

TEXTILES FROM AT-TAR CAVES

PART I: CAVE 12, HILL C

Hideo FUJII*, Kazuko SAKAMOTO**
and Mikizo ICHIHASHI***

Foreword

The archaeological site of at-Tar Caves is located some 30 km southwest of Kerbala, 15 km east-northeast of the Ukhaidhir Palace, lying about 80 km west of the ancient city Babylon (See Fig. 1 of p. 27 in this volume.).

Through several times of surveys since our discovery of this site in September 1969, we have confirmed here about 480 caves artificially hollowed out into a series of developed escarpments of marlstone strata which are stretching along the Bahr al-Milh lake. And we have divided them into four groups, i.e., Hill A, Hill B, Hill C, and Hill D [Matsumoto 1984/85: 14–27].

We see many wadis flowing into the neighboring land of these site groups all the way from the plateaus in Saudi Arabia lying further southwest. A large number of oases are seen along these wadis. These cave groups are situated on a junction of the Iraqi Southwestern Desert which links various coastal areas along the East Mediterranean with Mid-southern Mesopotamia, so that this seems to have been one of the important places utilized for certain purposes since the ancient times by many human groups that moved from west to east or in the reverse direction along the wadis or through the oases.

From March 1971 to December 1977, our party, Kokushikan University Expedition, was engaged in the excavation of Hill A and Hill C of at-Tar Site and also the survey into the natural environment and site distribution in its neighboring southwestern desert areas. According to the radiocarbon dating which was applied to the textiles, as well as leather goods and date seeds, unearthed here so far, it is believed that at-Tar Caves had been first dug out about 1200 B.C. probably for the purpose of self-defence and that they were reused as graveyard from the 3rd century B.C. up to the 3rd century A.D. [Fujii ed. 1976: 11]. In 1976 we examined the upper accumulation of the textile level and the state of burial in the slender corridor (0.7 m wide, 12 m deep) of cave 12, Hill C which leads up to the inner room by way of the existing entrance facing southwest [Ohnuma and Inaoka 1984/85: 28–36]. Next to the corridor, already mentioned, at our sixth excavation ranging from September to December 1984 we completed the observation of the deposits piled up to the primary carved face, which had been the target of ourselves in 1976, in the corridor of Cave 12, Hill C besides the excavation survey of the inner room. Also at this survey, we found various types of chisel traces left on the inside wall, which are similar to those observed on the inside walls of the other caves in Hill A and Hill C. Thus, we have come to the conclusion that this is an artificial cave as well. Among the sand layer above the crushed stones piled up on the primary carved faces of the corridor as well as the inner room, we have found some human mandibles and vertebrae accompanied with textile fragments and several pieces of leather with sewn traces on them. This state of accumulation coincides with those which have been observed in the previous excavations, respectively. It therefore signifies that the currently unearthed burial belongs to a certain period later than the caves had originally been hollowed out.

* Professor, Director, The Institute for Cultural Studies of Ancient Iraq (=ICSAI), Kokushikan University, Tokyo

** Visiting Scholar of ICSAI, Kokushikan University, Visiting Specialist of the Ancient Orient Museum, Tokyo

*** Visiting Scholar of ICSAI, Kokushikan University

The expedition has already published a preliminary report on the archaeological textiles discovered in the inner room of this cave [Fujii et al. 1984/85: 246–251]. And the analytical results and comments concerning these textiles were published in AL-RAFIDAN Vol. VII, 1986 in Japanese [Fujii and Sakamoto 1986: 37–54, Pls. 14–19].

