., 12 total (.9 cm.).

red alpaca, Z-2S(1-m), .7-1 mm., 16 per cm. (stripe 4.5-5 cm. wide).

Weft: brown cotton, S(h), .1-.3 mm., 6 per cm.

Supplementary warp: dark-brown cotton, S(h), a few warps in the center are Z, .3-.5 mm., paired, 5-7 ground warps between widest points of diamonds.

End finish: cut warps, turned under 1.5 cm.

Seam: dark-brown cotton, S(h)-2Z(1), .3 mm.

Fringe band (originally double; width 5.5 cm.), warps not secured.

Warp: tan cotton, S-2Z(m-h), .6 mm., top section 6 warps (1.2 cm.), bottom section 5 warps (1.2 cm.).

Weft: red alpaca, Z-2S(1), .7 mm., 16 per cm.

Seam: dark-brown cotton, S-2Z(h), .7 mm.

3D. Supplementary-weft patterned fragment with tapestry fringe band
(fig. 14; pp. 87,90-91,99-100,109)

Probably from a corner of a plain-weave textile which had the decorated area marked off by stepped outlines, the outer one red, the inner one brown changing to black in its lower band. Horizontals are woven with supplementary wefts in 5- or 7-span floats in alternating alignment, verticals with supplementary weft interlacing over and under 8,10, or 12 warps. The inside of the stepped area has red supplementary wefts in 5-span floats in diagonal alignment; design is too incomplete to show. Fringe band woven in slit tapestry with opposed-triangle design.

Dimensions: 12 x 10 cm.

Warp: tan cotton, S(m-h), .2 mm., 16 pair per cm.

Weft: tan cotton, S(m-h), .1-.2 mm., 14 per cm.

Supplementary weft: rusty-red (probably discolored from rose), brown alpaca, Z-2S(l-m), .5-.7 mm., 2 after each ground weft.

black alpaca, S(l), .4 mm., 2 after each ground weft.

End selvedge: 2 shots of 3 regular weft yarns.

Fringe band (width 2.5 cm.), warps secured by discontinuous wefts.

Warp: tan cotton, S-3Z(m), .3-.4 mm., 9 per cm. (11 total).

tan cotton, Z-2S(m), .5 mm., 3 on edge next to fringe.

Weft: cotton, Z-2S(m), 1 ply white, 1 ply tan, .4-1 mm., 36 per cm.

rust-red, dark-brown alpaca, Z-2S(l-m), .3-.5 mm., 28-40 per cm.

Seam: tan cotton, S(h)-2Z(l), .3-.4 mm.

3E. Featherwork fragment (fig. 21 right; pp. 87,92-93)

Two pieces of plain-woven fabric are seamed along side selvages. No feather is complete, the longest is 2 cm.; where present they are black. Quills are bent over a horizontal yarn and tied with a second cord by an overhand knot. Quills are secured to ground fabric with another yarn which forms one or two overhand knots around each quill. Rows are 1-1.5 cm. apart with 1-1.2 cm. between quills in a row.

Dimensions: 12 x 12.5 cm.

Warp: tan cotton, S or occasionally Z(m), .2-.5 mm., 11 pair per cm.

Weft: tan cotton, S(l-m), .3-1.5 mm., 5-6 per cm.

Yarn on which quills are strung: tan cotton, S-3Z(m-h), .5-.8 mm.

Yarn used to sew down quills: tan cotton, S-2Z(m-h), .4 mm.

Seam: tan cotton, S-6Z(m), 1-1.5 mm.

3G. Warp-striped fragments with plain-weave-derived float weave (fig. 10; pp. 87,94)

Four fragments of the same original fabric have warp stripes, 1.2 cm. brown alternating with tan warps, 2 cm. tan, 1.5 cm. blue alternating with tan, and 3 cm. remaining of a tan stripe. The interlacing order of the plain-weave-derived float weave stripes (with alternating colors of warp) is complex, involving 3- and 5-span warp floats of both colors on the front. The interlacing order of the blue stripes (fig. 10a) can be completely reconstructed; that of the brown stripes (fig. 10b) is incomplete. Dimensions: 6 x 8, 7 x 7, 8 x 3, 4 x 1 cm.

Warp: tan, light-blue, dark-brown cotton, S and some Z(m-os), .2-.7 mm., 12 pair per cm.

Weft: tan cotton, some S some Z(m), .2-.7 mm., 8 per cm.

3H. Tapestry-woven fragments (fig. 15; pp. 97-98,108-109,142)

Six fragments (one originally 3E) probably all from the same original. Design motif, on a red ground, is of the head and arms of a manlike

figure repeated in columns and rows. One fragment has some weft stripes below the patterned area. Weave is slit tapestry with loose wefts on the back. Dimensions: 12 x 21, 14 x 18.5, 6 x 10.5, 8 x 6, 7.5 x 7, 3 x 4.5 cm.

Warp: tan cotton, S-3Z(m-h), .3-.5 mm., 8-9 per cm.

Weft: red, pink, 2 shades yellow, brown alpaca, Z-2S(1), .3-.5 mm., 44-46 per cm.

3J. Tapestry-woven fragment (fig. 16; pp. 97-98, 108-109)

Design on a yellow ground is of a face with an appendage off the top and bottom. There are weft stripes below the patterned area. Weave is slit tapestry with loose wefts on the back. Fragment was found folded along the top weft stripe. Dimensions: 6.5 x 15 cm.

Warp: tan cotton, S-3Z(m-h), .4-.5 mm., 9 per cm.

Weft: red, pink, yellow, 2 shades brown alpaca, Z-2S(1), .3-.5 mm., 48 per cm.

3K. Warp-striped fragment with plain-weave-derived float weave (fig. 8; pp. 88, 94)

Warp stripes are colored symmetrically around the float weave stripe: dark-brown (incomplete), .9 cm. white, 1.3 cm. dark-brown, 1.3 cm. light-brown, .5 cm. dark-brown, 1.1 cm. light-brown, 1.3 cm. dark-brown, .7 cm. white, .7 cm. dark-brown, 1.5 cm. light-brown, 1 cm. float weave, 1.5 cm. light-brown, .7 cm. dark-brown, .7 cm. white, 1.3 cm. dark-brown, 1.1 cm. light-brown, .6 cm. dark-brown, 1.3 cm. light-brown, dark-brown (incomplete). Most of the fabric is warp-faced plain weave. In the float weave stripe, white and brown warp pairs alternate and are woven at intervals in alternating float weave with 3-span floats aligned in alternate pairs (20 warps). Dimensions: 44 x 25 cm.

Warp: cotton, S (two white stripes Z) (h), .2-.7 mm., 17-20 pair per cm.

Weft: brown cotton, S(h), .2-.8 mm., 7 pair per cm.

3M. Blue-and-white-striped plain-weave fragment (pp. 87, 109)

One complete loom width (48 cm.) seamed to side selvedge of a fragmentary one. Fabric is mostly white but has narrow blue warp stripes in groups of three. Wide white stripes are 1.6-2.5 cm. in the complete width, and 2.5-3 cm. in the fragmentary fabric. There are 2 pair of white warps between the narrow blue stripes in each cluster. Most of the blue stripes consist of 2 or 4 single yarns. In the complete width, most clusters of 3 stripes have a 2-4-2 arrangement of blue yarns. In the fabric of incomplete width some of the blue stripes consist of 2 pair. This fragment is similar to 3N-P and 19I-K. Dimensions: 44 x 72 cm.

Warp: white cotton, S(h-os), .2-.8 mm., 7-8 pair per cm.

blue cotton, S in complete width Z in incomplete width (m-os), .2-1 mm., used singly.

Weft: white cotton, S(h), .2-.5 mm., 6-7 per cm.

Side selvedges: warps slightly closer together, 9-10 pair per cm.

Seam: white cotton, S-3Z(1), 1.2 mm.

3N. Blue-and-white-striped plain-weave fragment (pp. 87, 99)

Mostly white but has narrow blue warp stripes in groups of three. Wide white stripes are 2.5-3 cm. wide. There are 2 pair of white warps between the narrow blue stripes in each cluster. Blue stripes consist of 2 or 4 single yarns (different sizes apparently random); 1 blue stripe has 6 singles. Dimensions: 8 x 17 cm.

Warp: white cotton, S(h-os), .2-.6 mm., 8-9 pair per cm.

blue cotton, S(h-os), .3-1 mm., used singly.

Weft: white cotton, S(h), .3-.8 mm., 8 per cm.

30. Blue-and-white-striped plain-weave fragment (pp. 87,109)

Mostly white but has narrow blue warp stripes in groups of three. Wide white stripes are 2.5-2.8 cm. wide. There are 2 pair of white warps between the narrow blue stripes in each cluster (single exception has 6 pair). Blue stripes consist of 2 or 4 single yarns (different sizes apparently random; majority have 4). Dimensions: 18 x 23 cm.

Warp: white cotton, S(h-os), .3-.8 mm., 8 pair per cm.

blue cotton, most S but some Z(h-os), .3-1 mm., used singly.

Weft: white cotton, S(h), .2-.9 mm., 8 per cm.

3P. Blue-and-white-striped plain-weave fragment (pp. 87,109)

Mostly white but has narrow blue warp stripes in groups of three (except one group with only two). Wide white stripes are 2 cm. wide. There are 2 pair of white warps between the narrow blue stripes in each cluster. Blue stripes consist of 2 or 4 single yarns, most clusters having either a 2-4-2 or a 2-2-2 arrangement of blue yarns. Dimensions: 25.5 x 28 cm.

Warp: white cotton, S(h-os), .3-.6 mm., 8 pair per cm.

blue cotton, S(h-os), .3-.9 mm., used singly.

Weft: white cotton, S(h), .2-.6 mm., 7 per cm.

3Q. Plain-weave fragment with weft-faced stripes (pp. 87,89)

The three weft-faced stripes are 1.3, 1.8, and 1 cm. high, and 2 cm. apart. They are woven over and under 3 pair of warps, warp pairs of adjacent groups crossing at the edges of stripes. Dimensions: 18 x 11 cm.

Warp: white cotton, S(h-os), .2-.6 mm., 8 pair per cm.

Weft: white cotton, S(m-h), .2-.5 mm., 9 per cm.

Weft in weft-faced stripes: white cotton, S(m), .5-.8 mm., 30 per cm.

End selvage: 2 shots of paired weft.

Side selvage: warps slightly closer together, 9 pair in outer cm.

Seam (on end selvage): white cotton, S(m)-2Z(1), .7 mm.

3R. Plain-woven fragments (pp. 87,109)

Dimensions of these two fragments from the same original fabric are 9 x 14 and 11 x 13 cm.

Warp: reddish-brown cotton, mostly S but some Z in the middle of one fragment (h-os), .1-.3 mm., 15 pair per cm.

Weft: reddish-brown cotton, S(h-os), .1-.3 mm., 13 per cm.

3S. Plain-woven fragment (p. 87)

Dimensions: 17 x 16 cm.

Warp: tan cotton (now dark), Z(m-os), .3-.6 mm., 6-7 pair per cm.

Weft: tan cotton (now dark), Z(m-os), .3-.7 mm., 7-9 per cm.

3T. Warp-striped fragments with plain-weave-derived float weave (fig. 12; pp. 87,94)

Four fragments from the same original have warp stripes of 4 pair of brown (4-5 mm.) alternating with 4 pair of white warps (3 mm. wide). Brown stripes are all plain weave. White stripes have areas of plain weave and areas of a plain-weave-derived float weave, in which warps interlace 5/1/5/1/5/1 (fig. 12). Three white stripes have the patterned and plain areas parallel, next three have these areas reversed, forming a checkerboard effect. Dimensions: 6 x 6, 5 x 6.5, 3 x 5, 2.5 x 3.5 cm.

Warp: white cotton, Z(m-h), .2-.5 mm., 10-13 pair per cm.

dark-brown cotton, S(m-h), .2-.5 mm.

Weft: dark-brown cotton, S(m-h), .2-.4 mm., 10-11 per cm.

3U. Plain-woven fragment (p. 87)

Fragment has one side selvedge. Dimensions: 8.5 x 7 cm.

Warp: white cotton, S(m-os), .2-.5 mm., 12 pair per cm.

Weft: white cotton, S(m-os), .2-.6 mm., 7 per cm.

3V. Plain-woven fragment (p. 87)

Dimensions: 14 x 6.5 cm.

Warp: tan cotton, S(m-os), .2-.6 mm., 5-6 pair per cm.

Weft: tan cotton, S(m-os), .2-.8 mm., 5-6 per cm.

3W. Lower end of alpaca tassel (pp. 101-102)

Very fragmentary specimen consists of a long red tuft (8 cm.) with a yellow tuft (2.5 cm.) above it.

Tufts: red alpaca, Z-2S(m), .5-.7 mm.

yellow alpaca, Z-2S(l), 1.2 mm.

H75U-7=5 (Chamber 5)

5A. All-cotton tiered tassel (pp. 101-102)

Probably incomplete, its present length is 16.5 cm. and diam. approximately 1-1.5 cm. Twelve tiers, alternate white (top) and brown. Most of the ends of the tufts are cut, but a few are uncut.

Foundation: tan cotton, S-2Z(m), .5-.6 mm., 5 yarns used together.

Tufts: white cotton, Z(m), .4-.9 mm.

brown cotton, Z(m), .3-.7 mm.

Binding: brown cotton, S(m), .4 mm.

H75U-7=12 (Chamber 14)

12A. Plain-woven fragment with tapestry fringe band (pp. 88,99-100,109)

Two tapestry-woven bands are sewn together lengthwise, one is 17 x 1.7 cm. and has a design of step blocks, the other is 15 x 1.8 cm. and has a design of stepped triangles. The second band has some wefts extended beyond the warps as a fringe which is worn off in most places. Weave is slit tapestry. End selvedge of a plain-woven cloth, of which only 2 x 8 cm. remains, is sewn to the join of the two tapestry bands. Dimensions: 4 x 17 cm.

Warp: white cotton, S(h), .1-.2 mm., 17 per cm.

Weft: tan cotton, S(h), .1-.3 mm., 14 per cm.

End selvedge: 3 shots of 3 wefts (white like the warp).

Tapestry bands

Warp: white cotton, S-2Z(m-h), .4-.5 mm., 8-10 per cm.; band with fringe has 14 warps and the other has 16 warps total.

Weft: white cotton, Z-2S(l), .4-.5 mm., 37-40 per cm.

brown cotton, S-2Z(l), .3 mm., 47-61 per cm.

Seam: brown cotton, S(l-m), .2 mm., mostly used single, but at one end used triple.

12D. All-cotton tiered tassel (pp. 101-102)

Probably incomplete, its present length is 12 cm. Five tiers, the lowest longer than the rest (6 cm.). Tiers alternate brown (top) and white. A few blue yarns are randomly mixed in the tufts.

Foundation: white cotton, S(m-h), .3-.4 mm., 7 yarns used together.

Tufts: white cotton, Z-2S(l), .6-1 mm.

brown cotton, some S and some Z(m-h), .2-.6 mm.

blue cotton, Z(m-h), .4-.5 mm.

Binding: brown or white cotton, S(m-h), .2-.6 mm.

12E. Blue-and-white-striped plain-weave fragment (p. 87)

Mostly white but 2 blue warp stripes consisting of 2 pair of warps are separated by 2 pair of white warps. Dimensions: 7 x 9 cm.

Warp: white, blue cotton, Z(m-os), .3-.6 mm., 6-8 pair per cm.

Weft: white cotton, Z(m-os), .3-.5 mm., 7 per cm.

End selvedge: 3 shots of paired yarns.

12F. Plain-woven fragment (p. 87)

Dimensions: 2.5 x 3.5 cm.

Warp: white cotton, S(h-os), .2-.5 mm., 8 pair per cm.

Weft: white cotton, Z(m-os), .3-.5 mm., 10 per cm.

H75U-7=13 (Excavation 20A in back dirt [exterior courtyard south of platform])

13A. Tapestry-woven fragment (fig. 17; pp. 97-98, 108)

Fragment has an incomplete large-scale design including bird heads. Weave is slit tapestry, with some eccentric wefts used to outline small areas and loose wefts on the back. Dimensions: 35 x 17 cm.

Warp: white cotton, S-2Z(m), .5-1 mm., 7 per cm.

Weft: white cotton, Z-2S(1), .7-1 mm., 20-22 per cm.

red, yellow, brown alpaca, Z-2S(1), .5-.6 mm., 21-31 per cm.

13B. Plain-woven fragment with supplementary-weft stripe (pp. 88, 90-91)

A stripe of supplementary wefts 8 cm. high runs full width of the fragment. Weft in the plain areas is notably coarser than the ground weft in the supplementary-weft band. Supplementary wefts are in 9-span floats in alternating alignment. In three places there was a mistake in setting up the heddles, so that the warp is paired instead of single, and the supplementary weft float is twice as long as it would be otherwise. Dimensions: 12 x 28.

Warp: white cotton, S(m-h), .1-.2 mm., 18 per cm.

Weft: white cotton, S(m), .3-.7 mm., 16 per cm.

Weft under supplementary wefts: white cotton, S(m-h), .1-.2 mm., 18 per cm.

Supplementary weft: white cotton, Z-2S(1), .7 mm., 2 yarns after every ground weft

H75U-7=14 (Same location as 13)

14A. Plain-woven fragment with tapestry fringe band (pp. 87, 99-100)

Only small fragments of the plain cloth remain, 3 x 1.3 and 4 x 4 cm., both sewn along the side selvedge to the fringe band. Fringe band is woven in slit tapestry with an opposed-triangle design. There are some eccentric wefts outlining the diagonals. Dimensions of the band: 14 x 4.6 cm.

Warp: white cotton, S(h-os), .2 mm., 16 pair per cm.

Weft: white cotton, S(h), .2 mm., 9 per cm.

Fringe band, warps secured by discontinuous wefts.

Warp: white cotton, S-2Z(h), .5 mm., 6 per cm., 10 total.

Weft: white cotton, Z-2S(1), .5-1 mm., 40 per cm.

green alpaca, Z-2S(1), .5-.7 mm., 36-40 per cm.

Seam: white cotton, S(h), .2 mm., used paired.

H75U-7=19 (Chamber 13)

19A. Sleeve with supplementary-weft patterning (fig. 18; pp. 87,90-91, (99-100,103-104,108)

Sleeve is made from a fabric 26 x 25 cm., folded parallel to the warp and sewn together along side selvages. It is plain weave with a pair of supplementary-weft stripes framing a stripe with bird motifs (fig. 18b) also woven with supplementary wefts near one end. In stripes, supplementary wefts are in 5-7-span floats in alternating alignment. For the birds, supplementary wefts float across the pattern on the front and between motifs on the back. A fringe band is sewn on the patterned end of the sleeve. Dimensions: 28 x 12.5 cm.

Warp: white cotton, each pair has one S and one Z yarn(h-os), .3-.7 mm., 9 pair per cm.

Weft: white cotton, S(h), .4-.5 mm., 7 per cm.

Supplementary weft stripes: tan cotton, Z(h)-2S(1), 1.2-1.7 mm., one after each ground weft.

Supplementary weft (birds): tan cotton, Z-2S(1), .7-1.4 mm., one after each ground weft.

End selvages: 5 shots of triple wefts. At shoulder, also 10 wefts in the first cm. after the heading.

Seam: white cotton, Z(h)-3S(1), 1-1.2 mm.

Fringe band (width 3 cm.), warps secured by discontinuous wefts.

Warp: white cotton, S-2Z(m), .4-.8 mm., 4 total in .6 cm.

Weft: white, gray, brown cotton, Z(m), .2-.9 mm. (mostly more than .5), 12-19 pair per cm., weft stripes 1.5-2 cm. wide.

Seam: white cotton, Z(m), .4-.8 mm., used paired.

19B. Fragments with supplementary-weft patterning and fringe band (fig. 19; pp. 87-91,99-100,108-109)

Two fragments from the same original textile were found folded in half, the smaller inside the larger. Each includes a fabric of plain weave with continuous supplementary wefts which float across bird motifs on the front and between motifs on the back. Framing the area with bird motifs are weft-faced stripes, woven with the warp pairs grouped in threes and crossed at the edges of the stripes. In smaller fragment (4.5 x 8 cm.), a separate plain-weave fabric is folded parallel to the warp and sewn along this fold to end selvedge of the supplementary-weft patterned fabric. Larger fragment (10.5 x 7.5 cm.) has three weft-faced stripes enclosing two zones of supplementary-weft decoration, one with three rows of birds, one with a single row. A fringe band is sewn to this fabric underneath and parallel to the weft-faced stripe which forms the lower border of the zone with the single row of birds, but the ground fabric for the supplementary-weft patterned cloth extends underneath the fringe and is broken (by decay) at the edge of the fringe. Fringe band has no color pattern, but a pattern formed by eccentric wefts: groups of wefts turn back alternately around the upper six warps, all warp yarns plus loops, and lower five warp yarns plus loops.

Supplementary-weft patterned fabric

Warp: tan cotton, S(m-os), .1-.3 mm., 19 pair per cm.

Weft: tan cotton, S(h), .2 mm., 12 per cm.

Supplementary weft and weft in weft-faced stripes: reddish-brown, dark-brown alpaca, Z-2S, .5 mm., 2 after each ground weft in patterned areas, 28 in .6 cm. in weft-faced stripes.

End selvedge: 4 shots of paired weft.

Seam: tan cotton, S(h), .1-.2 mm., 4 used together (both seams).

Fringe band (width 3.5 cm.), warps secured by discontinuous wefts.

Warp: tan cotton, S-2Z(m), 1 mm.

Weft: tan cotton, S-2Z(m), 1 mm., 21 per cm.

Plain fabric

Warp: tan cotton, each pair has one Z yarn(m-h), .3-.5 mm., and one S (m-h), .1-.2 mm., 22 pair per cm.

Weft: tan cotton, Z(m-h), .1-.2 mm., 8 per cm.

19C. Featherwork fragments (figs. 20,21 left; pp. 87,92-93,109)

Three fragments of plain-weave fabric, probably all from same original, have applied feathers forming a border 7 cm. wide along side selv-edges. Next to edge are 5-6 rows of red feathers, then 3-4 rows of yellow feathers. On one fragment (23 x 18 cm.) the feathered area turns a corner. Quills are bent over a cord and tied with a second cord by an overhand knot, then secured to the ground fabric with another yarn which forms an overhand knot around each quill. Rows are .8 cm. apart with .6-.9 cm. between quills in a row. Ground fabric is not well preserved. No feather is complete; longest is 2 cm. Some circular greenish metallic stains on the fabric may indicate that metal discs were once attached. Dimensions of other fragments: 20 x 22.5 and 8.5 x 15.5 cm.

Warp: tan cotton, S(h-os), .1-.2 mm., 12-13 pair per cm.

Weft: tan cotton, S(h), .1-.2 mm., 12 per cm.

Yarn securing quills: tan cotton, some S-2Z and some S-3Z(m-h), .5-1 mm.

19E. Tapestry-woven fragments (fig. 22; pp. 97,108)

Several fragments, possibly from same original fabric, all have a design of parallel zigzag stripes, some plain, one with a bird design, and others divided by a zigzag line. Design is very similar to that of 19M, although 19M may be from a different textile. Weave is slit tapestry, with some eccentric wefts along diagonal edges, and loose wefts on the back. Most fragments are discolored; largest ones measure 15 x 13, 8.5 x 7, 7.5 x 7, and 6 x 3 cm.

Warp: tan cotton, S-2Z with some S-3Z in largest fragment(m), .3-.5 mm., 8 per cm.

Weft: red, yellow, brown alpaca, Z-2S(1-m), .5-.7 mm., 21-40 per cm.
white cotton, Z-2S(1), .4-.6 mm., 15 per .5 cm.

19F. Tapestry-woven fragments (p. 97)

Three very small fragments from same original fabric have a design of curved reciprocal frets. Weave is slit tapestry with eccentric wefts and loose wefts on the back. Dimensions: 2.5 x 5.5, 2.2 x 3.5, 2 x 2.5 cm.

Warp: tan cotton, S-2Z(m), .4 mm., 9 per cm.

Weft: red, yellow alpaca, Z-2S(1), .4-.6 mm., 32-38 per cm.

19G. Weft-faced plain-weave fragments

Two fragments, probably from same original fabric (folded), were found lying directly on top of one another, side selvages parallel but not sewn together. Each has three weft stripes, one red, one yellow, one brown, of approximately equal size. Warps are in poor condition and hold the wefts together only near one end. These fragments may originally have been part of a tapestry-woven textile such as 19E or 19F.

Dimensions: 3.5 x 27 cm. (each piece).

Warp: tan cotton, S-2Z(m), .4-.5 mm., 7 per cm.

Weft: red, yellow, brown alpaca, Z-2S(1), .4-.8 mm., 40 per cm.

19H. Gauze sleeve with warp-faced border (fig. 24; pp. 88,95-96,104)

A sheer fabric, half in embroidered plain weave and half in gauze, divided parallel to the warp, is folded in half along the technical

division line and sewn together along side selvages (lower edge of sleeve). A second sheer fabric is sewn perpendicular to the sleeve at the shoulder, with gauze next to the embroidered section of the sleeve and vice versa (technical dividing line parallel to weft). Embroidered patterning is undulating lines in running stitch and small discs in cross-knit loop stitch. The end of the sleeve is overlaid with a fragmentary warp-faced band with diverted supplementary-warp patterning in a design similar to 3C and 55E. Dimensions: 19 x 20 cm.

Sheer fabric (sleeve loom width 30 cm., length 13 cm. to border)

Warp: tan cotton, S(h) on embroidered half, Z(h) on gauze half, .1-.2 mm., 16-20 per cm.

Weft: tan cotton, Z(h), .1 mm., 13-17 per cm.

End selvedge: 2 shots of 2 wefts.

Embroidery: red, yellow, brown alpaca, Z-2S(1), .3-.7 mm., paired.
white cotton, Z-2S(1), .6-1 mm., paired.

Sheer fabric (tunic)

Warp: tan cotton, S(h-os), .1-.2 mm., 16-20 per cm.

Weft: tan cotton, S(h), .1 mm., 13-17 per cm.

Embroidery: red alpaca, Z(m)-2S(1), 1 mm. (not paired).
yellow, brown alpaca, Z-2S(1), .3-.7 mm., paired.
white cotton, Z-2S(1), 1-1.6 mm., paired.

Seam: tan cotton, S(h), .2 mm.

Warp-faced fabric

Warp: red alpaca, Z-2S(m), .7 mm., 22 per cm.

Weft: brown cotton, S(h), .2 mm., 7 per cm.

Supplementary warp: brown cotton, S(h), .2-.3 mm., paired, 5-7 ground warps between widest points of diamonds.

Seam: brown cotton, S(h), .2-.3 mm., paired.

19I. Blue-and-white-striped plain-weave fragment (pp. 87-88)

One complete loom width (48 cm.) with one end selvedge, mostly white but with narrow blue warp stripes in groups of three. Wide white stripes are 2.5-5.5 cm. There are 2 pair of white warps between the narrower blue stripes (near the sides) and 4 pair between the wider ones (in the center). Most blue stripes consist of 4 single yarns, but near the sides are some blue stripes consisting of 2 pair or 2 singles.

Fragment is similar to 3M-P and 19J-K. Dimensions: 40-48 cm.

Warp: white cotton, most S but some Z near one side(m-os), .3-.7 mm., 7-8 pair per cm.

blue cotton, S(h-os), .3-.6 mm.

Weft: white cotton, Z(m), .3-.5 mm., 8-9 per cm.

End selvedge: 3 shots of 2 wefts.

19J. Blue-and-white-striped plain-weave fragment (pp. 87-88)

Mostly white but with narrow blue warp stripes in groups of three. Wide white stripes are 5-5.8 cm. wide. There are 4 pair of white warps between blue stripes in each cluster (except one which has 2 pair).

Blue stripes consist of 4 single yarns. Fragment is slightly finer than 19I or K. Dimensions: 29 x 38.5 cm.

Warp: white cotton, each pair has one S and one Z yarn(m-os), .2-.7 mm., 9-10 pair per cm.

blue cotton, S(h-os), .2-.7 mm.

Weft: white cotton, S(m), .3-.7 mm., 9 per cm.

Side selvedge: 13 pair of warps in the first cm.

19K. Blue-and-white-striped plain-weave fragment (p. 87)

Mostly white but with narrow blue warp stripes in groups of three. Wide white stripes are 3.8-4.5 cm. wide. There are 4 pair of white warps between blue stripes in each cluster. Blue stripes consist of 4 single yarns, though a few have 6 or 7 singles, apparently at random. Fragment includes a side selvedge. Dimensions: 12 x 23 cm.

Warp: white cotton, S(m-os), .4-1 mm., 6-8 pair per cm.
blue cotton, S(h-os), .3-.6 mm.

Weft: white cotton, S(m), .3-.7 mm., 8 per cm.

19L. Gauze fabric with warp-faced border (pp. 88, 95, 99-100)

Two fragments of same or closely related original fabric each has a warp-faced, warp-striped border overlaying a sheer fabric woven in plain weave and gauze with the selvedge of the sheer fabric sewn to side selvedge of the warp-striped band. A double fringe band is sewn abutting the edges of the other fabrics. In one fragment (14.5 x 15 cm.) the warps of the fringe and striped band turn 90° around the corner of the sheer fabric. Piece is too fragmentary to reconstruct original form of the folds that would be needed at such a corner. The second fragment (12 x 10.5 cm.) has a web of plain weave and one with gauze weave seamed side to side with end selvedges sewn to the warp-faced band. End selvedges of warp-faced and fringe bands meet parallel to the seam of the two sheer fabrics. With these fragments were two detached discs, embroidered in cross-knit loop stitch, which could be from same original fabric (see 3C, 19H, 55E).

Sheer fabric

Warp: tan cotton, S except Z in gauze section of larger fragment(h), .1-.2 mm., 16 per cm.

Weft: tan cotton, S(h), .1 mm., 12 in plain-weave area, 9-10 in gauze.

End selvedge: 2 shots of 3 wefts.

Embroidery: red, yellow, brown alpaca, white cotton, Z-2S(1), 1-1.2 mm.

Seam: brown cotton, S(h), .2 mm.

Warp-faced fabric (preserved width 5 cm., incomplete)

Warp: brown cotton, S(m-os), .2-.5 mm., 16 pair total (1 cm.).

dark-brown cotton, Z(m-h), .2-.6 mm., 14 pair total (.9 cm.).

white cotton, Z(m)-2S(1), .5-.8 mm., 15 total (.8 cm.).

brown alpaca, Z-2S(1-m), .5-.8 mm., 14 total (.8 cm.).

yellow alpaca, Z-2S(1), .8-1.2 mm., 12 total (.9 cm.).

red alpaca, Z-2S(1), .8-1.2 mm., stripe incomplete.

Weft: brown cotton, S(h), .1 mm., 4-5 per cm.

End finish: 4 shots of 2 wefts, last 7 mm. not woven (warp loops), 1.7 cm. turned under (only one side of seam complete).

Fringe band (width 6.5 cm.), warps secured by occasional discontinuous wefts

Warp: brown cotton, S-2Z(m), .6-.9 mm., 7-8 in top section (1.2-1.5 cm.), 4 in bottom section (1 cm.).

Weft: red alpaca, Z-2S(1), .7-.8 mm., 12-20 per cm.

Ends: one has simple warp loops, the other has warps cut and two adjacent warps knotted together.

Seam: brown cotton, S(h)-2Z(1), .4-.6 mm.

19M. Tapestry-woven fragments (pp. 97-98)

Four fragments from same original have a design of parallel diagonal stripes with a zigzag line dividing some of them. In three fragments the stripes reverse direction to form a point and in two there is a

small cross motif at this point. Two additional fragments with horizontal stripes may or may not belong with the diagonally striped fragments. Weave is slit tapestry, with some eccentric wefts along diagonal edges, and loose wefts on the back. First 4 fragments measure 5 x 7, 3 x 3.5, 3.5 x 3.5, and 3.5 x 3 cm.; last 2 measure 3.8 x 15 and 2 x 8.5 cm.

Warp: white cotton, S-2Z(m), .4-.7 mm., 8 per cm.

Weft: red, pink, yellow, brown alpaca, Z-2S(1), .4-.7 mm., 36-42 per cm.
white cotton, Z(m), .3 mm. (used only for small dots).

190. Plain-woven fragment (p. 87)

Found folded in half parallel to the warp. Dimensions: 20 x 10 cm.

Warp: white cotton, S(m), .3-.7 mm., 6-8 pair per cm.

Weft: white cotton, S(m-h), .3-.7 mm., 5-6 per cm.

19P. Plain-woven fragment with beaded fringe (fig. 23; pp. 87-88, 92-93, 109, 142)

There are three layers throughout, joined at irregular intervals by a thick yarn which pierces some or all of them. At the one finished edge the layers are doubled by folding the fabrics 2 cm. from their ends. One layer has a cut end folded under; the other two layers result from a single fabric that has been folded with this fold in turn folded under at the edge. Two cords that support the fringe (holding cords) were placed between the two pieces of fabric along this edge and the folds then sewn together, one stitch between each string of beads. At one end of the fragment, probably originally a corner, additional fabrics were inserted into the folds at the finished edge again doubling the number of layers (total of 12). These additional pieces have side selvages (perpendicular to the finished edge of the piece). The beads are cylindrical and straight drilled, of a fine grained, probably basaltic, volcanic rock. They are 1.8-2 mm. in diameter; the holes are .6-.8 mm. in diameter and off-center in some beads. Beads range from .9-1.8 mm. long most being from 1-1.4 mm. They are strung on thick replied cords. All these cords are broken at the distal end. At the proximal end, the cord is divided into its component two plies, each ply individually secured successively to each of the two holding cords which lie parallel to the edge of the fabric. Each ply of the beaded cord is wrapped twice around the holding cord and the end put through the loop in front to secure it. After it has been secured around the second holding cord it is cut off. Bits of purple feathers adhere to the outside of one side of the fabric. Dimensions: 8 x 12.5 (length of fringe is an additional 7.5 cm.).

Warp: tan cotton, S(m-h), .1-.3 mm., 23-24 pair per cm.

Weft: tan cotton, Z(h), .1-.2 mm., 17 per cm.

Seam: tan cotton, S-2Z-2S(m), .5 mm.

Yarn tacking layers together: tan cotton, S-2Z-4S(m), .7 mm.

Yarn holding beads: tan cotton, S-4Z(m), .6 mm., replied 2S under the beads.

Cord base for yarn with beads: tan cotton, Z(m), .2 mm., 8 used together.

H75U-7=22 (Floor clearing along top of west wall of Chamber 24)

22B. Tapestry-woven fragments (pp. 97-100)

The original fabric from which this group of small fragments came had a large-scale design impossible to reconstruct. Two fragments have parts of stepped hexagonal shapes. Other fragments have large stepped

diagonals combined with horizontal stripes. One fragment has an end finish with a second fragment sewn on top of it parallel to the edge. Another has a fringe band sewn onto it; a few other fringe band fragments are also included in this group. Weave is slit tapestry with loose wefts on the back. Largest fragments are 10 x 11.5, 7 x 6, 10 x 11.5, 5 x 8, 8 x 8, 5 x 5.5 cm.

Warp: white cotton, S-2Z(m-h), .4-.5 mm., 6-7 per cm.

Weft: white cotton, Z(m-os), .3-.6 mm., 16 pair or 28 singles per cm.

blue cotton, S-2Z(m), .6-.8 mm., 22 per cm.

red alpaca, Z-2S(1 or m), .7 mm., 20-28 per cm.

yellow alpaca, Z-2S(1), .7 mm., 18 per cm., sometimes paired, 16 pair per cm.

dark-brown alpaca, Z-2S(m), .8 mm., 14 pair per cm., used singly in some places (both can occur in one fragment).

End finish: warps cut and interlaced diagonally with adjacent warps, a distance of 7 warps.

Seam: brown cotton, S(m), .6 mm., paired.

Fringe band (width 3 cm.), warps secured by discontinuous wefts

Warp: white cotton, S-2Z(m), .4-.5 mm., 6 total in .9 cm.

Weft: red alpaca, Z-2S(1), .7 mm., 24-28 per cm.

Seam: white cotton, S-2Z(1), .7 mm.

H75U-7=28 (Floor clearing along top of west wall of Chamber 1)

28A. Painted weft-faced plain-weave band fragments (fig. 26; pp. 99,106, 108-109)

Ten fragments have a bird design painted with brown dye. Three of the largest fragments have a slit woven with discontinuous wefts part way down the center. In these split areas are two rows of birds instead of one. All birds face right. Band width is 4.7-5 cm.; fragment lengths are 25.5,19.5,21,24,11.3,6.5,9,8.7,5,4 cm.; totaling 134.5 cm.

Warp: white cotton, S-2Z(m), .3 mm., 10 per cm.

Weft: white cotton, Z-2S(1), .3 mm., 65-70 per cm.

H75U-7=31 (Chamber 4)

31A. Plain-woven fragment with weft-faced stripe (pp. 87,89)

The weft-faced stripe is 4 cm. high. In the part of the stripe closer to the selvedge, wefts are all brown cotton for 1.7 cm. In the remaining 2.3 cm. of the stripe light- and dark-brown wefts alternate, forming vertical lines of color. Weft-faced stripe is woven over and under 3 pair of warps, warp pairs of adjacent groups crossing at the edges of the stripe. Dimensions: 8 x 20 cm.

Warp: brown cotton, S(m-h), .4-.6 mm., 8 pair per cm.

Weft: brown cotton, S(m-h), .2 mm., 8 per cm.

Weft in weft-faced stripe: brown, dark-brown cotton, S(m-os), .3-.5 mm., 28 per cm.

End selvedge: 3 shots of 3 wefts, 2 shots of 1 weft, .7 cm. (then stripe).

H75U-7= (Chamber 20)

32A. Plain-woven fragment with supplementary-weft patterned stripes (fig. 25; pp. 87,90-91)

Supplementary-weft stripes are 1.5 cm. high and 2-2.5 cm. apart. Supplementary wefts are red alpaca in 9-span (a few 7-span) floats in alternating alignment. At intervals, discontinuous supplementary wefts substitute for the red and form diamond designs; red floats on the back in these areas. Discontinuous wefts may be carried on the back vertically between stripes. Dimensions: 33 x 14.5 cm.

Warp: white cotton, S(m-os), .3-.7 mm., 8 pair per cm.

Weft: white cotton, S(h), .3-.5 mm., 9 per cm.

Supplementary weft: red alpaca, Z-2S(1), .5 mm., 2 after every ground weft in patterned stripes (continuous).

Discontinuous wefts: yellow alpaca, Z-2S(1), .5 mm.

white cotton, Z-4S(1-m), .8-1.4 mm.

white cotton, Z(m)-2S(1), .8-1.6 mm.

tan cotton, S(h), .3-1 mm., paired (or 2Z[1]).

blue cotton, S(h), .4-.5 mm., paired.

32B. Plain-woven fragments with supplementary-weft patterned stripes
(pp. 88,90-91,108)

Two fragments from same original fabric, each with one side selv-edge and a similar sequence of warp stripes (starting from side selv-edge): tan .9 cm., pink 1.5, tan 2, white 1.5, tan 1 cm. (incomplete). The more complete fragment (6.5 x 7.5 cm.) also has an end selv-edge and a sequence of ground weft stripes (starting from end selv-edge): blue 5 cm., white 1.2 cm., blue (only 2 wefts left; incomplete). The second fragment (10 x 6.5 cm.) while measuring larger, is more irregularly shaped and less of its surface survives than that of the first fragment. It has tan cotton ground wefts. Supplementary-weft stripes cover entire fabric of both fragments. On more complete fragment, these stripes are (starting from end selv-edge): red .8 cm., white .9, blue .7, red 1.8 (with patterning), blue .9, white .9, red .8 cm. (incomplete). Second fragment has red and white supplementary-weft stripes but the condition of the piece precludes their being measured precisely. Supplementary wefts are in 9-span floats in alternating alignment, a pair after each ground weft. A wide red supplementary weft stripe on the more complete fragment contains small bird motifs formed by discontinuous wefts substituted for the continuous ones.

Warp: tan, pink, white cotton, S(m), .1-.5 mm., 16-18 per cm.

Weft: blue cotton, some S and some Z(m), .2-.6 mm., 11-13 cm.

white cotton, S(m), .3-.6 mm., 10 per cm.

tan cotton, S(h), .1-.3 mm.

Supplementary weft: dark-blue cotton, Z(h), .4-1 mm., paired.

white cotton, S(m), .5-1 mm., paired.

red alpaca, Z-2S(1), .5 mm., paired, 1 pair after each ground weft.

End selv-edge: 2 shots of 2 (blue) wefts.

32C. Plain-woven fragment with supplementary wefts and fringe bands
(fig. 27; pp. 88,90-91,99-100)

Plain-weave ground is entirely covered with supplementary wefts in 3-, 5-, or 7-span floats in alternating alignment. A series of four fringe bands is sewn along the side selv-edge. Fringe bands are overlapped, the top edge of each sewn to the lower edge of the band section of the next fringe. Fringe band nearest main fabric has a brown cotton weft, the next a light-yellow alpaca weft, next a brown cotton weft, and the last a (darker) yellow alpaca weft. All fringe bands have some discontinuous wefts holding the warps in place. Dimensions: 23 x 19 cm.

- Warp: tan cotton, S(h-os), .3-.5 mm., 10 per cm.
 Weft: tan cotton, S(m-os), .1-.5 mm., 5-6 pair per cm.
 Supplementary weft: yellow alpaca, Z-2S(1), .7-.9 mm., 2 woven after each ground weft.
 Seam: brown cotton, S(h)-2Z(1), .7 mm.
 Brown cotton fringe bands (width 2.5 cm.)
 Warp: cotton, S-3Z(m), 2 tan and 1 dark-brown single plied together, 1 mm., 6 total, .8 cm.
 Weft: brown cotton, S(m-h), .3-.6 mm., 12 pair per cm., each pair is twisted Z in the fringe area.
 Light-yellow alpaca fringe band (width 2.5 cm.)
 Warp: tan cotton, S-3Z(m), .8 mm., 4 total in .7 cm.
 Weft: yellow alpaca, Z-2S(1), .7-.8 mm., 8 pair per cm.
 Dark-yellow alpaca fringe band (width 3.5 cm.)
 Warp: tan cotton, S-2Z with one warp at lower edge Z-2S(m), .6-.7 mm., 6 total in 1 cm.
 Weft: yellow alpaca, Z-2S(1), .7-.8 mm., 14 per cm.
- 32D. Fringe band fragments (pp. 99-100)
 Band has some discontinuous wefts to hold the warps in place. Band width is 2.5 cm., fragment lengths are 5, 1.7, and 1.5 cm.
 Warp: brown cotton, S02Z(m), .7 mm., 6 total, 1 cm.
 Weft: yellow alpaca, Z-2S(1), .8-1 mm., 14-17 per cm.
- 32E. Plain-woven fragment with tassel (pp. 87, 101-102)
 Band with loom width of 4.2 cm. and incomplete length of 10 cm. with broken warps at both ends. Tassel, probably incomplete and consisting of only 1 tuft 2.2 cm. long, is attached to one corner of band at the end where wefts are multiple.
 Warp: white cotton, S(m-os), .3-.8 mm., 7-10 pair per cm.
 Weft: white cotton, S(m), .3-.6 mm., 5-6 per cm.
 End: 4 shots of 2 wefts, then unwoven warps for not quite 1 cm. before they break off; possibly originally a selvedge.
- Tassel
 Foundation: white cotton, S-8Z(1), 2 mm.
 Tuft: white cotton, S(m), .4-1 mm.
 Binding: not preserved.

H75U-7=36 (Chamber 19; excavated to the floor)

36A. Fragments of tapestry fringe band (fig. 28; pp. 99-100)

Two fragments of double fringe band have white and brown weft stripes, 1.5-2 cm. wide. Wider band, at the top, has stepped diamond designs woven in slit tapestry, red diamond in brown stripes and brown diamond in white stripes. Some discontinuous wefts hold warps in place. Band width: 10.5 cm. Fragment lengths: 30 and 32 cm.

Warp: white cotton, S-2Z(m), .5-.7 mm., 12 total in upper band (2 cm.), 6 total in lower band (1 cm.).

Weft: white, brown cotton, Z-2S(1), .4-.6 mm., 32-35 per cm.
 red alpaca, Z-2S(1), .3 mm., 40-45 per cm.

36C. Supplementary-weft patterned hat (fig. 32; pp. 87, 90-91, 105, 108-109)

Padded tubular hat made by folding a nearly square cloth in quarters. Unspun cotton fiber was placed within first fold. Second fold, perpendicular to first, is seamed only on one side, leaving top and

bottom open. A fragmentary tie end of fabric folded in half and sewn up side selvages is attached to one corner. Fabric is plain-weave patterned only where it will show on outside of hat, with large-scale checkerboard design in supplementary wefts in 13-span floats in alternating alignment. Design matches 36D. Hat is 21 x 23 cm., so original cloth was 42 x 46 cm. Tie end is 20.5 x 5 cm. with loom width of 10 cm. (folded as sewn).

Warp: white cotton, S(m-h), .3-.7 mm., 7-8 pair per cm.

Weft: white cotton, S(m-h), .2-.6 mm., 7-8 per cm. on outside and 4-5 per cm. on inside.

Supplementary weft: dark-brown cotton, S(os), .3-.9 mm., 2 after each ground weft.

End selvedge: 4 shots of 2 wefts at patterned end, 5 shots of 2 wefts at plain end.

Seam: white cotton, Z-2S(1), .8-1.2 mm.

Tie end

Warp: white cotton, S(h-os), .2-.5 mm., 9-11 pair per cm.