On the occasion of publishing a standard of researches into the specimens uncovered at AT-Tar Caves, as shown below, we have decided to handle all the data from the inner room inclusive of its latest examination data here, since we feel it necessary to settle the correlation of the data from the inner room with those from the corridor for the full understanding of the characteristic feature of Cave 12, Hill C. The textiles to be reported here are the accompaniments for burials. Cave 12, Cave 16 and Cave 17, Hill C have yielded the textiles in which at-Tar features can be observed in nearly original state. Cave 12, Hill C consists of corridors and a inner room, where individual characteristic textiles have been uncovered. Cave 16, Hill C predominates over others in number of various sorts of textiles. Cave 17, Hill C contains the ones which are common to all these cave textiles. By means of our thorough investigation of the textiles coming from Cave 12, Hill C, we were able to grasp the characteristics of H-shape pattern, tree and flower design and Type A-2 pile textiles out of such representative textiles there as H-shape pattern, tree and flower design, human-pattern, chequered-pattern and Type A-2 pile textiles. We have attempted our efforts to the understanding of these outstanding Cave 12 textiles through the comparative studies of them with the other textiles from some other at-Tar Caves and the ones coming from some sites in the east coastal areas of Mediterranean Sea. Our report will deal with an overall comment covering all the textiles uncovered from the three caves, Cave 12, Cave 16 and Cave 17, Hill C, and all excavated caves, Hill A, at-Tar in order.

I. Methods of investigations

1. Identification and choice of representative specimen

In order to approximate the textile fragments unearthed as close to their original state as possible, The identification work was practiced by us that the fragments of the same origin were assorted and/or allocated in accordance with material, thickness, twist count, twist direction of the thread, structure, thread density, thread-spacing, production technique, color and design of the fabric with care taken to their state of excavation as well. Besides, pile textiles must be treated in the light of the specific conditions given below.

Among individual fragments of pile textiles, the following peculiar aspects different from non-knotted pile yarn textiles are observed:

- (1) Some fragments are provided with warp threads of different twist directions in one piece.
- (2) Some fragments have a great variety of warps and wefts in thickness, thus causing irregularity in ground density in one piece.
- (3) Some fragments use two-ply warp threads twisted with same material and color, and other two-ply warp threads (grandrelle yarn)⁽¹⁾ twisted with different materials and colors in one piece.
- (4) Some fragments sometimes use weft threads of different kinds of materials and colors in one piece.

The presence of the above (3) or (4) is not readily detectable at the finished appearance of the pile textile since it is concealed by the pile tufts and/or weft elements.

In trying to identify such small fragments while strictly checking their thread thickness, twist count, twist direction, thread density and thread-spacing, we may have to treat some textiles of supposedly the same origin as utterly the ones of different origins. In the meantime, if we go on identifying the pile textiles with attention concentrated on the above features peculiar to pile textiles, our concern over the matter is that we

tend to identify resembling textiles or same-quality textiles of plural sources as a single fabric.

Every cave has its own consecutive 'Textile Numbers' given to each group of the individual fragmentary specimens which are identified as the same textile, respectively. From among the fragments thus identified so far, larger and better-preserved cloth pieces were picked up as individual representatives, the numerals of which resulting from measuring size, color, thickness, material, thread thickness, twist direction, twist count and thread density were recorded as data.

Hence, on 'Al-Tar I, AL-RĀFIDĀN Vol. I', we only mentioned the mere measurement and classification of the fragmentary specimens. So they are different from the research method published here, since they had not been subject to the textile research method mentioned in this chapter. Ever since the examination of the textiles from the inner room, Cave C-12 [Fujii and Sakamoto 1986: 37-54, Pls. 14-19; Fujii and Sakamoto 1987: 215-231, Figs. 68-86; Fujii et al. 1987: 131-140], we have been examining all the specimens from at-Tar under the new research method.

2. Structure, tapestry weave and thread-spacing

There are three kinds of basic structures in textile weave such as plain weave⁽²⁾, twill and satin. Further, they branch into various sorts of weave structures, where the way warps and wefts are intercrossed is altered. In the report already published [Fujii et al. 1982/1983: 91, Fig. 2], we used to have individual names on separate variations in classifying the structures of the uncovered textiles. From this time on, however, the basic structure of the cloth is to be given first. Its variation is to be described, if necessary, for example: Variation of plain weave, warp 1, weft 2 (Fig. 1).