Weft: white cotton, S(h), .2-.4 mm., 7-8 per cm.

End selvedge: 3 shots of 2 wefts.

Seam: white cotton, S-2Z(m), .6-.9 mm.

36D. Tunic fragments in plain weave with supplementary-weft patterning
(fig. 31; pp. 87-88, 90-91, 99-100, 103-104, 108-109)

The fragments consist of a complete sleeve (fig. 31b) with border and fringe band on one end and a piece of the tunic body on the other, a large part of the tunic body (fig. 31a) including what appears to be the neck slot, and a small fragment of tunic body (these last two pieces formerly numbered 36B). Sleeve is made from a fabric 20.7 x 22 cm., folded parallel to the warp and sewn together along the side selvages. It is plain weave with a large-scale brown cotton checkerboard design and a series of 9 stripes at the end woven with supplementary wefts in 17-span floats in alternating alignment. Stripes are .8 cm. wide except center one which is 1.2 cm. and had a series of small, 3-pronged motifs woven with discontinuous wefts substituted for the continuous ones. Starting at one end, stripes are red alpaca, brown alpaca, brown cotton, yellow alpaca, red alpaca (center), then reverse, yellow alpaca, etc. Ends of sleeve web have cut warps folded under. Overall dimensions: 28 x 11 cm. Tunic body also has large-scale checkerboard design in brown cotton (one square is 12 x 10 cm.) woven in supplementary wefts. Unlike sleeve, the ground fabric has warps used singly instead of paired. Supplementary wefts float over 11, 13 or 15 warps. Largest tunic body fragment consists of two pieces sewn together along side selvages but leaving a gap of 16 cm., and folded perpendicular to this seam. Dimensions (unfolded): 40 x 42 cm. Smallest tunic body fragment has no selvages and measures 8 x 7 cm. The design on this tunic matches the hat, 36C.

Sleeve

Warp: white cotton, S(h), .4-.5 mm., 9-10 pair per cm.

Weft: white cotton, S(m-h), .2-.6 mm., 7 per cm.

Supplementary weft: dark-brown cotton, S(h-os), .3-.6 mm., 3 yarns after each ground weft in checkerboard, 2 yarns in striped area.
red, yellow alpaca, Z-2S(1), .6-.7 mm., 2 yarns after each ground weft.

brown alpaca, Z-2S(1), 1.1-1.3 mm., 1 yarn after each ground weft.

Seam: white cotton, S-3Z(1), .7-.9 mm.

Tunic body

Warp: white cotton, S(m-h), .2-1 mm., 12-14 per cm.

Weft: white cotton, S(m-h), .2-.7 mm., 5-8 per cm.

Supplementary weft: dark-brown cotton, S(h-os), .3-.7 mm., 2 after each ground weft.

Seam: white cotton, S-5Z(m), 1 mm.

Fringe (width 7.3 cm.), warps secured by discontinuous wefts

Warp: tan cotton, S-2Z(m), .9 mm., 6 warps total in .8 cm.

Weft: tan cotton, Z-2S(1), .6-.9 mm., 24 per cm.

Seam: tan cotton, S-2Z(1), .6-.7 mm.

36E. Supplementary-weft patterned padded tube (fig. 33; pp. 87,90-91, 105,108-109)

Exterior of tube, which is incomplete at the top, is in plain weave with supplementary-weft patterning in a large-scale design of what appears to be the lower part of a human figure. Supplementary wefts are mostly in 9-span floats in alternating alignment, but 5-,7-, and 13-span floats also occur. Tube is made of a rectangle folded in half and sewn up the sides. It is lined with a separate fabric sewn in the same way, with unspun cotton padding in between. Each fabric has a loom width of 44 cm. The lower ends of both fabrics were cut and folded under, patterned fabric folded 5 cm. and lining 2 cm. Folded ends were then sewn together. Dimensions: 26 x 22 cm.

Warp: tan cotton, S(m-h), .2-.5 mm., 13-16 pair per cm.

Weft: tan cotton, S(m-h), .2-.4 mm., 9-10 per cm.

Supplementary weft: light-brown cotton, Z(h-os), .2-.8 mm., 4 after each ground weft (makes up most of the figure).

dark-brown cotton, S(h-os), .2-.7 mm., 4 after each ground weft.

white cotton, Z-2S(1), .4-1.2 mm., 2 after each ground weft.

red alpaca, Z-2S(1), .5-.7 mm., 2 after each ground weft.

Seam: tan cotton, S(m-h), .2 mm.

Lining

Warp: brown cotton, most S but some Z(h-os), .1-.6 mm., 5-9 pair per cm.

Weft: brown cotton, S(h), .2-.8 mm., 6 per cm.

Seam: tan cotton, Z(h)-2S(1), .3 mm.

36F. Warp-stripped tubular hat (fig. 34; pp. 87,105)

Hat was formed by folding a long warp-stripped plain-weave rectangle in half twice in the same direction. Dimensions of hat are 21 x 21 cm. so original fabric was 84 x 21 cm. Tie ends, made from a fabric 7-8 cm. wide folded in half (but not sewn up the sides), are sewn inside the hat. One tie end sewn 12 cm. inside is broken at the bottom of the hat but there are two detached fragments of it (originally numbered 36K), 16.5 and 9 cm. long. Other tie end is sewn 6 cm. inside and projects 9 cm. beyond the bottom of the hat. Warp stripes are 4 pair of warps wide, and in a sequence of white, medium-brown, white, dark-brown, etc. Varying widths of warp stripes noticeable in fig. 34 result from use of different thicknesses of yarns.

Warp: white, medium, dark-brown cotton, most S but some Z(m-os), .2-.7 mm., 10-13 pair per cm.

Weft: white cotton, S(h), .1-.3 mm., 7 per cm.

End selvedge: 3 shots of 2 wefts (both ends).

Seam: white cotton, Z-2S(1), .9-1.8 mm. (bottom).

white cotton, Z(m-h), .3-.8 mm., paired (top and side).

Fragmentary tie end

Warp: white cotton, Z(h-os), .2-.4 mm.

medium, dark-brown cotton, S(h-os), .2-.4 mm.

20 stripes of 4 pair total, 8-12 pair per cm. (higher count at edges).

Weft: white cotton, S(h), .2-.7 mm., 6 per cm.

End selvedge: last 1 cm. warp loops not woven.

Seam: white cotton, Z(m-h)-2S(1), .9-1.1 mm.

One piece tie end

Warp: white, medium-, dark-brown cotton, S(m-h), .2-.6 mm., 20 stripes of 4 pair total, 11-13 pair per cm.

Weft: white cotton, S(h), .2-.6 mm., 7-8 per cm.

End selvedge: last .5 cm. warp loops not woven.

Seam: white cotton, S(m-h), .5-1 mm., paired.

36G. Tapestry band fragments (fig. 29: pp. 97-98, 101-102, 106, 109)

Two fragments of same band have design of nested squares, yellow in the center, then red, then white, on a yellow ground. Weave is slit tapestry with loose wefts on the back. Weaving and pattern formation very uneven. One fragment is 110 x 6-6.5 (loom width) cm. Other fragment includes the end of the warp, with discontinuous wefts dividing the band in half for a distance of 3 cm. and a tiered tassel attached to the end of each half. This fragment is 25.5 cm. by 5.5-6 cm. (loom width), plus 20 cm. length for the complete tassel. The two tassels are similar. Only one is complete, and it consists of six short tiers (2-3 cm. long) plus a longer one (6 cm.) at the bottom. Tiers are alternately white cotton and yellow alpaca, with white cotton at top and bottom. Cotton tiers have looped ends, some with a few transverse elements interlaced. Alpaca tiers have cut ends. Warp ends of the band are wound around the foundation cords of the tassels to secure them.

Warp: blue cotton, S-2Z(1-m), .6-.9 mm., 7 per cm.

tan cotton, Z-2S(1), .6-.8 mm., 2 used on one edge in smaller fragment, 3 on larger fragment.

Weft: red, yellow alpaca, Z-2S(1), .5-.7 mm., 10-32 per cm.

white cotton, Z-2S(1), .6-2 mm., 11-15 per cm.

Tassels

Foundation: tan cotton, S-8Z(h), 1.7 mm. (complete tassel).

white cotton, S-4Z(m), 1 mm., paired (incomplete tassel).

Tufts: white cotton, Z-2S(1), .7-1 mm.

yellow alpaca, Z-2S(1), .5-.6 mm.

Binding: same as tuft or tan cotton, S(m-h), .3-.4 mm.

36H. Tapestry band fragments (fig. 30; pp. 97, 106, 108)

Two fragments of same band were found folded in half lengthwise.

Design is a series of faces with four projecting snake-headed rays; faces are red on a tan cotton ground. Weave is slit tapestry with loose wefts on the back (no eccentric wefts). Loom width is 6.4-7.8 cm., fragment lengths are 24.5 and 18 cm.

Warp: white cotton, S-2Z(h), .3-.5 mm., 8-9 per cm.

Weft: white, tan cotton, Z-2S(1), .5-.8 mm., 20-26 per cm.

red, brown alpaca, Z-2S(1), .3-.6 mm., 29-36 per cm.

36I. Fragmentary tiered tassel (pp. 101-102)

Tassel, in poor condition, appears to be incomplete at top and bottom; 16 remaining tiers total 12 cm. in length. Top tier is brown alpaca, then red, brown alpaca, white cotton, 2 brown alpaca, white cotton, yellow alpaca, gap (1 missing), white cotton, yellow alpaca, 3 tan cotton,

yellow alpaca, white cotton, yellow alpaca. Ends of tiers are cut.

Foundation: tan cotton, S-2Z(m)-4S(1), 1.2 mm.

Tufts: tan cotton, S-2Z(m), .4-.5 mm.

white cotton, Z-2S(1), .7-1 mm.

brown, red, yellow alpaca, Z-2S(1), .6-.7 mm.

Binding: tan cotton, S(m), .2-.4 mm.

36J. Fragmentary fringe band (pp. 99-100)

Some discontinuous wefts hold warps in place. Dimensions: 9 x 11 cm.

Warp: tan cotton, S-3Z(h), 1-1.8 mm., 6 total in 1.3 cm.

Weft: yellow alpaca, Z-2S(1), .5-1.2 mm., 10-18 per cm.

36L. Warp-striped fragment with plain-weave-derived float weave (fig. 11; pp. 87,94)

Fragment has white and brown warp stripes in plain weave and a stripe with white and brown warps in alternate pairs woven in a plain-weave-derived float weave. Stripes are: white 2 cm., brown 1, white and brown 1.2, white 1.7, brown 1.2, white 1.2, brown 1.5 cm. (incomplete). In plain-weave-derived float weave both colors occur in 3-span (sometimes 5-span) warp floats in horizontal alignment, sometimes overlapping, all warp floats on one face and all weft floats on the other (fig. 11). Stripe consists of four warp pairs of each color in the float weave and two more of each on one side in plain weave. Dimensions: 9.5 x 10 cm.

Warp: white, dark-brown cotton, S(os), .2-.7 mm., 4-8 pair per cm.

Weft: dark-brown cotton, S(os), .3-.6 mm., 6-8 per cm.

End selvedge: 4 shots of 2 wefts.

Seam: brown cotton, Z-2S(m), 1-1.5 mm. (on end selvedge, opposing fabric not preserved).

36M. Plain-woven fragments with supplementary-weft patterned stripes (pp. 88,90-91,108)

Two fragments each consist of two fabrics joined along side selvages. Supplementary wefts are in 13-span floats in alternating alignment and cover ground fabric in colored stripes 1-1.3 cm. wide. A red stripe contains a brown cotton bird motif woven with a discontinuous supplementary weft substituted for the continuous ones. Parts of two yellow birds are visible in other parts of the fabric, also in red stripes. Most of the ground weave has rotted, leaving loose strands of supplementary wefts. Fragments measure 14 x 74 and 9 x 86 cm. If the seam in the two fragments is lined up, total width is 91 cm.

Warp: white cotton, S(h), .2-.6 mm., 11-13 per cm.

Weft: white cotton, S(m), .1-.6 mm., 8 per cm.

Supplementary weft: red, yellow, brown alpaca, Z-2S(1-m), .6-.8 mm. brown cotton, S(os), .3-1 mm.

2 used after each ground weft.

Seam: white cotton, S-4Z(m), 1 mm.

36N. Warp-striped rectangle with plain-weave-derived float weave (figs. 9,35; pp. 87,94,99-100,107,109)

Specimen is 86 cm. long with a loom width of 52 cm. Warp ends are cut and hemmed. Pieces of four fringe bands are sewn consecutively down one side. Rectangle has groups of four patterned stripes (each .6-.8 cm. wide) separated by reddish-brown stripes (each about 1 cm. wide). Between these groups are tan stripes each 3-4.5 cm. wide. Two of the groups have additional narrow stripes (blue or dark-brown) flanking them. Patterned stripes are 13 warps wide and of alternating pink and reddish-brown warp pairs. Pink warps interlace 1/1 and brown warps interlace

3/1/1/1 (with the 3-span floats in horizontal alignment) except on one side of the stripe where two pink warps interlace 3/1/1/1, opposite the brown ones. This structure forms small C-shaped motifs. Dimensions: 86 x 58 cm.

Warp: tan, blue, pink, reddish-brown, dark-brown cotton, most S but with some SZ pairs in some reddish-brown stripes(h-os), .2-.9 mm., 14 pair per cm.

Weft: tan cotton, S(h), .3-.6 mm., 5-6 per cm.

Fringe band 1 (34 x 4 cm.), warps secured by occasional discontinuous wefts

Warp: tan cotton, S-2Z(m), .6-.9 mm., 8 warps in top section (1.5 cm.) and 6 warps in bottom section (1.3 cm.).

End finish: on end at hem of rectangle, adjacent fringe warps are cut and knotted together; on other end, warps cut and overcast in top section.

Fringe band 2 (27 x 6 cm.), warps secured by occasional discontinuous wefts

Warp: white cotton, Z-2S(m), .7-1.3 mm., 8 total in 1.2 cm.

End finish: warps cut on both ends.

Fringe band 3 (18 x 8 cm.), warps secured by discontinuous wefts in upper band, not lower one

Warp: gray cotton, Z-2S(h), .6-1 mm., 5 total in upper section (1.1 cm.) and 4 in lower section (1.6 cm.).

End finish: cut on end next to band 2, warps knotted to those of band 4 on other end.

Fringe band 4 (6 x 6 cm.), warps not secured

Warp: brown cotton, S-2Z(m), .5-1.2 mm., 6 total in upper section (.9 cm.) and 4 total in lower section (1 cm.).

End finish: cut on end at hem of rectangle, cut and knotted to warps of band 3 on other end.

All fringe bands

Weft: red alpaca, Z-2S(l), .5-.8 mm., 24-30 per cm.

Seam: tan cotton, S(h-os), .1-.2 mm., 4 loosely plied Z or 2 loosely plied Z; in other places, a single up to .6 mm. is used.

H75U-7=39 (Chamber 15)

39A. Plain-woven fragments with fringe band (pp. 88,99-101, 109)

These fragments from same original textile were found with four layers superimposed, evidently part of a large textile folded in quarters. Fringe band is sewn to side selvages. There is a seam of side selvages in the plain fragments. Loom width between this seam and fringe band is 57 cm. Fragment dimensions are 14 x 84 (4 layers), 7 x 18 (2 layers), 12 x 20 (4 layers).

Warp: tan cotton, S(m-h), .1-.2 mm., 18-28 per cm.

Weft: tan cotton, S(m-h), .1-.2 mm., 11-13 per cm.

Seam: tan cotton, S-2Z(m), .4 mm.

Fringe band (width 3 cm.), adjacent wefts (uncut loops) replied Z to secure warps

Warp: tan cotton, S-3Z(m), .7 mm., 3 total in .3 cm.

Weft: tan cotton, Z-2S(m), .5 mm., 38 per cm.

Seam: tan cotton, Z-2S(l), .3 mm.

39B. Weft-faced plain-weave fragments

The largest of these four small fragments, presumably from same original textile, has a side selvedge (7 x 4 cm.). Possibly they once formed part of a tapestry-woven fabric but the only visible design now is horizontal stripes. Smaller fragments measure 2.5 x 1.7, 2 x 2.5, and 1.7 x 2 cm.

Warp: brown cotton, S-3Z(m-h), .7 mm., 6 per cm. (near the selvedge).
 tan and brown cotton plied together Z-2S(m), .5-.6 mm., 5 per cm.
 Weft: yellow alpaca, Z-2S(1), .5 mm., 16-18 pair per cm.
 cotton, discolored, now dark, S(m), .2-.4 mm.

H75U-7=46 (Chamber 6)

46A. Brown-and-white-plaid plain-weave fragment (fig. 36; p. 88)

Fragment has one end but no side selvages. Warp stripes: brown 3 cm. (incomplete), white .6 (5 warps), brown 3.8, white 3.8, brown .9 (8 warps), white .6 (5 warps), brown .6 (6 warps), white .5 (5 warps), brown 3, white .7 (7 warps), brown 4.5, white .5, brown .5, white 1.5, brown .5, white .5, brown .8, white 1 cm. (incomplete). Weft stripes (starting from end selvedge): brown 1.5 cm., white 3.3, brown 2, white .7 (4 wefts), brown 1.5 (5 wefts), white 1 (4 wefts), brown 1.7, white .7 (4 wefts), brown 2, white 3.5, brown .7 (4 wefts), white .7 (4 wefts), brown 3.7, white .8 (4 wefts), brown 2.9, gap with discoloration and rotted wefts, brown 4.2, white .7 (4 wefts), brown .7 (3 wefts), white 2.3, brown 1.5, white .8 (4 wefts), brown 4.3, white 1 cm. (4 wefts).
 Dimensions: 57 x 26 cm.

Warp: white, dark-brown cotton, S(h-os), .3-1 mm., 7-8 per cm.

Weft: white, dark-brown cotton, S(h-os), .3-.5 mm., 4-5 per cm.

End selvedge: 2 shots of 2 wefts.

46B. Brown-and-white-striped plain-weave fragment (p. 88)

Fragment has one side and one end selvedge. Warp stripes (starting from side selvedge): white .5 cm. (7 warps), brown .7, white .6 (6 warps), brown 5.5, white .9, brown .8, plied 4.5, brown 1.2, white .8 (4 warps), brown 7.5, white 1.2, brown 1.2, plied 4.4, brown 1.2, white .7, brown 1, white .8 cm. (incomplete). Dimensions: 50 x 29 cm.

Warp: white, dark-brown cotton, S(h-os), .3-.8 mm., 6-9 per cm.

a white and a dark-brown single (as above) plied Z(1), .7-1.3 mm., 6 per cm.

Weft: dark-brown cotton, S(h), .2-.4 mm., 6 per cm.

End selvedge: wefts are white cotton, Z-2S(1), .7-1 mm., 2 shots of 2 yarns, then 4 shots of 1 yarn.

46C-1. Brown-and-white-striped plain-weave fragment (p. 88)

Fragment has loom width of 36 cm. but no end selvages. Warp stripes are: white .7 cm. (8 warps), brown .6, plied 1.8, brown .7, white .6, brown 3.5, white .7, brown .6, plied 5, brown 1.2, white .8 (6 warps), brown ca. 7, white 1 (7 warps), brown .9, plied 6.2, brown .6, white 1.3 (8 warps), brown 4, white .5 (6 warps), brown .3 cm. (7 warps).
 Dimensions: 94 x 36 cm.

Warp: white, dark-brown cotton, S(h-os), .3-.6 mm., 8-12 per cm.

a white and a dark-brown single (as above) plied Z(1), .8-1.2 mm., 5-7 per cm.

Weft: dark-brown cotton, Z(h), .3-.6 mm., 4-5 per cm.

46C-2. Brown-and-white-striped plain-weave fragment (p. 88)

Fragment has one side selvedge. Warp stripes (starting from

selvedge): white .6 cm. (8 warps), brown 1, white .6 (6 warps), brown 4, white 1.1 (8 warps), brown .6, plied 5, brown 1 cm. (incomplete).

Dimensions: 90 x 14 cm.

Warp: white, dark-brown cotton, S(h-os), .2-1 mm., 7-15 per cm.

a white and a dark-brown single (as above) plied Z(1), .8-1.3 mm., 5-6 per cm.

Weft: dark-brown cotton, S(h), .2-.4 mm., 5-6 per cm.

46D. Brown-and-white-striped plain-weave fragment (p. 88)

Fragment has one side selvedge. Warp stripes (starting from selvedge): white 1.5 cm., brown 4, white 2, brown 1, plied 5, brown 2, white 1.5, brown 5, white 1.5, brown 2, plied 5.5, brown 1 cm., white (incomplete). Dimensions: 48 x 40 cm.

Warp: white, dark-brown cotton, S(h-os), .2-.6 mm., 6-9 per cm.

a white and a dark-brown single (as above) plied S(1), .5-1.3 mm., 6 per cm.

Weft: dark-brown cotton, S(m-h), .2-.8 mm., 6 per cm.

46E. Brown-and-white-striped plain-weave fragment (p. 88)

Fragment has one end and one side selvedge. Warp stripes (starting from selvedge): white 1.2 cm., brown 1, plied 3, white 1, brown 4, white 1, brown .8, plied 5.5 cm. Dimensions: approx. 30 x 18 cm.

Warp: white, dark-brown cotton, S(h-os), .3-.5 mm., 7-13 per cm.

a white and a dark-brown single (as above) plied Z(1), .7-1.5 mm., 6 per cm.

Weft: dark-brown cotton, Z(h), .3-.5 mm., 6 per cm.

End selvedge: 2 shots of 3 wefts.

46F. Brown-and-white-striped plain-weave fragment (p. 88)

Fragment has one end but no side selvedges. Warp stripes: brown .5 cm. (incomplete), white .9, brown .6, plied 7, brown .7, white .7 (5 warps), brown 1.5 cm. (incomplete). Dimensions: 12 x 15 cm.

Warp: white, dark-brown cotton, S(h-os), .3-.5 mm., 7-11 per cm.

a white and a dark-brown single (as above) plied Z(1), .6-1.5 mm., 6-7 per cm.

Weft: dark-brown cotton, Z(m-h), .3-.5 mm., 6 per cm.

End selvedge: 3 shots of 3 wefts.

46G. Brown-and-white-striped plain-weave fragment (p. 88)

Fragment has no selvedges. Warp stripes: brown 1 cm. (incomplete), white .8 (6 warps), brown .4 (6 warps), plied 6 cm. (incomplete).

Dimensions: 34 x 8 cm.

Warp: white, dark-brown cotton, S(h-os), .2-.6 mm., 8-10 per cm.

a white and a dark-brown single (as above) plied Z(1), .7-1.5 mm., 7-8 per cm.

Weft: dark-brown cotton, Z(h), .2-.5 mm., 5 per cm.