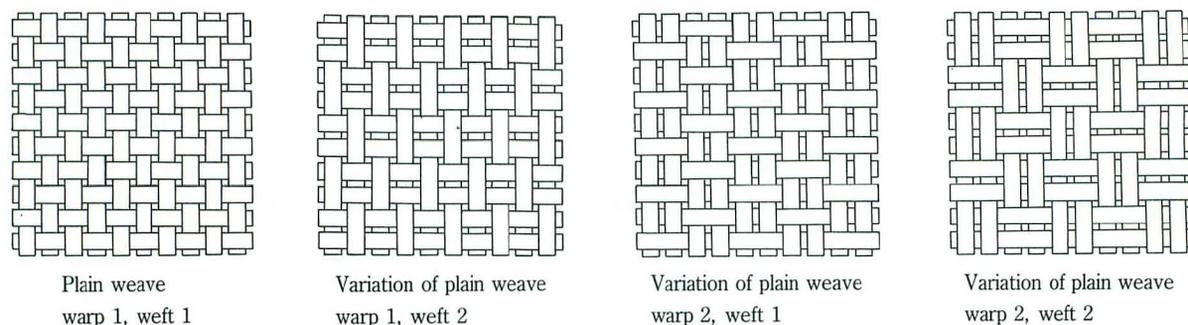
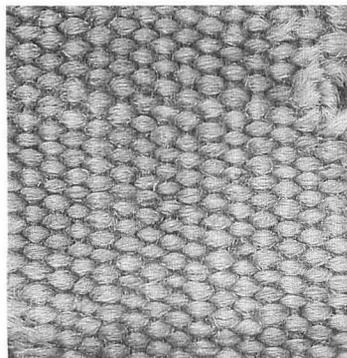


Fig. 1 Structures of plain weave

Tapestry is a weave technique to produce a pattern by carrying repeatedly forth and back the weft threads in accordance with the pattern. So, the term 'tapestry' is not given to the one in which weft threads continuously pass from one selvage to the other in a horizontal way, even if it is weft-faced. In describing the tapestry weave technique, its basic structure and thread-spacing of the weft elements are to be denoted.

Thread-spacing: the interrelation among warps and wefts is the term to designate the state of thread created on the cloth surface when the cloth has been ready, since the value of 'thread density' only is not sufficient. This is because the state of warp or weft caused on the cloth surface has something to do with that of each thread diameter and thread density. So, we have to be attentive to the spacious extent of thread, i.e., from one warp to another or from one weft to another. To denote this, we have thus picked up the following three terms from among the I. Emery Terminology [Emery 1966: 76-7]: weft-faced type where the wefts predominate over the warps; balanced type where the warps and the wefts are well balanced; warp-faced type where the warps predominate over the wefts (Fig. 2). The cover factor value is to be added to them, if necessary [Fujii ed. 1980: 78].

Type 1



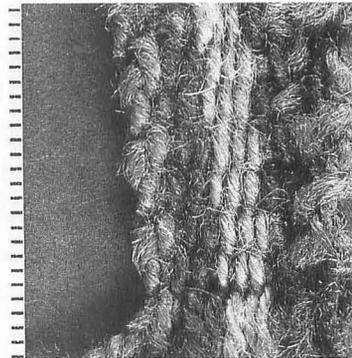
Weft-faced

Type 2



Balanced

Type 3



Warp-faced

Fig. 2 Thread-spacing from at-Tar examples

II. Basic Characteristics of Weave Technique

1. Thread spinning

The threads constituting at-Tar textiles are mainly of wool and hair. Some others are of cotton and flax or hemp. In particular, wool thread spinning technique is excellent. Here, we have found the fabrics where surprisingly fine threads are used. One of the finest threads is 0.12 mm in yarn diameter (C-17, IV-MK-1428) on which considerably strong twisting of 10–14/cm is worked. Such fabrics as are composed of fine strongly-twisted warp and weft elements are not so fluffy, but are superior in airy quality. As for thin fabrics, their warp and weft threads range from 0.15–0.3 mm in diameter, among which the ones of 0.2 omm in diameter are very common. These thread thicknesses are all in uniformity. This is probably because the raw material of wool had been very good in quality. The microscopic examination ($\times 500$) has concluded that many of them are of about 15 μ fibers with some 30% mixture of 20 μ fibers in them (C-12, Textile 14, C-16, V-72-1).