46H. Brown-and-white-striped plain-weave fragment (p. 88)

Parts of two webs, sewn together along side selvedges. Warp stripes: plied Z 3 cm. (incomplete), brown .9, white .6, brown .8, seam, white 1, brown 5.4, white 1.2, brown .8, plied S 6, gap with rotted warps, brown 4 (incomplete), white 1.5, brown 2, plied S 3 cm. (incomplete). Dimensions: approx. 45 x 36 cm.

Warp: white, dark-brown cotton, S(h-os), .2-.4 mm., 8-10 per cm.

a white and a dark-brown single (as above) plied Z(1), .6-1.5 mm., 8 per cm., or plied S(1), .7-1.1 mm., 7 per cm.

Weft: dark-brown cotton, S(h), .2-.4 mm., 5-6 per cm.

Seam: brown cotton, S(h), .2-.6 mm.

46I. Brown-and-white-striped plain-weave fragment (p. 88)

Fragment has one side selvedge. Warp stripes (starting from selv-edge): brown .7 cm., white .6, brown 1, plied 5, brown 1, white 1, brown 5 cm. (incomplete). Dimensions: 22 x 16 cm.

Warp: white, dark-brown cotton, S(h-os), .2-.4 mm., 8-10 per cm.
a white and a dark-brown single (as above) plied Z(1), .6-1.5 mm., 6 per cm.

Weft: dark-brown cotton, S(h), .2-.4 mm., 4-5 per cm.

46J. Brown-and-white-striped plain-weave fragment (p. 88)

Fragment has one end selvedge and parts of both side selvedges, one of which is seamed to side selvedge of another piece. Loom width is 45 cm. Warp stripes: brown 3.5 cm., white 1.6, brown 6, white 2, brown 5, white 2, brown 5.5, white .5 (two white warps with one brown one between them), brown 5.7, white 2, brown 6, white alternating with brown 1.4, brown 1 cm., seam, brown .5, white 2 (incomplete). Dimensions: 58 x 47 cm.

Warp: white, dark-brown cotton, S(h-os), .3-.5 mm., 5-6 per cm.

Weft: dark-brown cotton, most S but some Z(h), .3-.5 mm., 6-8 per cm.

End selvedge: 5 shots of 2 wefts.

Seam: brown cotton, S(m), .8-1.1 mm.

46K. Brown-and-white-striped plain-weave fragment with supplementary warps (p. 88)

Stripes line up exactly in these two fragments; no selvedges. Warp stripes: white 11 cm. (incomplete), brown 1.2, white 1, brown (with supplementary warps) 12.5, white 1.1, brown 1 cm. (incomplete). Broad brown stripe includes 7 groups of 2 supplementary warps set about 1.5 cm. apart. The two supplementary warps in each group interlace parallel, one on either side of a ground warp yarn. At one end of one fragment, supplementary warps are paired with ground warps, and then float, first on one face, then on the other face of the fabric. Floats are uneven in length consecutively: 5-span is most common but 3- and 7-span are not uncommon. Floats of the different warps are approximately in horizontal alignment. There is no design motif as such. Dimensions: 18 x 36 and 17 x 40 cm.

Warp: white, dark-brown cotton, most S but some Z(h-os) at one end of wider piece, .2-.6 mm., 6-9 per cm.

Weft: dark-brown cotton, Z(h), .2-.6 mm., 7-8 per cm.

46L. Fragment with weft-faced stripes (pp. 87, 89-90, 99-100)

Two similar but not identical webs sewn together along side selvedges each has warp and weft stripes of dark-brown and pale-orange cotton, a weft-faced stripe woven on grouped warps just above the end selvedge, and a fringe band sewn to the end selvedge. In one web warp stripes are 1.8-2.2 cm. and weft stripes (above weft-faced stripe) are: orange .5 cm. (6 wefts), brown .9 cm. (incomplete). Weft-faced stripe is woven over and under 3 pair of warps, with 2 pair of warps in adjacent groups crossing at the edges of the stripe (fig. 5). It is 1.2 cm. and the wefts consist of 7 shots paired yellow alpaca, 8 shots one brown cotton paired with one yellow alpaca, and 4 shots one yellow alpaca yarn. Fringe band for this web has weft stripes 1.5 cm. and each weft pair is loosely plied in the fringe area. Warp stripes in second web are 1.5-2 cm. While most warps are paired, some are used singly or in groups of four (brown only), apparently at random. Weft stripes above weft-faced stripe are: orange 1 cm. (9 wefts), brown .6 (8 wefts), orange 1.5 cm. (incomplete, 8 wefts remaining). Weft-faced stripe is 1-1.3 cm. (more

compact near the seam) and consists of 13 pair of white cotton yarns woven over and under 2 pair of warps with 1 pair of warps in adjacent groups crossing at the edges of the stripe (fig. 4). The fringe band for this web has weft stripes 1.3-1.9 cm. Dimensions: 10 x 21 cm.

Web with yellow weft-faced stripe

Warp: dark-brown cotton, S(h), .3-.7 mm., 6 pair per cm.

pale-orange cotton, S(h), .2-.4 mm., 8 pair per cm.

Weft: dark-brown cotton, S(m-h), .2-.5 mm., 12 per cm.

pale-orange cotton, S(m), .3-.7 mm., 12 per cm.

Weft in weft-faced stripe: yellow cotton, Z-2S(1), .5-1.1 mm.

brown cotton, Z(m), .5-.9 mm.

19 in 1.2 cm.

End selvedge: dark-brown cotton wefts used, 3 shots of 4 wefts and 2 shots of 2 wefts.

Web with white weft-faced stripe

Warp: dark-brown cotton, S(h), .3-.6 mm., 6 pair per cm.

pale-orange cotton, most S, some SZ pairs(h), .2-.9 mm., 6 pair per cm.

Weft: dark-brown cotton, S(m-h), .3-.5 mm., 8 in .6 cm.

pale-orange cotton, S(m), .3-.9 mm., 9 per cm.

Weft in weft-faced stripe: white cotton, Z(m), .3-.9 mm., 10-13 pair per cm.

End selvedge: orange cotton wefts used, 3 shots of 3 wefts and 5 shots of 1 weft.

Fringe band for web with yellow stripe (width 4.5 cm.), warps secured by discontinuous wefts

Warp: brown cotton, Z-2S(1), .7-1 mm., 3 total, .5 cm.

Weft: dark-brown cotton, Z(m), .3-.9 mm., 12-14 pair per cm.

pale-orange cotton, S(m), .3-.9 mm., 12-14 pair per cm.

Fringe band for web with white stripe (width 3.5 cm.), adjacent wefts (uncut loops) replied Z to secure warps, and some wefts discontinuous

Warp: white cotton, S(m), .5-1.1 mm., 2 pair total, .4 cm.

Weft: dark-brown cotton, S-2Z(m-h), .5-1 mm., 12-16 per cm.

pale-orange cotton, Z-2S(m-h), .5-1 mm., 12-16 per cm.

Seam: brown cotton, S(m), .2-.9 mm., paired.

46M. Tapestry-woven fragment (fig. 37; pp. 97-98, 108)

Four strips, each 4 cm. wide, are sewn into a tube along their side edges. There is also a crosswise seam across two strips (the other two broken off in this area). Warp ends of the strip were cut and the fabric folded inside .8-1.4 cm. before being seamed. Design is a series of squares nearly the width of each strip alternately containing a bird motif or an opposed step-block design. Weave is slit tapestry, with the longer slits sewn, and loose wefts on the back. A few eccentric wefts are used on the diagonals in the step block design, otherwise all wefts are horizontal. Alpaca wefts are much discolored. Dimensions: 26.5 x 8 cm.

Warp: white cotton, S-2Z(h), .5-.7 mm., 9 per cm.

Weft: red, brown, and possibly yellow alpaca, Z-2S(1), .7 mm., 38 per cm.

white cotton, Z-2S(1), .6-.7 mm., 40-50 per cm.

Yarn for sewing slits and vertical seams: tan cotton, S(m), .2-.4 mm.

Yarn for sewing crosswise seam: tan cotton, S-2Z(m), .6 mm.

46N. Fragments with weft-faced stripes (pp. 88-90)

Two similar fragments, each with two identical layers. Warps are in poor condition but weft loops indicate a complete loom width of 56 cm. for larger fragment. Only about 1 cm. square of the main cotton weft fabric remains at the edge of one fragment, an end selvedge. Warps are crossed at the transition and woven in groups of three in the weft-faced bands which also have weft stripes, each 2.5 cm. wide, yellow near the cotton end, then red, then brown alpaca. Dimensions: 7.5 x 56 cm., 5 x 52 cm.

Warp: brown cotton, S(h), .5 mm., 6 in .5 cm. in cotton weft area, 3-4 groups of 3 per cm. in weft-faced bands.

Weft: brown cotton, S(m), .2-.4 mm., 10 per cm.

Weft in weft-faced stripes: yellow, red, brown alpaca, Z-2S(m), 1 mm., 22 per cm.

End selvedge: 3 shots of 3 wefts (brown cotton).

H75U-7=52 (Chamber 12)

52A. Tapestry-woven fragments (pp. 97-98)

Most of the fragments, presumably from same original fabric, consist simply of weft stripes, 2 x 10 cm. a yellow and a brown stripe, 1 x 14 cm. a pale yellow stripe, 1 x 22 cm. a red stripe. A fragment 3 x 21 cm. has a little tapestry patterning above brown and yellow stripes but there is too little left and the warps are broken so the design cannot be determined. Another fragment (2.5 x 5 cm.) has a design of a red rectangle within a brown rectangle. Warps are mostly rotted.

Warp: tan cotton, most Z-2S but some S-2Z(m) (both can occur in one fragment), .6 mm., 6-7 per cm.

Weft: red, two shades of yellow, brown alpaca, Z-2S(1), .5-.7 mm., some red(m), .3 mm., the darker yellow paired, 28-32 per cm.

52B. Supplementary-weft patterned plain-weave fragment (pp. 88,90-91)

Most, but not quite all, of fragment covered with supplementary wefts in 9-span floats in alternating alignment. Fragment too small for any design to be apparent. Fragments of a green metal adhere to back. Dimensions: 11 x 9 cm.

Warp: white cotton, S(m), .3-.6 mm., 10-15 per cm.

Weft: white cotton, S(m-os), .2-.3 mm., 8-9 per cm.

Supplementary weft: white cotton, S(m), .3-1 mm., 1 pair after each ground weft.

H75U-7=54 (Chamber 22)

54A. Plain-weave sleeve with weft-faced stripes and fringe band (fig. 38; pp. 88-90,99-100,104)

Sleeve consists of two loom widths, each 22 cm., sewn together along side selvages and with a fringe band sewn along one end. Sleeve length incomplete at shoulder. Weft-faced stripe 4.5 cm. high is just above end selvedge at fringed end, then a 1 cm. space, then another weft-faced strip 1.2 cm. high. Weft-faced stripes woven on groups of 3 warps, crossed 2/2 at the edges of stripes. Dimensions: 22.5 x 22 cm.

Warp: tan cotton, S(m-os), .1-.2 mm., 20-26 per cm.

Weft: tan cotton, S(m-h), .1-.2 mm., 10-14 per cm.

Weft in weft-faced stripes: tan cotton, Z(m), .2-.6 mm., 23-28 pair per cm.

End selvedge: 3 shots of 2 wefts.

Seam: tan cotton, Z(m), .4 mm., paired.

Fringe band (width 1.5 cm.), warps not secured

Warp: tan cotton, S-3Z(m), .7 mm., 6 total in .9 cm.

Weft: tan cotton, Z-2S(l), .5-.8 mm., 36 per cm.

Seam: tan cotton, S(m), .3 mm., paired.

54B. Brown-and-white-striped plain-weave cloth with tassels (fig. 39; pp. 88,101-102)

Small rectangle found folded in half parallel to weft. It has brown and white warp stripes, most of which are 10-12 warps (.3-.8 cm.) wide. A tassel is attached to one corner at each end. Tassels are 5-5.5 cm. long and have 3 tiers, top one dark-brown, other 2 tan. Loom dimensions of striped fabric: 27.5 x 21 cm.

Striped fabric

Warp: tan, dark-brown cotton, S(h-os), .2-.6 mm., 14-30 per cm.

Weft: tan cotton, S(h), .2-.3 mm., 5-8 per cm.

End selvedges: unwoven warp loops, twisted Z in bunches, 2 cm. long on one end and weaving begins with 2 shots of 3 wefts. On other end warp loops are 3 cm. long, followed by 3 shots of 3 wefts, followed by terminal area with 4 wefts per cm.

Tassels

Foundation: tan cotton, Z-2S(m), 1.2 mm.

Tufts: dark-brown, tan cotton, most Z but some dark-brown is S(l-m), .5-1.2 mm.

Binding: not preserved on half of tufts, same as tuft in 2 cases, and one has a binding like the foundation.

54C. Brown-and-white-striped plain-weave band with tassels (pp. 89,101-102)

Band with 9 warp stripes, white alternating with brown, with white at edges. Most stripes are 10-12 pair of warps wide, .4-1 cm., with white stripes tending to be more compact than brown ones. At each end wefts are discontinuous at the center for 4-5 cm. forming a bifurcation. One tassel is bound to each half by a group of 8 single yarns or a cord like the tassel foundation. No tassel is complete; the most complete has 4 tiers, brown at top, then white and brown alternating. It is 6 cm. long but the foundation continues then is broken at the bottom. Another tassel has a single short white tuft left as well as a long (12 cm.) white one. Loom dimensions of striped band: 27 x 6 cm.

Striped fabric

Warp: white, dark-brown cotton, S(h-os), .2-.3 mm., 17-19 pair per cm.

Sample stripes with relatively extreme counts: brown .6 cm. wide (8 pair of warps), white .5 cm. wide (14 pair of warps).

Weft: white cotton, S(h), .2-.3 mm., 6 pair per cm. On ends of band some wefts are single or triple (not uniform).

Tassels

Foundation: white cotton, S-4Z(m), .8 mm.

Tufts: white, dark-brown cotton, most S but some white is Z(l), .5 mm., long tuft is Z-2S(l), .7-1 mm.

Binding: not preserved.

54E. Fragments with weft-faced stripes (fig. 7; pp. 87,89-90)

Each of 3 plain-woven fragments, probably from same original textile, has 3 weft-faced stripes. One stripe is 1-1.2 cm. high, then a space of 2.7 cm., another stripe 1.7-2 cm., a space 2.5-3, and a third stripe 1 cm.

In weft-faced stripes alternate wefts interlace 3/1 instead of 1/1, with 3-span floats in vertical alignment. Two of the fragments were found superimposed, each with one side selvedge, each 25 x 20 cm., third fragment measures 28 x 43 cm.

Warp: white cotton, S(m-os), .2-.6 mm., 8-10 pair per cm.

Weft: white cotton, S(m-h), .2-.6 mm., 6-7 per cm.

Weft in weft-faced stripes: white cotton, Z(1-m), .2-1 mm., 9-10 pair per cm.

54F. Plain-woven fragments (p. 87)

One consists of two webs sewn together along side selvages. Smaller fragment, probably from same original textile, has no selvages. Dimensions: 36 x 40.5 and 8 x 11 cm.

Warp: white cotton, S(m-os), .2-.5 mm., 8-10 pair per cm.

Weft: white cotton, S(m-h), .2-.7 mm., 6-7 per cm.

Seam: white cotton, S(m)-2Z(1), .9-1.1 mm.

54G. Plain-woven fragments (p. 87)

Two fragments of same original textile were found superimposed, each with one side selvedge, each 33.5 x 20 cm.

Warp: white cotton, S(m-os), .2-.8 mm., 10 pair per cm.

Weft: white cotton, S(m-h), .2-.7 mm., 6-7 per cm.

54H. Fragmentary plain-weave band with tiered tassel (pp. 101-102)

Only 2.5 x .8 cm. of the weft-faced band remains. Tassel 11 cm. long consists of 3 short tiers plus a longer one at the bottom. Entire piece is discolored to a uniform brown color, though in a few broken places yarns are white to light-tan.

Band

Warp: brown cotton, Z-2S(m), .4-.5 mm., 6 total in .8 cm.

Weft: brown cotton, Z-2S(1-m), .5-.6 mm., 23 per cm.

Tassel

Foundation: brown cotton, S-2Z(m)-6S(1), 1.5 mm.

Tufts: brown cotton, Z-2S(1), 1.2-1.5 mm.

Binding: brown cotton, Z(m), .4 mm.

Attachment of tassel to band: cotton, Z-2S(m), .5-.8 mm.

54I. Warp-striped plain-weave fragment (p. 88)

Brown-striped fragment is sewn to a blue-and-white-striped fragment at side selvages. Stripes in brown fragment are all about same size, 6 or 8 pair of warps wide with 6-10 pair of white between them. Brown-and-white fragment is so discolored that shade of lighter stripes is not clear. Brown-striped fragment: 32 x 21 cm. Blue-and-white one: 15 x 5 cm.

Brown-and-white-striped fragment

Warp: light-, dark-brown cotton, S(m), .2-.7 mm., 12 pair per cm., in 4 places there is a weaving mistake so warps are quadruple.

Weft: brown cotton, most S with some SZ pairs(m), .2-.6 mm., 9 pair per cm., .8 cm. length at one end has 5-6 pair per cm.

End selvedge: 3 shots of 4 wefts.

Blue-and-white-striped fragment

Warp: white, blue cotton, S(m-os), .2-.4 mm., 12 pair per cm.

Weft: white cotton, S(m-os), .2-.5 mm., 9 pair per cm., an area parallel to the one in the other fragment has 6 pair per cm.

Seam: tan cotton, S-3Z(m), .8-.9 mm.

55A. Plain-weave fragment with supplementary-warp inserts (fig. 40: pp. 88, 95)

Fragment has dark-brown and lighter-brown warp stripes, a dark, medium, and dark stripe each .8 cm. wide in the center of the fragment, and narrower tan and dark-brown stripes on either side. In narrow striped areas, tan warps float on the back to form step-fret designs. A wad of unspun cotton fiber adheres to the back. Fragment has no selvages. Dimensions: 16 x 11.5 cm.

Warp: brown, dark-brown cotton, S(h), .1-.3 mm., 22-28 pair per cm. in unpatterned stripes, 12 pair per cm. in patterned stripes.

Weft: dark-brown cotton, S(h), .1-.2 mm., 6-11 pair per cm.

Supplementary warp: tan cotton, S(h), .1-.3 mm., 4 pair alternating with 4 pair of ground.

55B. Blue-and-white-striped plain-weave fragment (p. 87)

Fragment has no selvages. Warp stripes: blue 4 cm. (incomplete), white 1.6, blue 1.5, white 1.7, blue 1.8, white 1.8, blue 1.7, 4 white stripes alternating with 3 blue stripes each 2 warps wide 1.7 cm., blue .8, white 1 cm. (incomplete). Dimensions: 12 x 19 cm.

Warp: white, blue cotton, S(h-os), .2-1 mm., 7-9 pair per cm.

Weft: dark-blue cotton, S(m-h), .4-1.4 mm., 5 per cm.

55C. Plain-woven fragment (p. 87)

Fragment has no selvages. Dimensions: 13 x 11 cm.

Warp: tan cotton, S(m), .2-.5 mm., 8 pair per cm.

Weft: tan cotton, S(m-h), .2-.3 mm., 8 per cm.

55E. Gauze fabric with warp-faced border (fig. 41; 88, 95-96, 104, 108)

Two fragments of same or closely related original textiles each consists of a sheer fabric, plain weave with embroidery in one fragment and areas of gauze and areas of plain weave with embroidery in the other, overlaid with a warp-faced, warp-striped border with diverted supplementary-warp patterning. End selvedge of sheer fabric is sewn to side selvedge of warp-faced band. Other side selvedge of warp-faced band is also whipped down to sheer fabric. Border of fragment including gauze areas is in two pieces, with ends abutted; no stitching survives. Embroidered patterning is undulating lines in running stitch and small discs in cross-knit loop stitch. Supplementary warps form a bird motif. Dimensions: fabric with gauze 45 x 16 cm., fabric all plain weave 43 x 15.5 cm. Loom width of warp-faced fabric 9 cm.

Sheer fabric

Warp: tan cotton, most S but some Z(h), .1-.2 mm., 16 per cm.

Weft: tan cotton, most S but some Z(h), .1 mm., 8-11 per cm. (plain), 14 per cm. (gauze).

End selvedge: plain web has 2 shots of 2 wefts, gauze web has 3 shots of 3 wefts.

Embroidery: red, yellow, brown alpaca, Z(m)-2S(l), .7-1 mm., paired. white cotton, Z-2S(l), .7-1.1 mm.

Warp-faced fabric

Warp: brown cotton, S(m-os), .2-.5 mm., 16 pair total (1 cm.).

dark-brown cotton, Z(h), .7-.9 mm., 18 pair total (.8 cm.).

white cotton, S(h)-2Z(l), .4-.8 mm., 19 total (.7 cm.).

brown alpaca, Z-2S(l), .8-1 mm., 16 total (1.1 cm.).

yellow alpaca, Z-2S(l), .8-1 mm., 16 total (.7-.8 cm.).

red alpaca, Z-2S(m), .7 mm., 17-20 per cm. (stripe 5 cm. wide).

Weft: brown cotton, S(h), .1-.2 mm., 6 per cm.

Supplementary warp: brown cotton, S(m), .2-.7 mm., paired, 5-7 ground warps between widest points of diamonds.

End finish: on one end at the join the warps are cut or broken, and 1.2 cm. is turned under; on the other end are 4.7 cm. of unwoven warp loops and 2 shots of 2 wefts, with 5 cm. turned under.

55F. Plain-woven loincloth with weft stripes (fig. 42; pp. 87, 89-90, 99-100, 103)

Loincloth consists of two loom widths, 42 and 47 cm. wide and 201 cm. long, sewn together along side selvages. Tie band has a loom width of 21.5 cm. folded in half parallel to warp, its side selvages sewn to end of the loincloth proper but not to each other beyond this seam. Band is 219 cm. long but broken at both ends. The ends of the tie band were found as separate fragments. One, 23 cm. long, was originally numbered 55D; it includes a fringe band sewn to the end selvedge.

At tie band end of loincloth, main webs have weft stripes. On one width, all 9 weft stripes are woven with paired wefts in 1/1 interlacing (from end selvedge): single weft 2.5 cm., paired 1.3, single 1, paired 2, single 1.2, paired 1.3, single 8, paired 2, single 2.5, paired 3, single 1.5, paired 1.5, single 4, paired 1.5, single 1.5, paired 3, single 1, paired 1.5 cm., the rest plain. Other width also has 9 weft stripes, but all except top one are woven on warps grouped in threes, crossed at the edges of the stripes: single weft (1/1 interlacing) 3.5 cm., paired weft (1/1) 1, single 1.8, paired (3/3) 2.5, single 2.2, paired (3/3) 1, single 12, paired (3/3) .8, single 2.3, paired (3/3) 2.5, single 2.5, paired (3/3) 1, single 8.5, paired (3/3) 1, single 2, paired (3/3) 2, single 2.2, paired (3/3) .8 cm., the rest plain until near opposite end where 3 more weft stripes are woven with paired wefts in 1/1 interlacing (starting from other end selvedge): single weft 2.5 cm., paired 1, single 1.5, paired 2, single 2, paired 1 cm. Weft stripes on the two pieces do not match. On width with no weft stripes at the far end, weft insertion is less even in this area than in the rest of web, as if it was the area of terminal weaving. A tie band end fragment also has weft stripes with paired wefts in 1/1 interlacing (from end selvedge): single .7 cm., paired 1, single 1.8, paired 2.4, single 1.8, paired .7 cm. Loincloth was found folded in half lengthwise (along the seam) and rolled up with the end opposite tie at the center.