The values which have been converted into the common yarn count (metric) use at the present time are shown below [Owari Textile Research Institute, Aichi Prefectural Government ed. 1985: 77–82]:

Yarn diameter	Converted Nm
0.15 mm	app. $\frac{1}{72}$
0.20 mm	app. $\frac{1}{40}$
0.30 mm	app. $\frac{1}{18}$

- Notes: (1) The diameters of warps and wefts are obtained by 25-fold magnifier.
 (2) The relation between yern diameter and yern count is given in the following equation:

$$\text{Yarn diameter (mm)} = 25.4 \div D$$
 [Example: 0.15 (mm) = 25.4 \div D, D = 169.3 threads/1 inch]

$$D = K\sqrt{840 \times Ne}$$
 Ashenhurst's equation

$$Ne = Nm \times 0.591$$
 Conversion equation for yarn count
 D: Number of threads placed tightly without overlapping in one inch
 K: Constant decided by the type of fibers (worsted: 0.90)
 Ne: English cotton count
 Nm: Common yarn count

The frequent use of such fine threads as above quite naturally makes us consider that skilled craftsmen were engaged in spinning and weaving work. In the second place, there is the method of mixture-color spinning applied here for the production of neutral shades. The technique is to spin thread by changing the

ratio of the material wool which has been dyed into two different colors. Its mixed color change is more natural than that of separately dyed threads. Some caves have yielded the evidences in which we can learn various color gradation (Textiles 2 & 3 from the C-12 cave, C-82, C-301-1-a from the F-5 cave (Fuji ed. 1980: specimens 62, 66))

2. Weave alteration and warp crossing

Weave alteration means that in process of weaving on the loom, the weave system is turned from plain weave into its variation (warp 2, weft 1), from variation of plain weave (warp 1, weft 2) into its variation (warp 2, weft 1), or from twill into variation of plain weave (warp 1 or 2, weft 1) for some purpose, and sometimes vice versa. We often see warp threads cross on the alteration line of the weave system, which is termed warp crossing. This is frequently observed in altering the ground and pattern structures, which occurs in association with the warp lifting order. At-Tar has the following types of weave alterations. And Type A, Type B and Type C contain such warp crossing (Fig. 3).

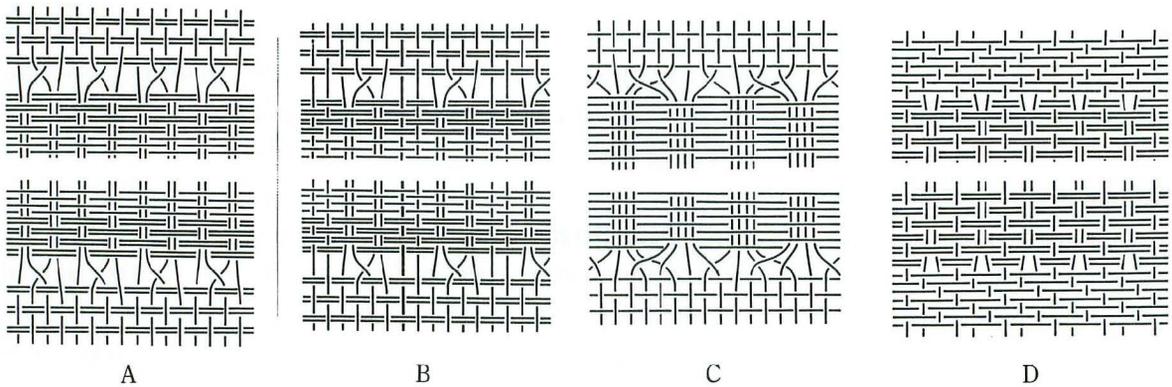


Fig. 3 Weave alteration

Given below is the presumable reason why they altered their weave procedures; textiles vary in weave technique according to their uses (tunic, mantle, veil or scarf) at the time when their production program has been drawn up: some fabrics require a smooth, soft feel, and others, a slightly hard feel. The mantle and the scarf must be good in soft, draping quality. It is essential that the pattern and ground textures are well balanced there. Passing of many weft threads into warp threads on the plain weave where a single warp alternately goes up and down will surely make the portion thicker and harder in touch. This is caused by the increase of intercrossing and interlacing points. Therefore, the adoption of two or more warps instead of a single warp, as it is often observed in pattern portion, will lessen the above problem, resulting in keeping balance between ground and pattern in texture and giving the cloth a soft feel. It seems that this is one of the reasons.