Main webs

Warp: white cotton, S(h-os), .2-.7 mm., 6-8 pair per cm. (occasional singles).

Weft: white cotton, S(h-os), .2-.8 mm., 7-8 per cm.

Weft in weft stripes: white-tan cotton (color not uniform), S(m), .3-.7 mm., 8-9 pair per cm.

Weft in weft-faced stripes with grouped warps: white-tan cotton, some S and some Z(m), .2-1 mm., 14 pair per cm.

End selvages on width with weft stripes: at tie band end, 3 shots of 2 wefts; at lower end, 2 shots of 3 wefts: white cotton, Z(m-h), .2-.3 mm.

End selvages on width with weft-faced stripes: at tie band end, 3 shots of 3 wefts; at lower end, 4 shots of 2 wefts: brown cotton, S(m-h), .3-.7 mm.

Seam: white cotton, Z(m-os)-4S(1), 1 mm.

Tie band web

Warp: white cotton, S(h-os), .2-.6 mm., 7-8 pair per cm.

Weft: white cotton, S(m-h), .4-.8 mm., 7 per cm.

Weft in weft stripes: white-tan cotton, Z(m), .2-1 mm., 7-8 pair per cm.

End selvedge: 4 shots of 3 wefts.

Fringe band (width 3 cm.), warps secured by discontinuous wefts

Warp: white cotton, S-2Z(m), .8-1.1 mm., 4 total in .6 cm.

Weft: white cotton, S-2Z(m), .7-1.5 mm., 15 per cm.

Seam: white cotton, S(h)-2Z(1), 1 mm.

H75U-7=68 (Excavation no. 31, south end of east side court)

68A. Plain-woven fragments with fringe band (pp. 87,99-102)

Three fragments of same original textile. One has fringe band sewn to side selvedge (overall dimensions: 10 x 6.5 cm.) and a tassel attached to one end. Other two have fringe band sewn to end selvedge (overall dimensions: 7 x 7, 3 x 6 cm.); the larger has a seam in the fringe band. Fringe band has weft stripes, each about 1 cm. wide, in sequence blue, tan, blue, red, etc. Tassel is 5.5 cm. long with 5 tiers (blue, red, blue, tan, blue), the last longer than the rest.

Warp: tan cotton, S(m), .1-.4 mm., 12-15 pair per cm.

Weft: tan cotton, S(m), .1-.3 mm., 8-10 per cm.

End selvedge: 3 shots of 3 wefts.

Fringe band (width 2.5 cm.), warps not secured

Warp: tan cotton, S-2Z(h), .4-.5 mm., 7 total in 1.5 cm.; since warps are not secured, they are farther apart on the open side.

Weft: tan cotton, Z-2S(m), .4 mm., 28 per cm.

dark-blue, red (discolored to brown) alpaca, Z-2S(1), .5-1.2 mm., 28 per cm.

Seam: dark-brown cotton, S(h), .4 mm.

Tassel

Foundation: tan cotton, S-2Z(m), .7 mm.

Tufts: same as fringe weft.

Binding: tan cotton, S-2Z(m), .3 mm.

Attachment of tassel to band: dark-blue alpaca (as in fringe weft).

NOTES

¹I am grateful to Michael E. Moseley, who made it possible for me to study the Avispas textiles and placed the resources of the Chan Chan-Moche Valley Project at my disposal for this purpose. It is also a pleasure to acknowledge the assistance of the excavator, Thomas Pozorski, who not only freely shared with me his data on the excavation, but also carried out the tedious work of washing and laying out the textiles in preparation for study. Unless otherwise noted, data on the excavation presented here are from his excavation report, Pozorski, ms., and Pozorski, 1979. I would also like to thank the editors, especially Patricia J. Lyon, for their helpful comments on earlier drafts of the manuscript.

²Kolata, 1978, pp. 67-68.

³Pozorski, 1979, p. 133.

⁴For cotton padding in mummy bundles, see e.g., Vreeland, 1978. There was little or no textile preservation in the Chimu burials reported by Donnan and Mackey, 1978.

⁵O'Neale and Kroeber, 1930.

⁶Three of the seven from Chan Chan are illustrated by O'Neale and Kroeber, 1930, pls. 45a-c, as well as a selection of the Cerro Blanco textiles, pls. 46-48.

⁷Menzel, 1977, p. 26.

⁸Menzel, 1977, pp. 37,40-41. Although preservation of Moche textiles is poor, the small amount of data that exists suggests that the Moche textile tradition is distinguishable from that of Chimu in its technical features. The Moche IV plain-weave textiles from the Santa Valley described by Donnan (1973) do not have a preponderance of paired warps. The decorative techniques described by Conklin (1979) are also distinctively Moche rather than Chimu.

⁹O'Neale and Kroeber, 1930, p. 48; O'Neale here notes a close similarity between Chimu textiles and those from Chíncha. An examination of Uhle's data on Chíncha published by Menzel (1967) reveals that the textiles most closely resembling the Chimu style (e.g., O'Neale and Kroeber, 1930, pls. 38,39,41) are all from graves containing ceramics of the post-Chíncha assemblage or Spanish glass beads instead of pottery vessels, indicating a date beginning in the Late Horizon and extending into the early Colonial Period. During this time the native Chíncha style was abandoned and both ceramics and textiles were strongly influenced by foreign styles, including that of the north coast. The textiles associated with Chíncha style ceramics (dating to LIP 8 and the first part of the LH), while woven in plain weave with paired warps and single wefts, do not otherwise show a strong resemblance to Chimu material (Garaventa, 1979).

¹⁰O'Neale and Kroeber, 1930, p. 48.

¹¹O'Neale and Kroeber, 1930, pl. 46a.

¹²See also Bellinger, 1951, p. 3. The chief reason for this crossing is not that it gives a neater finished effect, which it undoubtedly does, but for convenience in weaving. In weaving plain weave with over-1 under-1 interlacing, alternate warps pass over the shed rod or through a heddle loop on the loom. Manipulation of either the heddle rod or the shed rod thus opens a space (called a shed) through which a weft may be passed. To change to over-3 under-3 interlacing on the same loom setup, it is desirable to have all three warps in each group controlled by the same shedding device, either the shed rod or the heddle rod, an effect which would not be produced if three consecutive warps were grouped. Crossing some of the warps at the beginning of the stripe groups the warps so that for the rest of the stripe the weaver can proceed with the same shedding devices as before without further individual warp manipulation. When the stripe is completed, the warps are allowed to recross to their original position and 1/1 interlacing can resume.

¹³In Guatemala today, the same type of supplementary-weft patterning is done with the aid of two extra pattern shed sticks inserted behind the heddle rod and principal shed rod (Sperlich and Sperlich, 1980, pp. 102-104).

¹⁴It is also found in a few of Uhle's Cerro Blanco textiles and in two of his pieces from Chan Chan (cat nos. 4-70a,-70c).

¹⁵O'Neale and Kroeber, 1930, pl. 45c.

¹⁶O'Neale and Kroeber, 1930, pl. 46b, which is a very similar corner decoration to fig. 14 here, and a sleeve (cat. no. 4-2277a). Another type of supplementary-weft patterning, where the supplementary weft is paired with the ground weft in the background of the design area (O'Neale and Kroeber, 1930, pl. 46c), is not found in the Avispas sample.

¹⁷E.g., Harcourt, 1962, pl. 25a-b, a Chancay style piece.

¹⁸Compare Harcourt, 1962, fig. 96Ab; also Mead, 1907, fig. 3.

¹⁹Compare Mead's diagram (1907, fig. 4) where the quill tip and knot in the second cord face up.

²⁰As the needle with the third cord enters the fabric, it passes over the second cord as well as over the quill. This procedure does not give the effect illustrated by Mead (1907, fig. 4).

²¹No provenience is given for the examples analyzed by Mead. The piece that Harcourt illustrates (1962, pl. 115A) is a north coast one (provenience given as Trujillo). It is similar to 19C except that blue feathers are used rather than red ones. The paired warp ground fabric is clearly visible in the photograph. The ends of the feathers are cut to make the color change clearer, a feature not visible on the Avispas pieces because of the poor preservation of the feathers.

²²The Textile Museum has an example of a type of necklace or gorget (cat. no. 91.943), decorated with glued feathers, which has metal bangles on it in the shape of heads similar to those of 3H (fig. 15) in the Avispas lot. This piece also has a ground fabric of paired-warp plain weave, with the edges layered and folded under as in 19P. These similarities suggest that 19P is in fact a fragment of this same type of necklace. A complete example of such a necklace, even more similar to 19P and said to be from Lambayeque, is on permanent exhibition in the Museum of the American Indian, Heye Foundation, New York. It is bib-shaped, with a straight lower edge; its surface is covered with glued feathers, all purple except for an orange border, and it has a short beaded fringe of the same type as 19P (see next section).

²³Lothrop (1964, p. 188) illustrates a necklace with Chan Chan provenience in the American Museum of Natural History, New York. This necklace, of the same type mentioned in note 22, is entirely beaded, and has this type of beaded fringe.

²⁴Emery, 1966, p. 113 ff.; Rowe, 1977, chap. 9.

²⁵Harcourt, 1962, pl. 26b-c; Emery, 1966, figs. 231-232; VanStan, 1967, figs. 10,19,61-62; Rowe, 1977, fig. 29.

²⁶See Emery (1966, fig. 289) for basic complex alternating gauze. This variant is diagrammed in O'Neale and Clark (1948, pl. 5a, type IVB).

²⁷For a discussion of the term cross-knot loop stitch, see Emery, 1966, pp. 32,47,243. O'Neale called this technique needleknitting.

²⁸O'Neale and Clark, 1948, p. 163; the account of which pieces are woven in type IVB gauze with 2/2 gauze crosses is somewhat confused, but it seems clear that the pieces in pl. 18b and d from the area of Supe, pl. 18c from Chillon, and pl. 17 from Chancay are meant. Harcourt (1962, pls. 36b,37b) illustrates two central coast examples, similar to the ones discussed by O'Neale. The piece in his pl. 36b is also embroidered to emphasize the gauze design, a central coast feature. The O'Neale and Clark monograph also illustrates a single gauze fragment from Chan Chan (pl. 16c-d) which has a design in weft-faced plain weave on a background of complex alternating gauze (type IV). This unusual use of gauze weave may also be distinctive to the north coast.

²⁹E.g., Rowe, 1977, fig. 80.

³⁰The Museum of the American Indian, Heye Foundation, New York, has an example (cat. no. 5/1628) from the Hacienda Marquez, near Lima. It is woven with the usual central coast yarns (Z-2S). Four examples from the Textile Museum collection woven in this technique have Z-2S yarns, including those illustrated in Emery (1966, fig. 295) and Rowe (1977, fig. 50). One example in the Textile Museum has S-spun paired warps (cat. no. 91.586). It is woven entirely of cotton and does not resemble the Avispas examples. For a back view of a piece in which the supplementary warps are treated much like the ones in the Avispas examples, see Harcourt, 1962, pl. 28c.

³¹A diagram of this type of end selvedge may be found in Bird and Skinner, 1974, fig. 4.

³²Some all-cotton central coast tapestries are illustrated in Tsunoyama, 1979, pls. 35,45,48.

³³See Moseley and Mackey (1973, pp. 342-343) for an example that seems to be woven with single warps and wefts in a balanced plain weave. There are a number of unassociated examples with paired unplied warps and single wefts in the Textile Museum collection.

³⁴For some Chancay fringe bands with long fringe and uncut loops, see Tsunoyama, 1979, pls. 28,33,34,38,40,53.

³⁵O'Neale and Kroeber, 1930, pl. 45b.

³⁶For examples of Chancay tapestry bands with tassels, see Tsunoyama,

1979, pls. 1,63.

³⁷E.g., Benson, 1972, fig. 5-10.

³⁸E.g., Textile Museum no. 1966.7.71 said to be from Taika, Huarney Valley.

³⁹The mantle is shown folded in Textile Museum, 1969, fig. 2 (left). The Viru tunic is illustrated in color in Lapiner, 1976, no. 622. The Amano collection contains a tunic very similar to the Textile Museum one (Tsunoyama, 1979, pl. 13, provenience given as Chan Chan). The supplementary weft birds are more like those on the Textile Museum's Viru hat than those on the Viru tunic.

⁴⁰Accession numbers 1968.26.1-6. Accession records indicate that this group of textiles was found by Ernest Reid, on the north coast, ca. 1900. No further details are available. The loincloth (1) and the two tunics (5,6) have paired warps. The two mantles (2,3) and another fabric still done up in a tight bundle (4) have single warps and wefts.

⁴¹Inca women's costume consisted of a large rectangle which was wrapped around the body from neck to ankles, and a large shawl, folded in half and pinned at the chest. Guaman Poma's illustrations indicate that while the belt was often patterned, the dress and shawl of non-royal women commonly had no patterning other than stripes. The clothes of the female figurine from Cerro del Plomo (Lothrop, 1964, p. 218) are striped, the shawl having narrow complementary-warp patterned stripes. Full size examples of Inca women's dress have rarely been identified, the shawl in the Textile Museum collection (Rowe, 1977, figs. 81-82) and the material excavated by Uhle at Pachacamac (Uhle, 1903) being notable exceptions. These items also have broad stripes with relatively narrow complementary-warp patterned stripes, if any.

Current knowledge of Chancay women's dress derives primarily from cane and yarn figurines. These figurines show presumably male figures dressed in short tunics with tapestry borders and loincloths (e.g., Tsunoyama, 1979, pl. 230) and presumably female figures dressed in a one piece long tuniclike garment, with horizontal neck slot and armholes (same source, pls. 231,233). These dresses are woven in complementary-weft diamond twill or a check pattern. Apart from the gauze squares which are presumed to be women's headcloths, however, none of the many types of Chancay textiles can be identified as women's dress. Presumably this situation results primarily from a lack of scientific excavation.

⁴²O'Neale and Kroeber, 1930, pls. 45c (probably a tie end), 47c.

⁴³Moseley and Mackey, 1973, pp. 340-341.

⁴⁴Sawyer, 1975, figs. 77,78. The textile in fig. 80, also includes a version of this design.

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KEY TO ILLUSTRATIONS

The photographs of Avispas textiles in pls. XXI, XXV, XXVIII-XXX, and pl. XXXIII, figs. 42a,b are by Robert A. Feldman. Those in pls. XXII-XXIV, XXVI-XXVII, XXXI, and pl. XXXIII, fig. 41a are by Paul Brandford. For dimensions see the catalog. Figs. 43-45 are by Raymond L. Schwartz, courtesy of The Textile Museum, Washington, D.C.

Except for figs. 1 and 2, the drawings are by Eve Becklund based on drawings or yarn constructions by the author. In the drawings of tapestry designs (figs. 15, 16b, 22, 37a) one step is the equivalent of one warp in the textile. The use of eccentric wefts is indicated by diagonal lines. Except for fig. 22, these drawings represent composites of motifs within the piece, no single one being well enough preserved to show all features.

The warp direction is vertical unless otherwise noted.

Plate XXII

Fig. 14. Fringe band warps are horizontal.

Plate XXIII

Fig. 18. Sleeve warps of 18a are shown horizontal; 18b shown at right angles to its position on the sleeve above it.

Fig. 19. Warps of the fringe band and upper fabric are horizontal.

Plate XXVI

Fig. 27. Fringe band warps are vertical, not horizontal as the caption indicates.

Plate XXVIII

Fig. 31b. Sleeve warps are horizontal.

Plate XXXIII

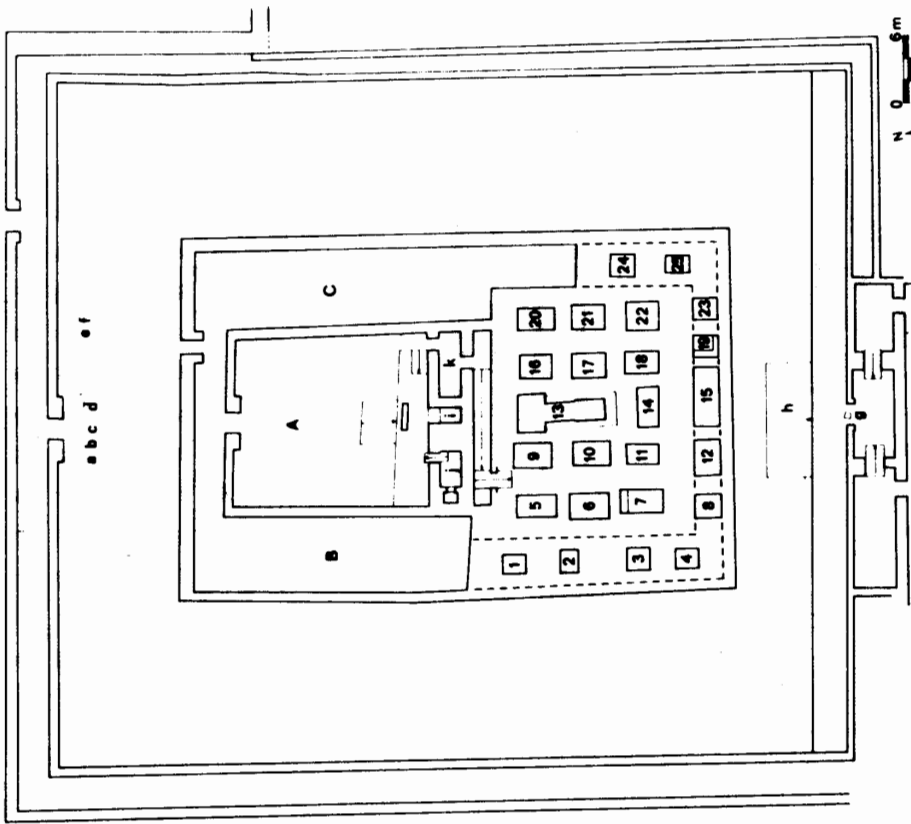
Fig. 41a. Warp stripes are shown horizontal.

Plate XXXIV

Fig. 43. Sleeved tunic said to have been found in the Viru Valley. 59 x 116 cm. Textile Museum 1969.39.2.

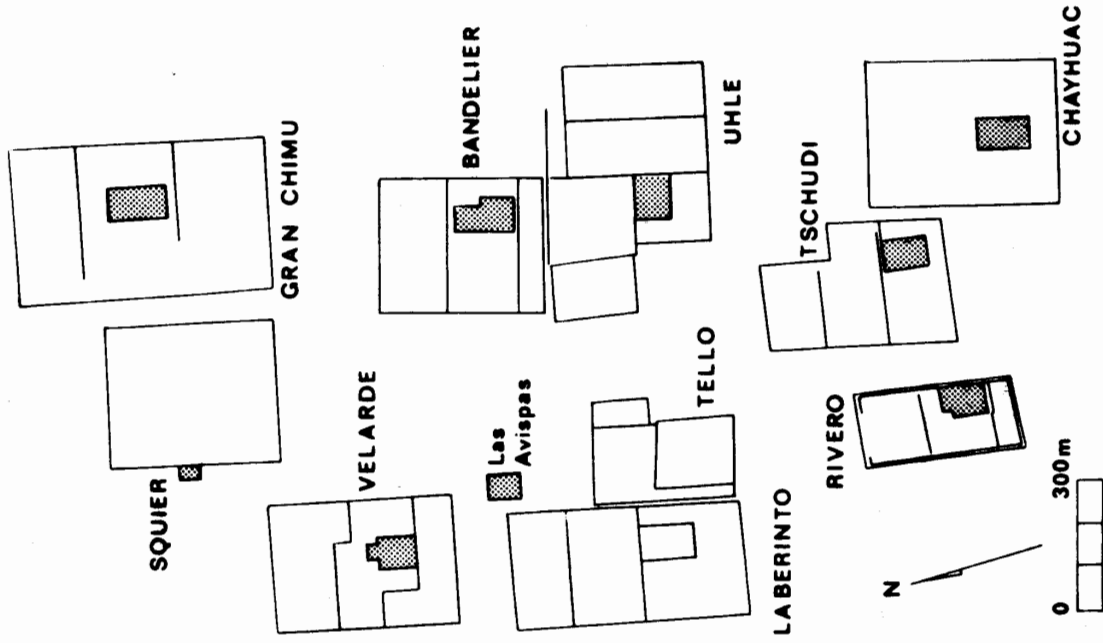
Fig. 44. Padded tubular hat said to have been found with the tunic in fig. 43. 35.5 x 27 cm. (excluding tie ends). Textile Museum 1969.39.3.

Fig. 45. Weft-faced band said to have been found with the tunic and hat in figs. 43,44. 313 (including tassels) x 5.5 cm. Textile Museum 1969.39.5.



1

LAS AVISPAS



2

Plate XIX. Fig. 1, plan of Las Avispas, H75U, based on excavations by Thomas Pozorski. Reproduced from Pozorski, 1979, fig. 2; fig. 2, simplified plan of Chan Chan, showing locations of burial platforms. Reproduced from Pozorski, 1979, fig. 1.

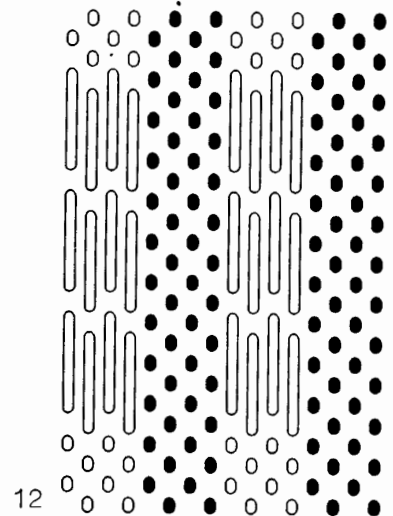
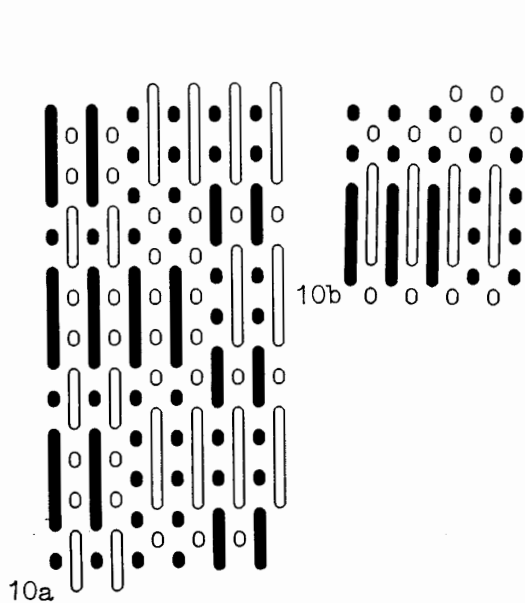
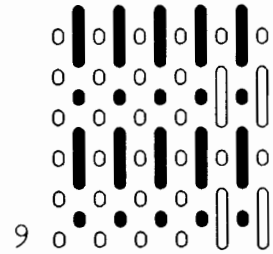
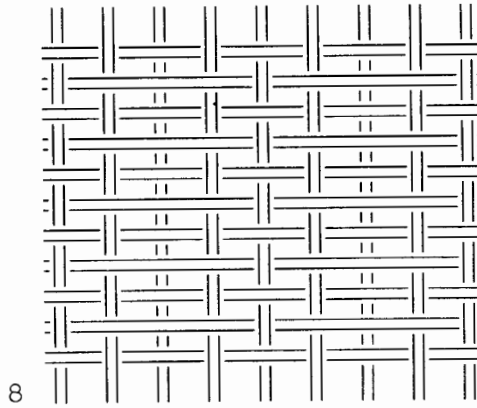
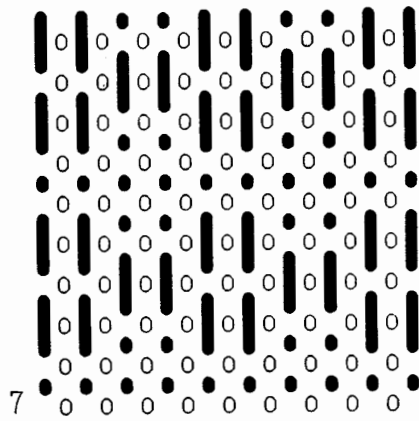
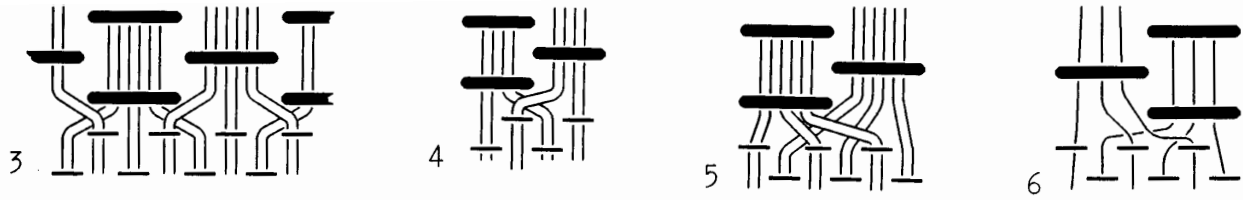
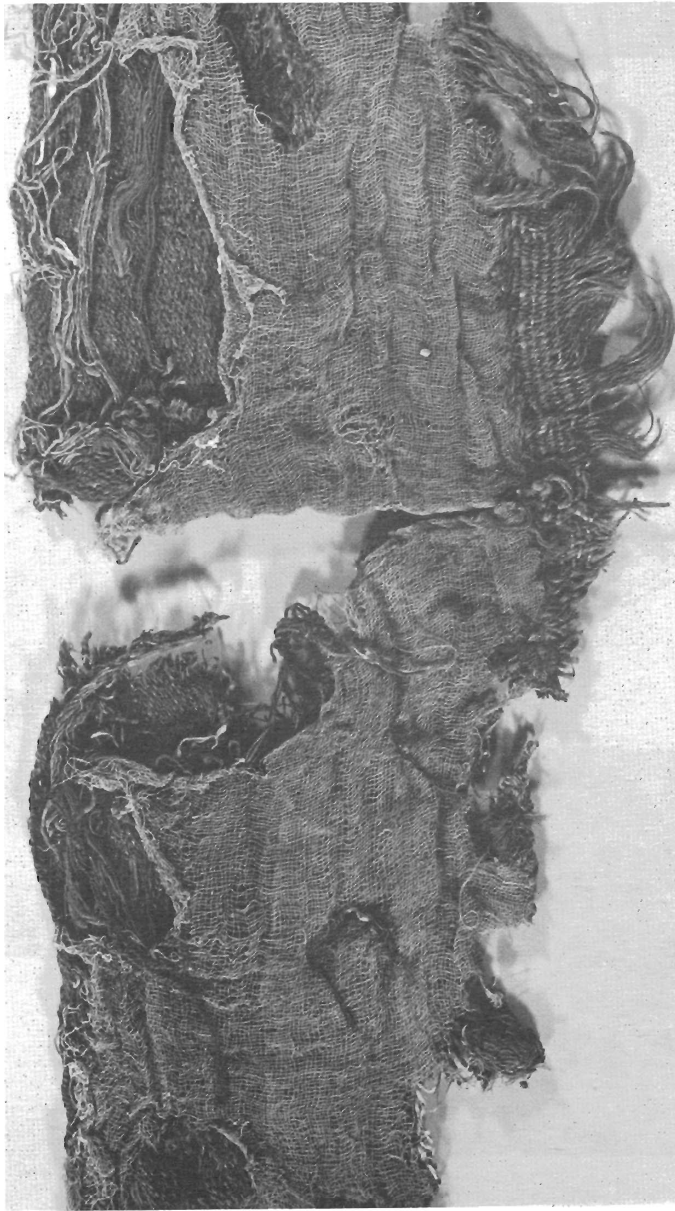


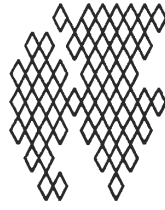
Plate XX. Weaving details. Warp crossing at edges of weft-faced stripes: fig. 3, most common type; fig. 4, one web of 46L; fig. 5, other web of 46L; fig. 6, 54A. Fig. 7, interlacing order of weft-faced stripes, 54E. Warp interlacing in plain-weave-derived float weave: fig. 8, 3K; fig. 9, 36N; fig. 10a, blue and white stripes in 3G; fig. 10b, brown and white stripes in 3G (complete repeat not preserved); fig. 11, 36L; fig. 12, 3T.



13a

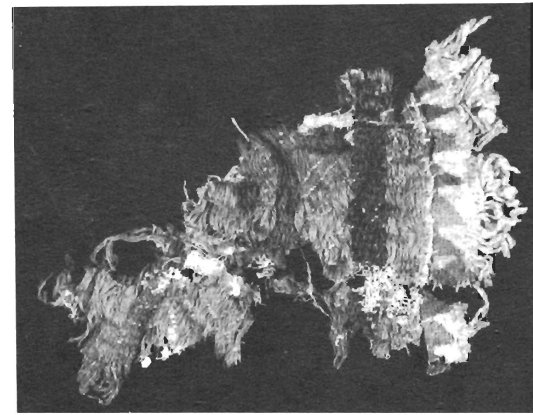


13b

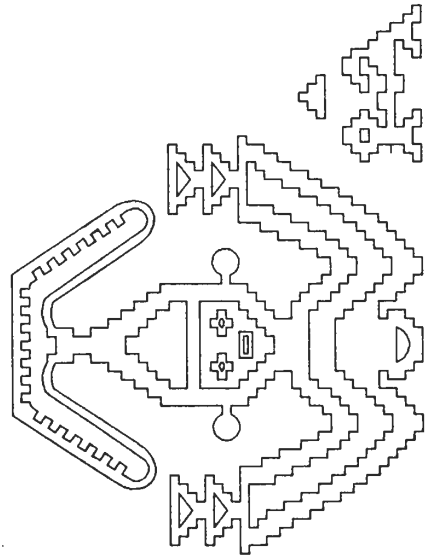


13c

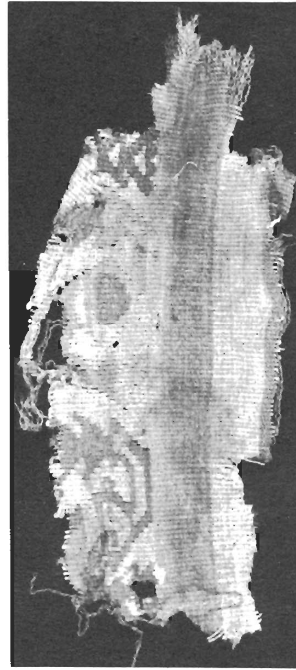
Plate XXI. Specimen 3C, warp stripes are shown horizontally. Fig. 13a, full view; fig. 13b, detail of back; fig. 13c, drawing of design woven with diverted supplementary warps.



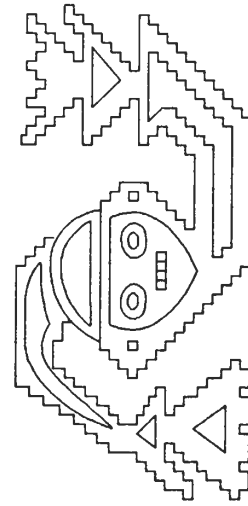
14



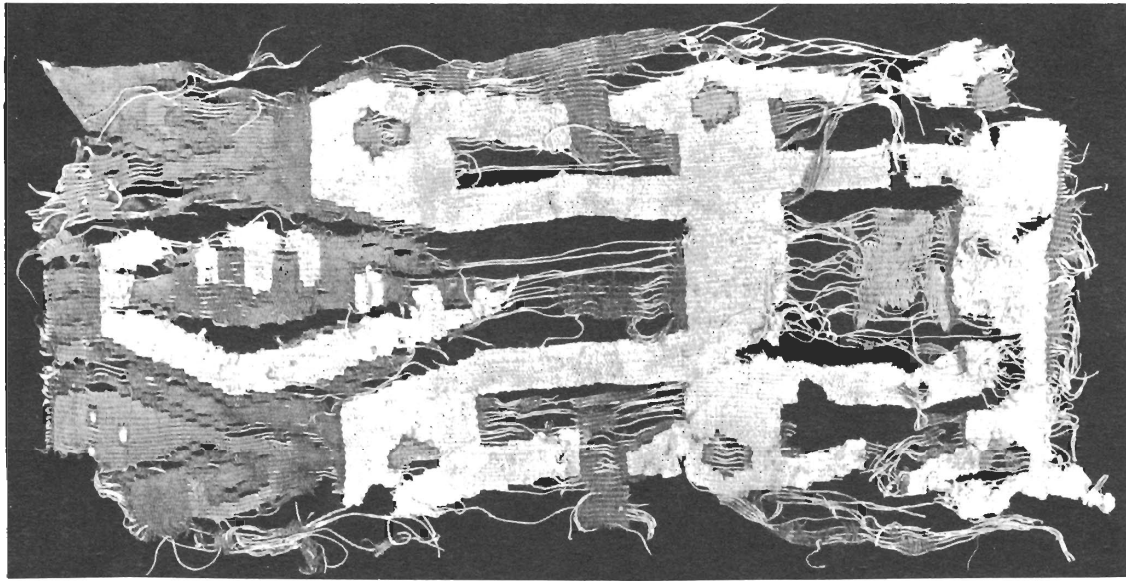
15



16a

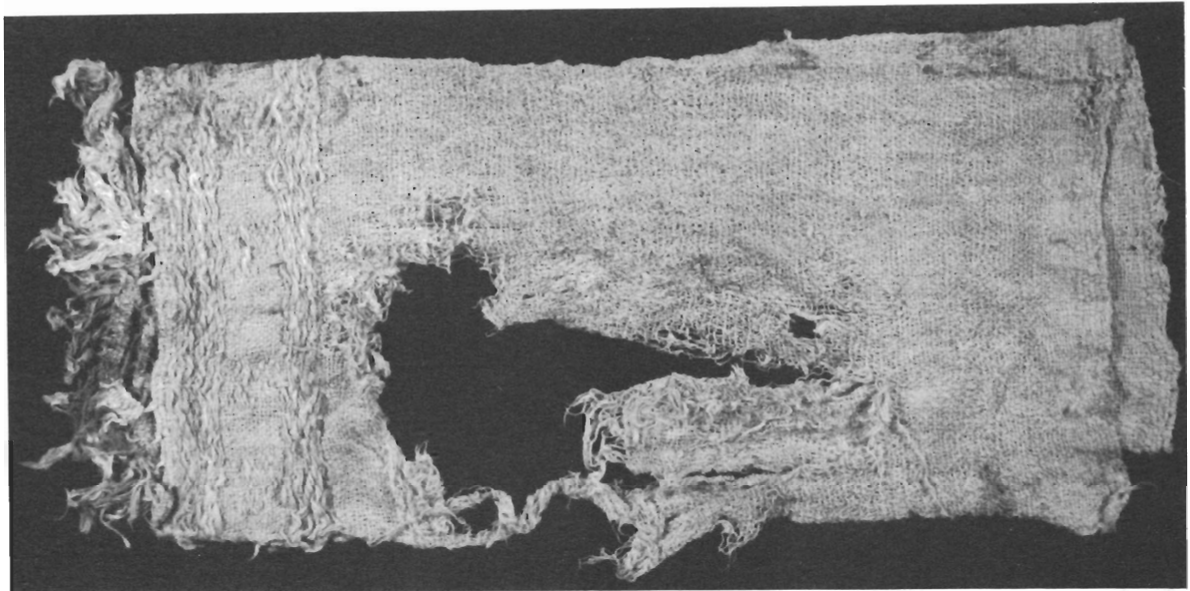


16b



17

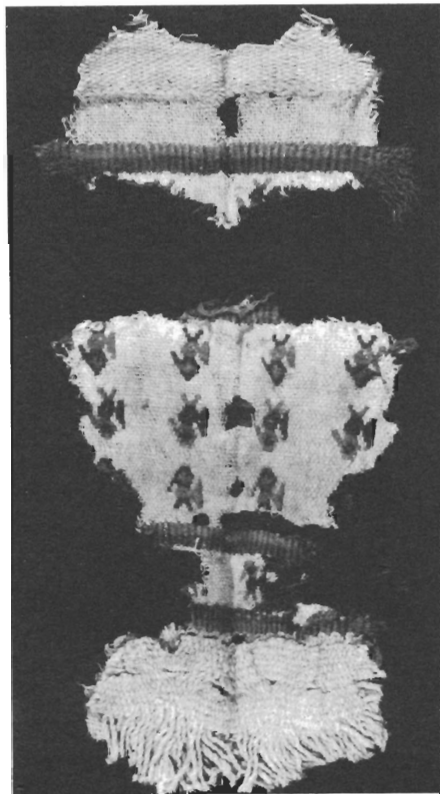
Plate XXII. Fig. 14, 3D; fig. 15, drawing of design from 3H; fig. 16a, 3J; fig. 16b, design from 3J; fig. 17, 13A. See Key to Illustrations.



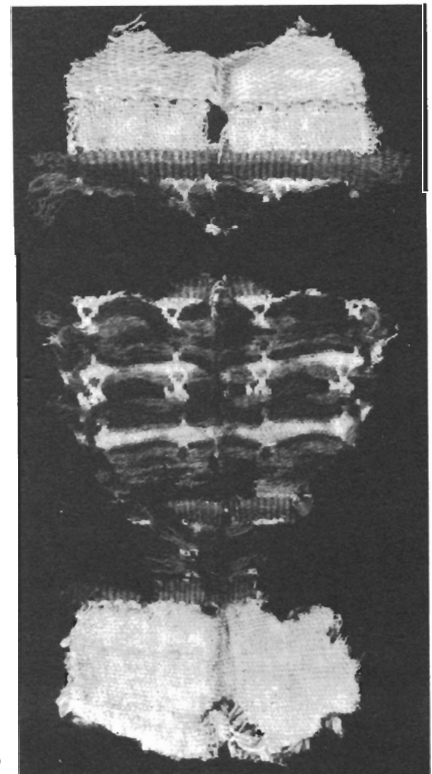
18a



18b

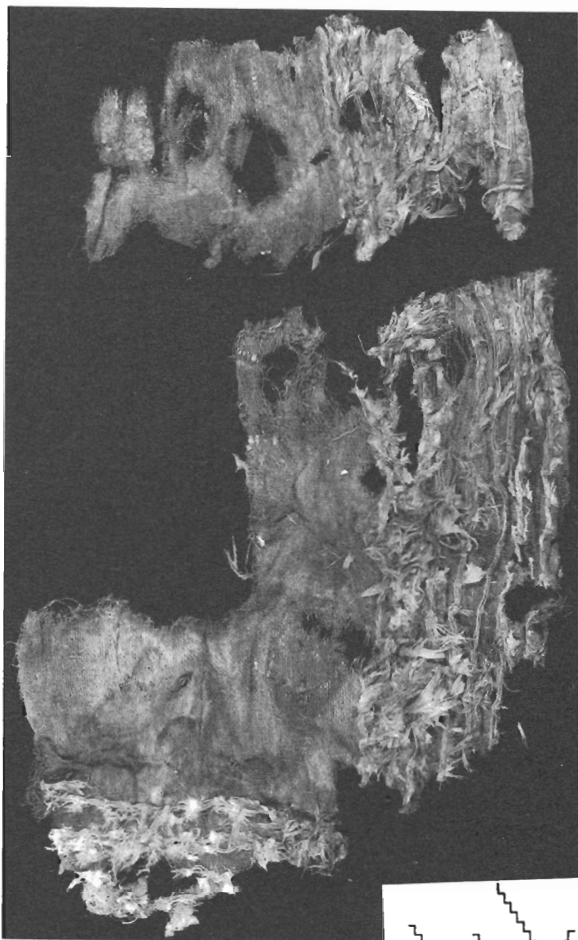


19a

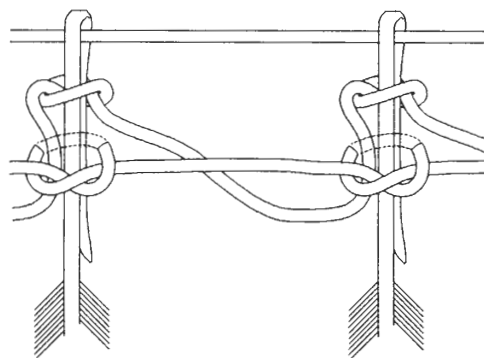


19b

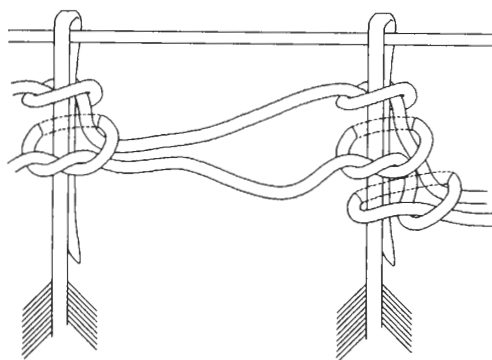
Plate XXIII. Fig. 18a, sleeve 19A; fig. 18b, bird design 19A; fig. 19a, front 19B; fig. 19b, back 19B.



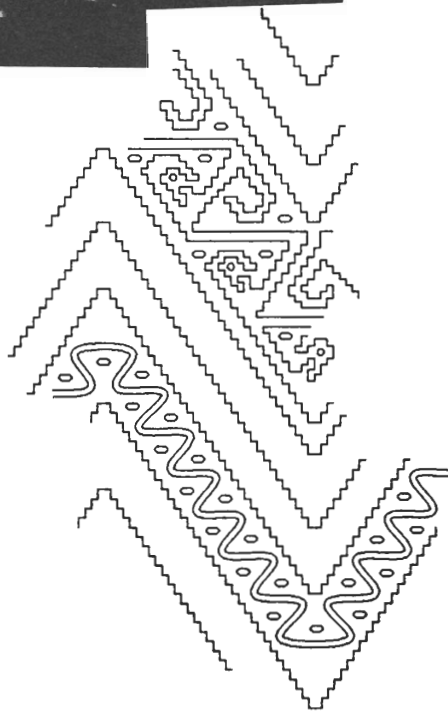
20a



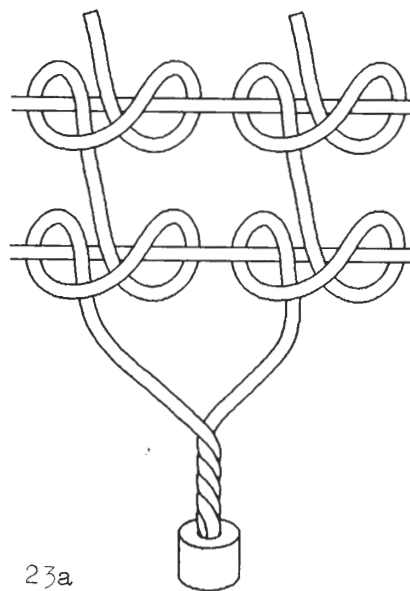
20b



21

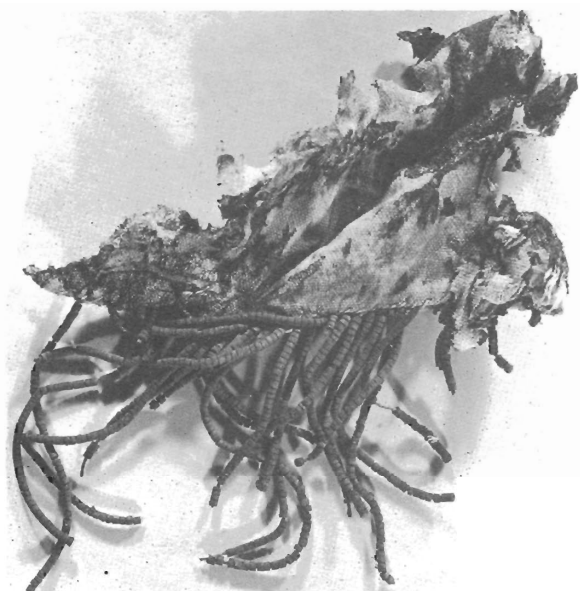


22

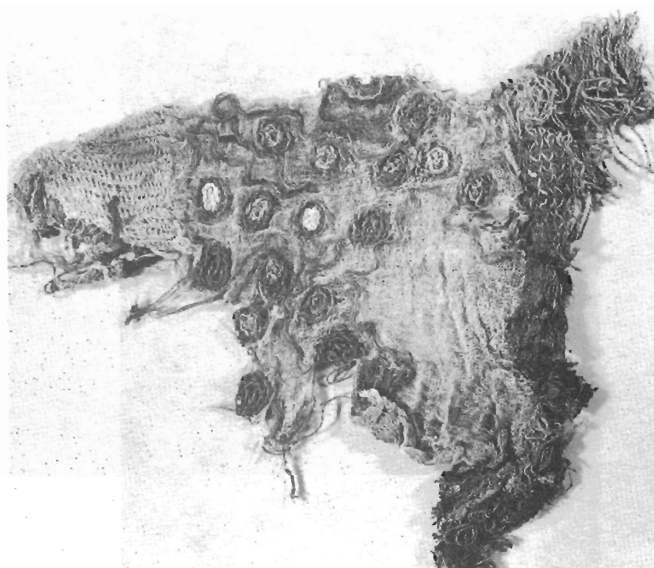


23a

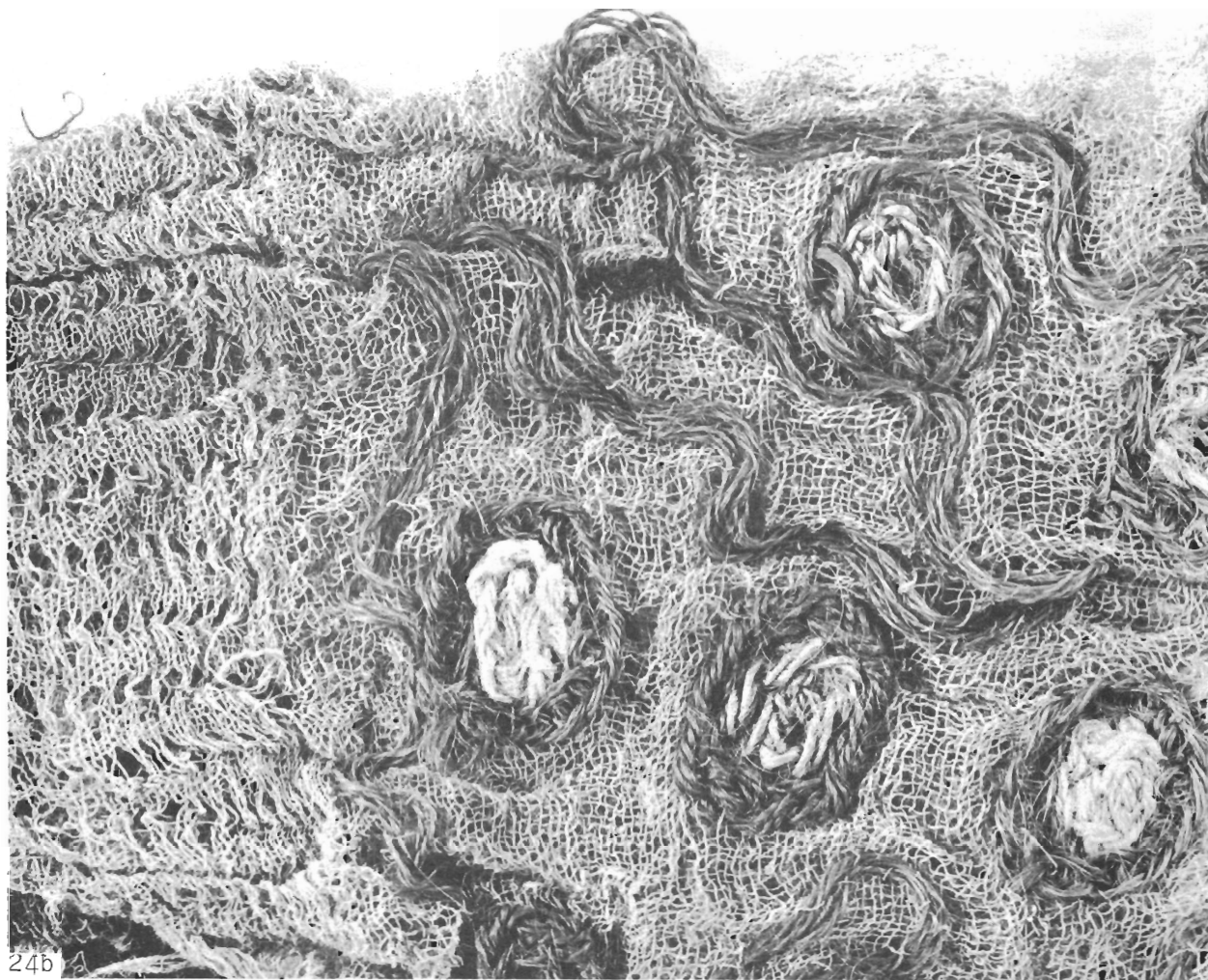
Plate XXIV. Fig. 20a, 19C; fig. 20b, attachment of feathers to 19C; fig. 21, attachment of feathers to other areas of 19C (left) and 3F (right); fig. 22, design 19E; fig. 23a, attachment of fringe cords to holding cords 19P. See Key to Illustrations.



23b

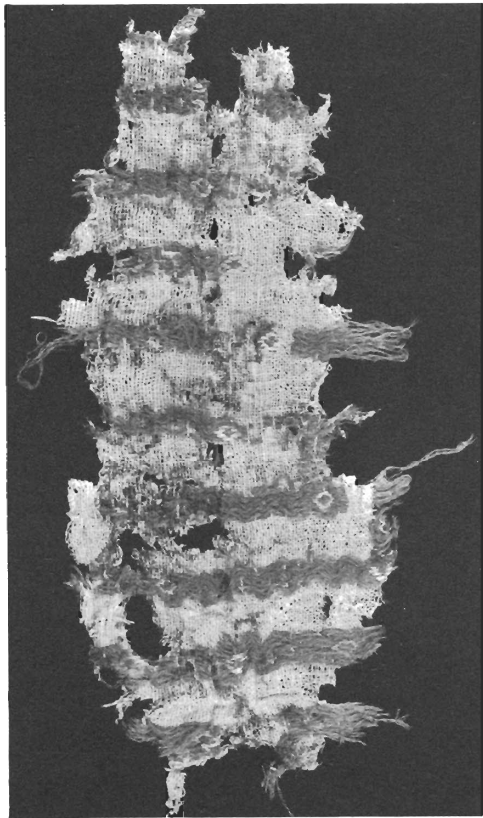


24a

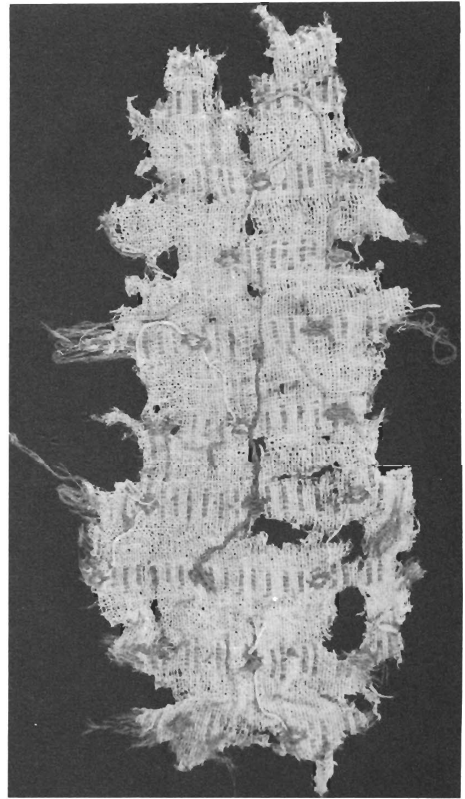


24b

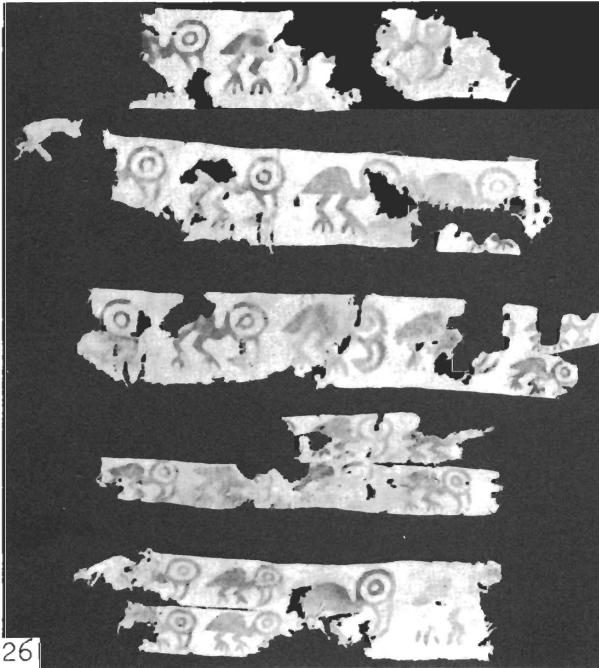
Plate XXV. Fig. 23b, 19P; fig. 24a, 19H, sleeve warps horizontal, tunic (left) and border warps vertical; fig. 24b, detail of 19H.



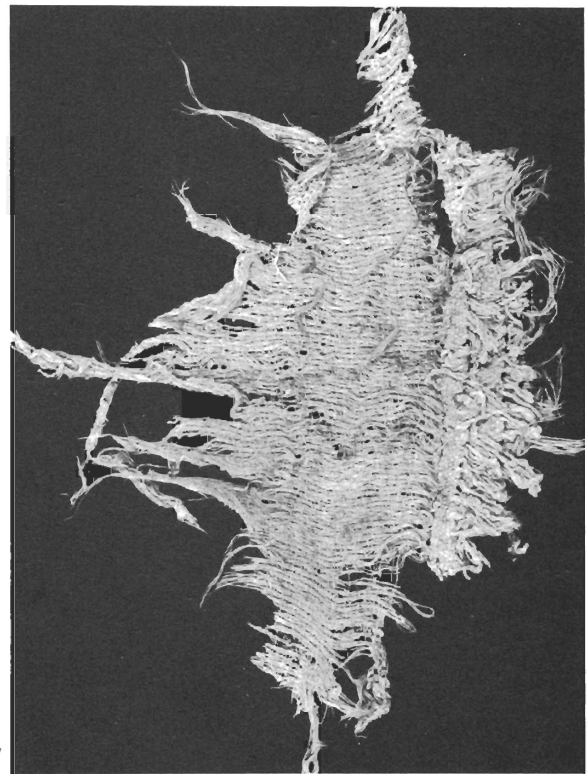
25a



25b

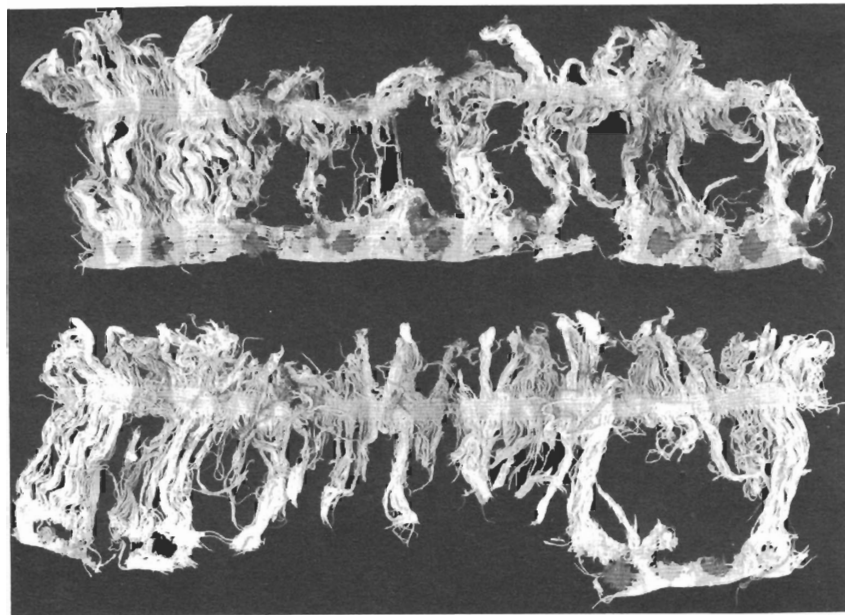


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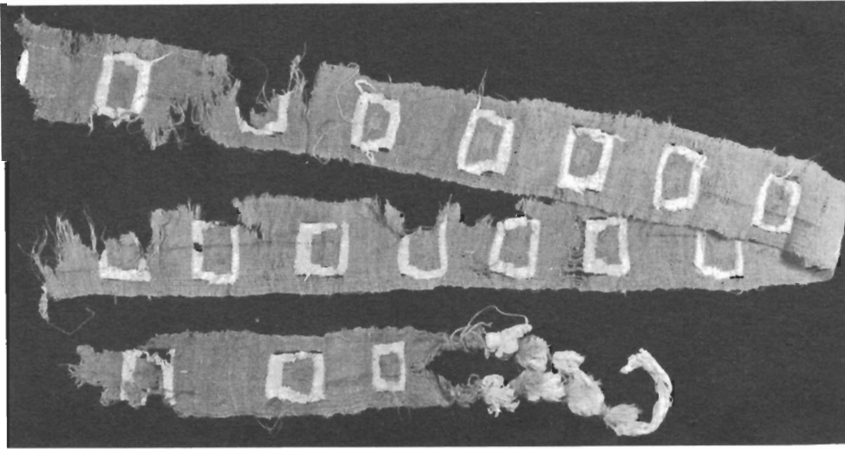


27

Plate XXVI. Fig. 25a, 32A front; fig. 25b, 32A back; fig. 26, 28A, warps horizontal; fig. 27, 32C (fringe-band warps horizontal).



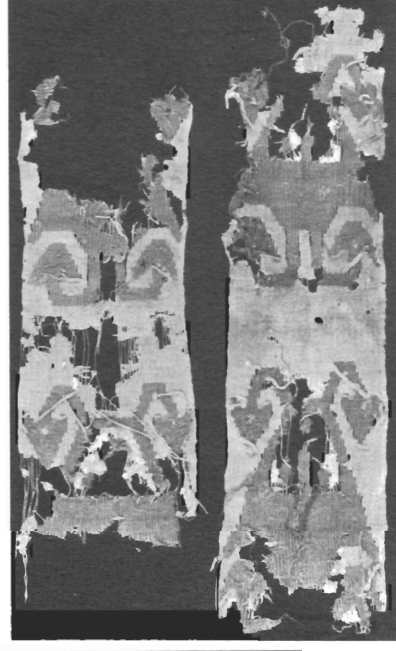
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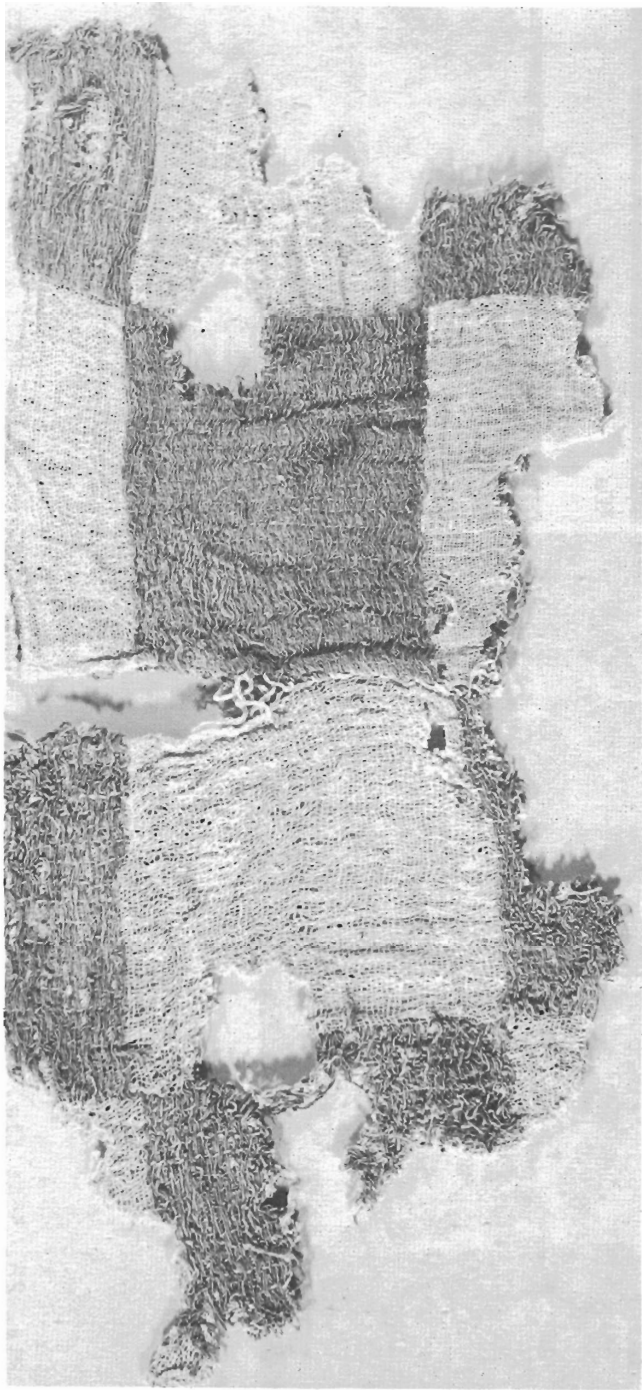
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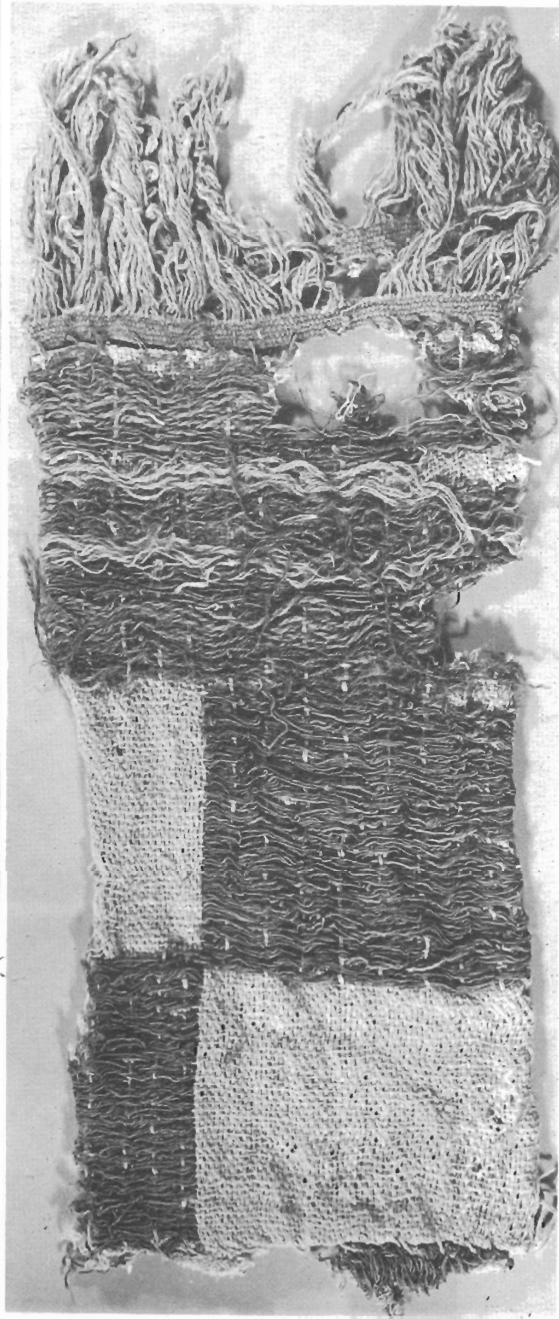
30a



30b

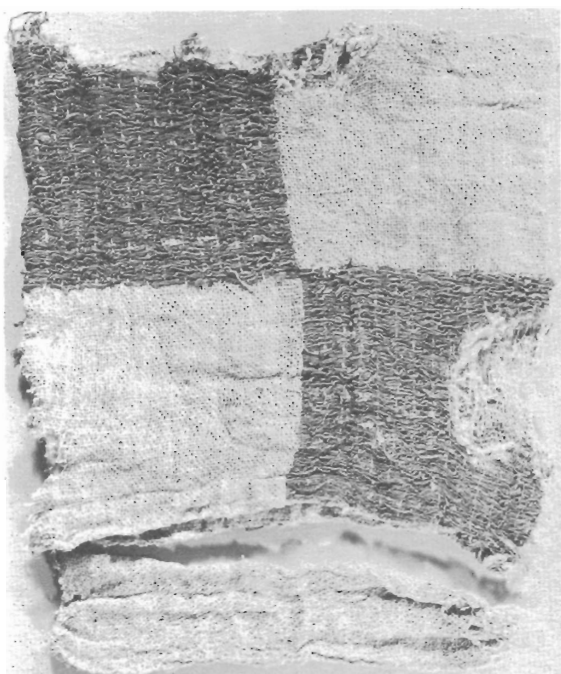


31a



31b

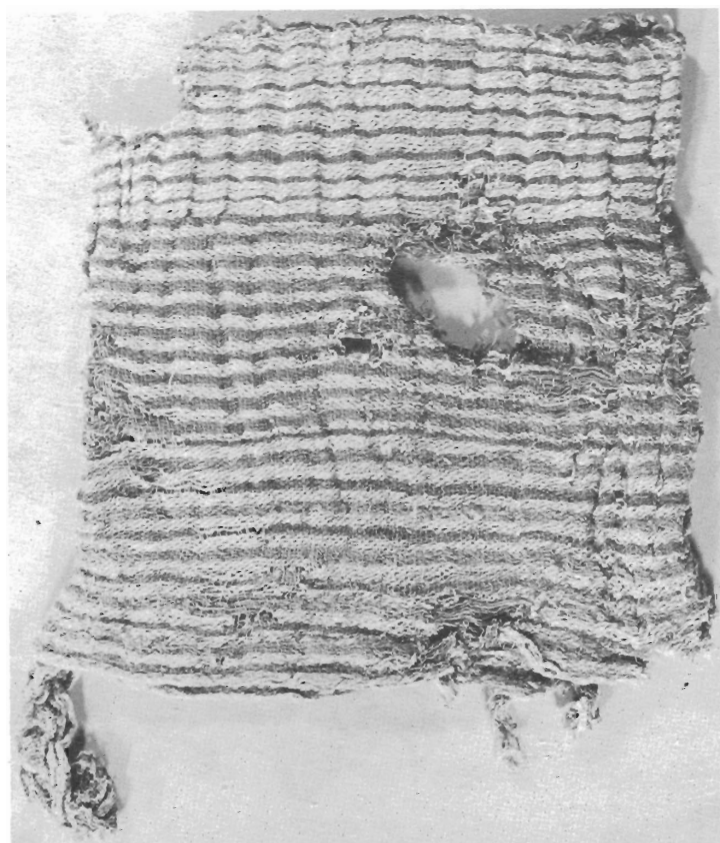
Plate XXVIII. Fig. 31a, 36D folded fragment; fig. 31b, 36D sleeve.



32



33



34

Plate XXIX. Hats. Fig. 32, 36C tie end shown with warps horizontal; fig. 33, 36E; fig. 34, 36F, warps of hat shown horizontally.

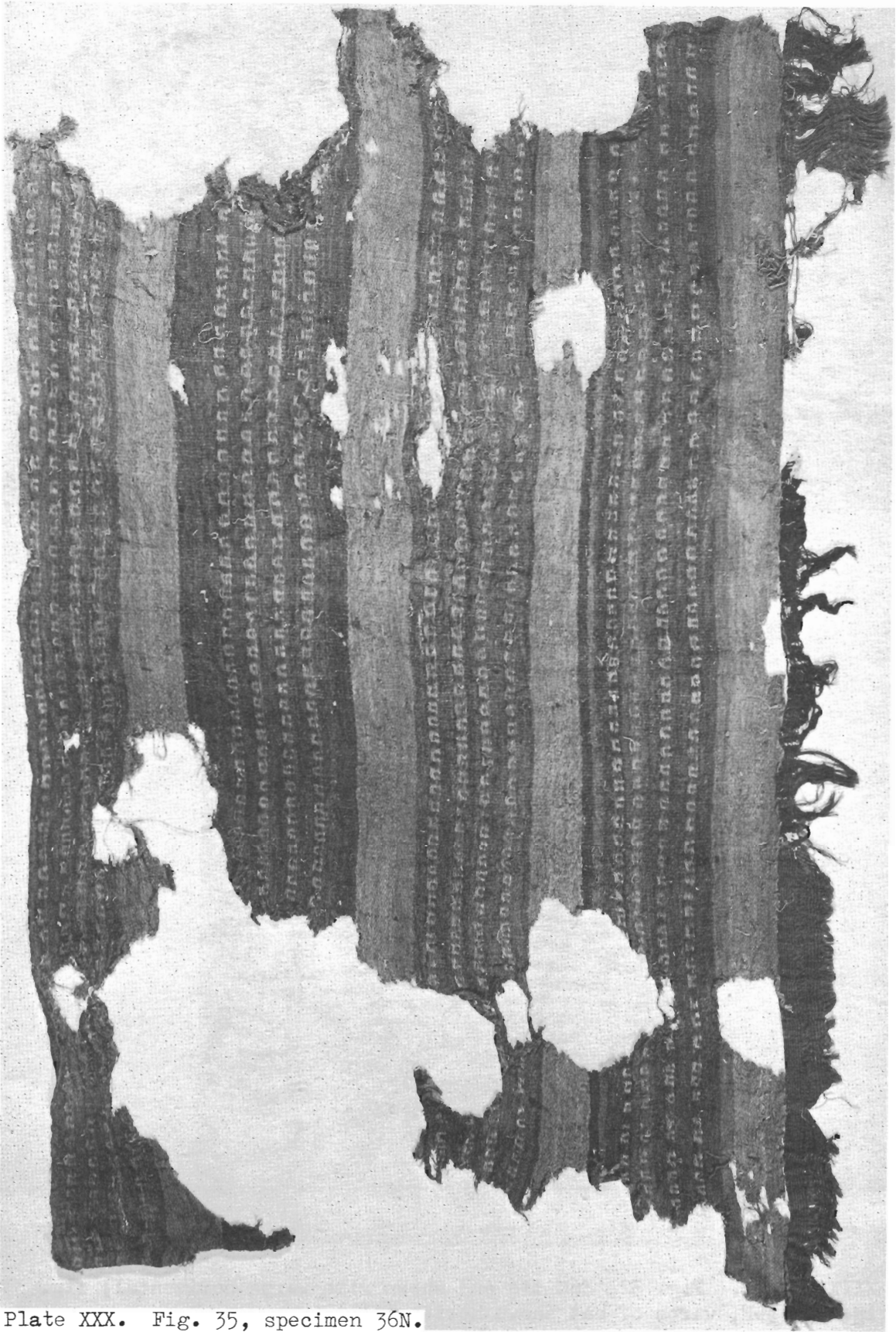
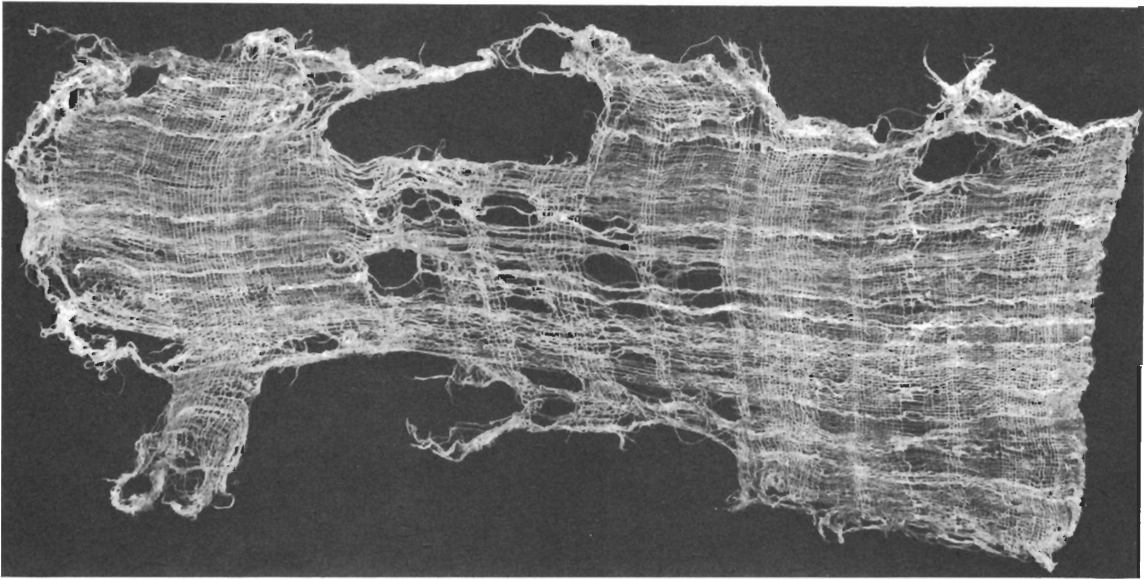
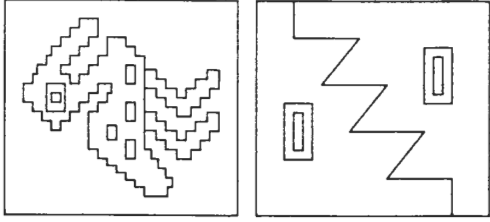


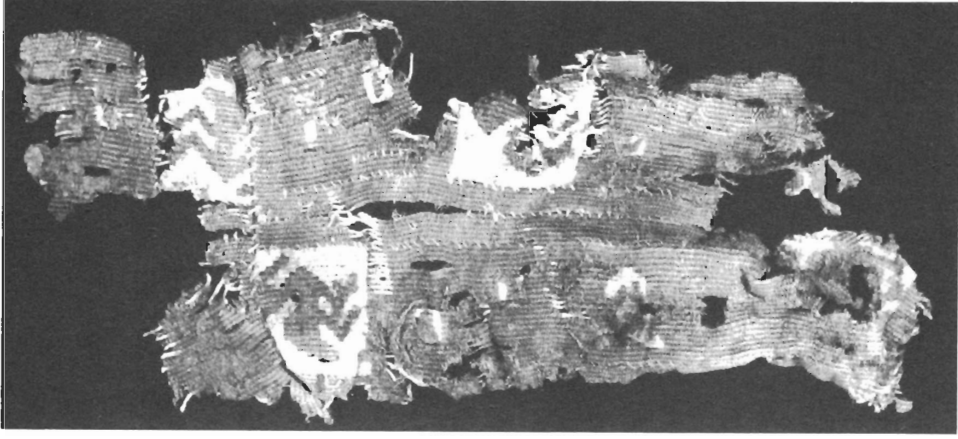
Plate XXX. Fig. 35, specimen 36N.



36

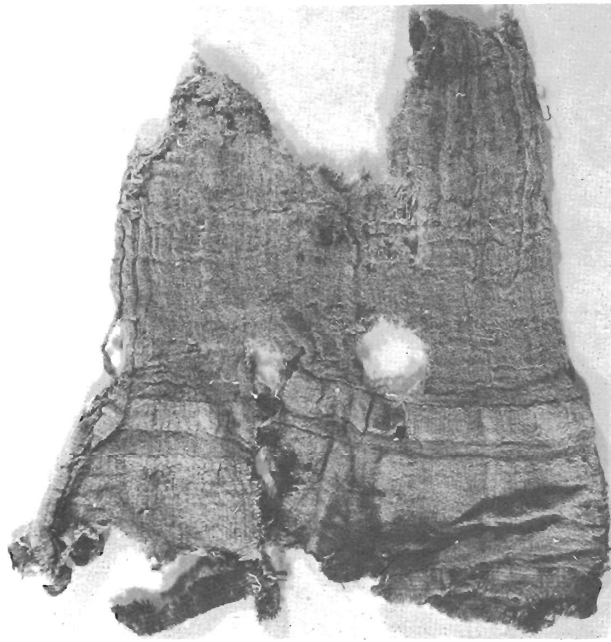


37a

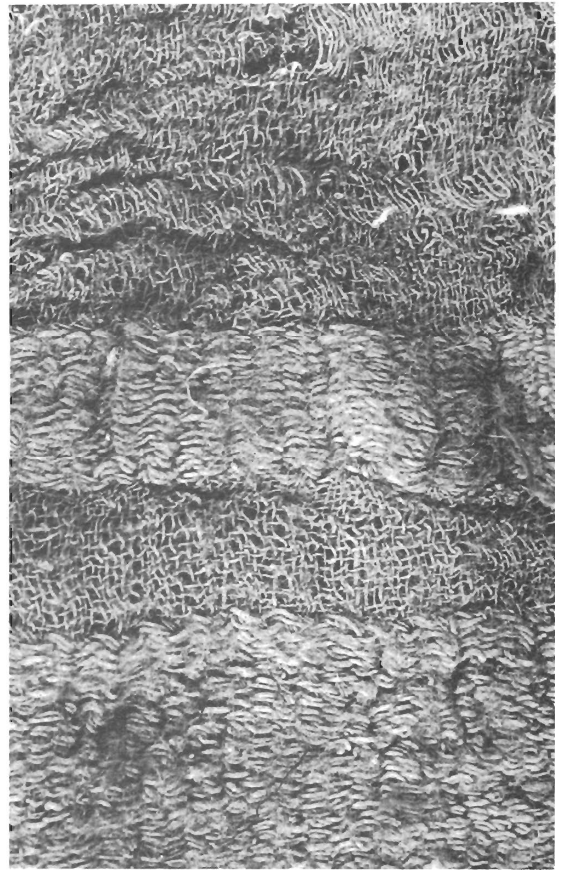


37b

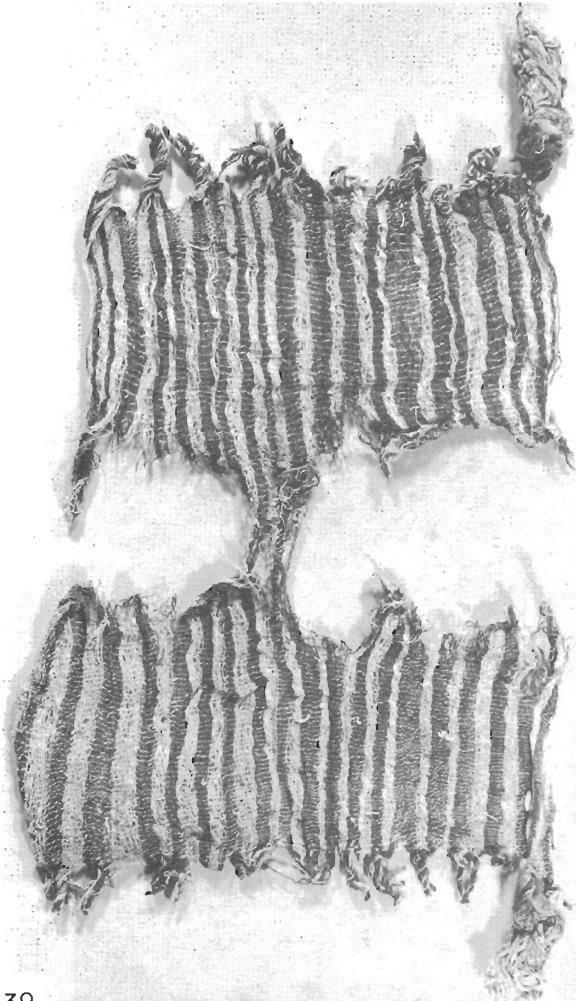
Plate XXXI. Fig. 36, 46A; fig. 37a, design from 46M; fig. 37b, design from 46M; fig. 37b, 46M. See Key to Illustrations.



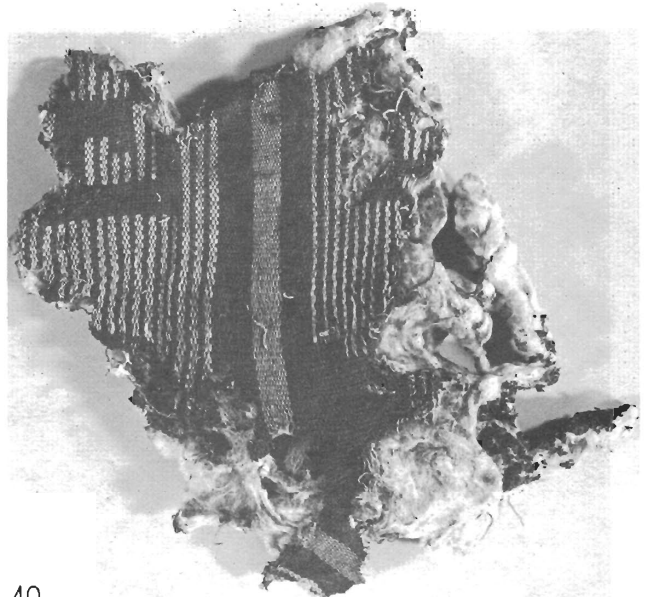
38a



38b

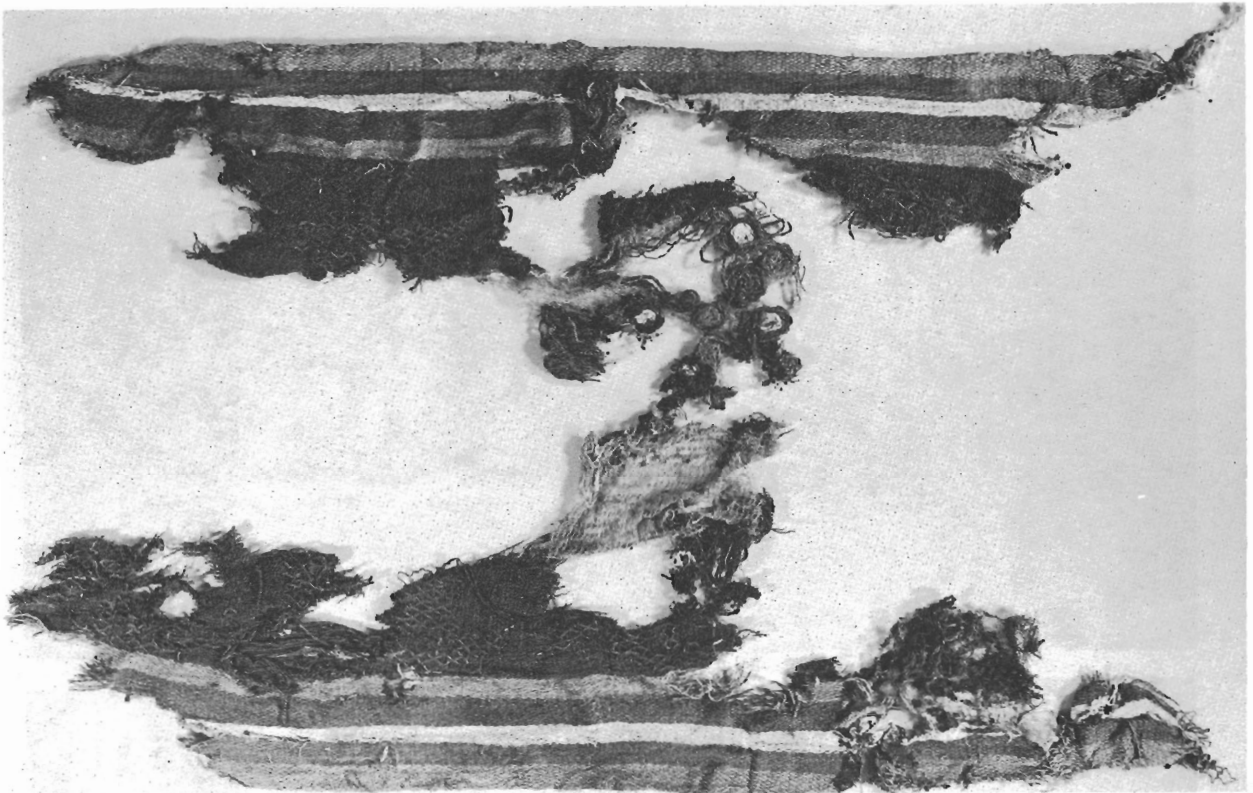


39

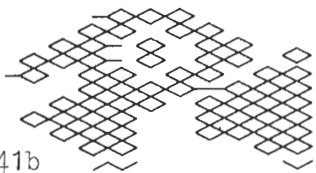


40

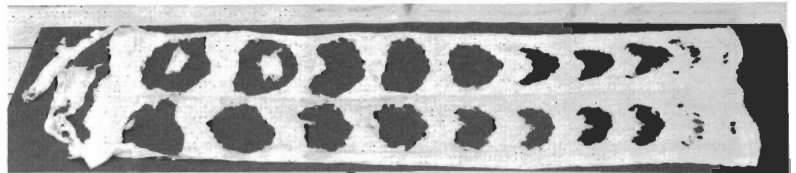
Plate XXXII. Fig. 38a, 54A; fig. 38b, detail of 54A; fig. 39, 54B; fig. 40, 55A.



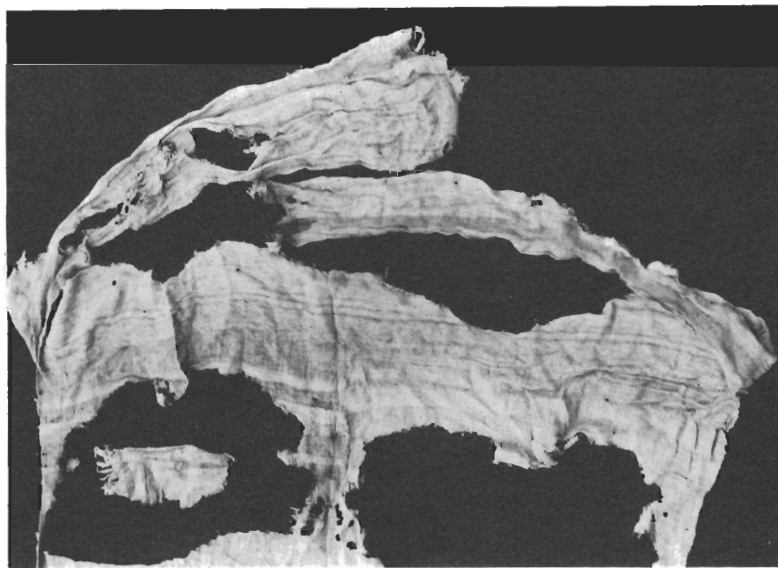
41a



41b

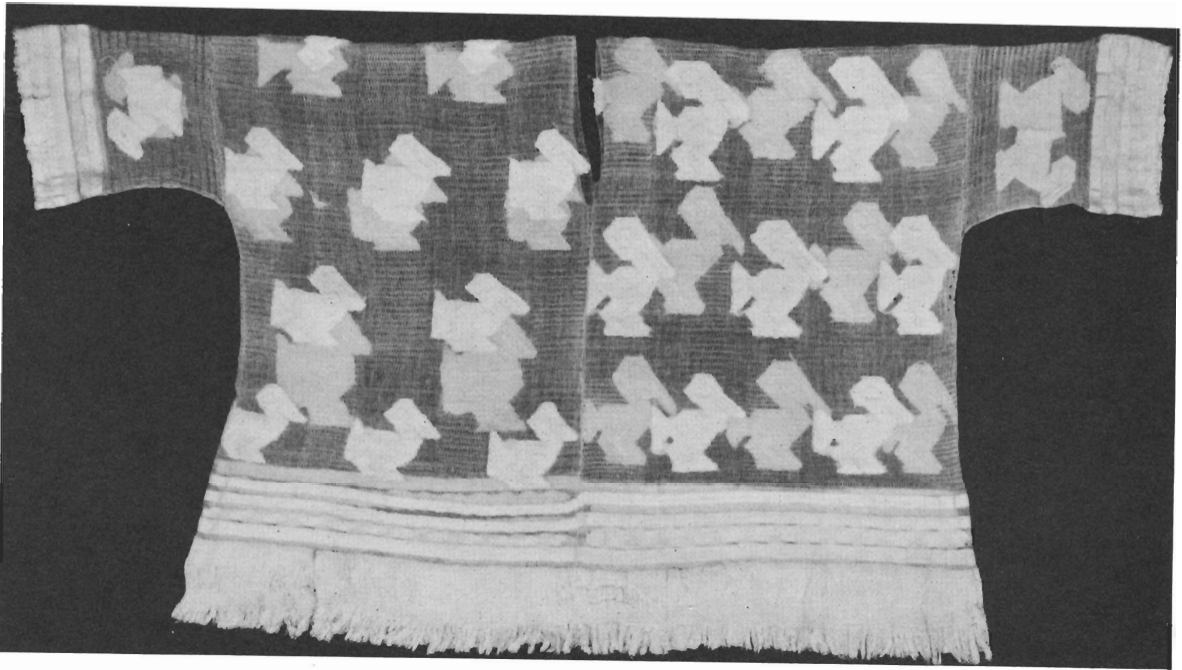


42a



42b

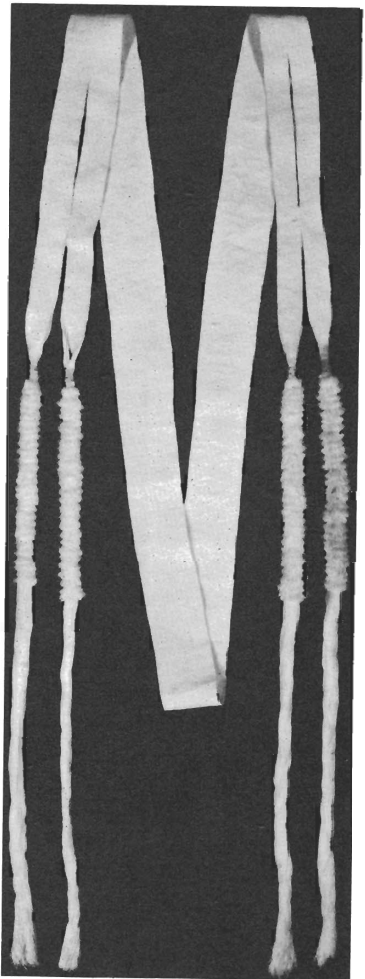
Plate XXXIII. Fig. 41a, 55E; fig. 41b, design from 55E; fig. 42a, full view of loincloth 55F taken at an angle (warps of main webs horizontal); fig. 42b, detail of 55F showing attachment of tie band to loincloth (warps of tie band horizontal), fragment of tie end on lower left.



43



44



45

Plate XXXIV. Garments said to have been found in the Viru Valley. See Key to Illustrations.