At-Tar is abundant in specimens which use warp crossing in weave alteration. That may be due to the following reason besides warp lifting order:

When the cloth is woven from gauze-like ground portion of less weft density with the use of thin warp and weft threads successively into the pattern portion of thick weft density, the weft threads worked into the beginning of the pattern portion will come to be very unstable, and finally get out of shape. To avoid its occurrence, it is necessary to take a certain readily stoppable measure at the first row of the pattern portion, that is, the measure of crossing system. This is the technique to be required when the difference between the weft density of the ground and that of the pattern is large.

3. Two-weft picking method

This is the method in which two weft threads are used at a single shed to give cloth a smooth, soft touch. Thus, the next several sorts of two-weft picking methods at the single shed are considerable:

- (1) The weft threads which are wound around two separate shuttles in advance, are to be passed through twice in the same direction.
- (2) Each weft thread is passed through from both sides of the fabric toward each opposite selvage.
- (3) As preparatory work prior to weave operation, two weft threads in pairs are wound around a shuttle without their twisting together. And then paired wefts, which are unwound at proper length each time, are passed when the loom starts its operation.

Some other methods than the above are also presumable since the weave work was conducted by hand. Through closer examinations of these fabrics, however, we have come to deduce the following methods:

The methods, (1) to (3), usually require two or more weavers when a broad cloth is woven. It demands handing-over of the weft thread at halfway.

Method 1: The work of passing the thread ball or shuttle from side to side at a single shed twice would be troublesome. Quite naturally, it may take a lot of time to do this. The weft threads which are passed like this way are lying rather parallel to each other. Even if the weft of the second pick covers that of the first, it is easy to set them back to parallel by pulling them a little.

Method 2: The work of handing over the weft here takes less time than that of Method 1. Weft threads which have been passed often cross on the way [Bergman 1975: 25]. If the threads cross with others, they would never turn round. In Method 2, the weavers positioned side by side pass the threads from each opposite side at the same time: next the weavers who receive the threads pass to their own side, and then send them back to each opposite side again at the next opening. Here, a single weft thread will be returned. It means that each weft turns back at the selvage one by one. (However, in most of the uncovered specimens, we see the repetition of the weft threads paired together at the selvage.) Method 2 is different from most of the specimens uncovered here in this respect. Textile 14 of Cave C-12, the details of which we explain in Chapter IV, does not use Method 2.

Method 3: The weft threads in pairs are wound around the shuttle or into the thread ball during the preparatory work prior to weave operation. It can be easily handled by even unskilled weavers. The cloth made by Method 3 often has such twist (Pl. 30-b) as is not observable in those by Methods 1 and 2. We call Method 3 the paired weft technique. This twist was often observed in H-shape pattern cloth (for example Textile 14). The weft threads are ready for work in parallel condition while they are wound from two spindles into a thread ball or a board-shuttle. Then, weave operation will be started. The weavers are engaged in the weft passing after unwinding it from the thread ball or the board-shuttle as soon as the shed is opened on the loom. It seems to have been a customary work. The presumption is that the weavers had been watchful about the tension or slack to be caused on the weft, but had not noticed the weft twist. From the textiles uncovered here, we can learn what they suggest to us about that.

When they wind the thread ball, the core is held by hand. And the thread makes a circle, going round the core. When it is unwound, the thread ball is also held by hand, but the thread to be unwound is usually pulled out without running along the former circle course. The work of its getting back along the former course is considered unnatural. Presumably, they had used some board-like shuttle notched at both its ends rather than the thread ball. It is probable that this sort of tool made it easy to pass the weft thread, thus resulting in the solution of the unwound direction of the thread which had already been wound as well as its twist condition. In this case, the tool operation is considered constant in direction, where it is certain by the experiment that the threads are twisted when they are unwound. The twist is so loose that

frequency of weft crossing is low. The twist direction of this sort is opposite to that of single yarns, and it is always constant. Consequently, such sort of twist never occurs in Methods 1 and 2.

4. Specific technique of starting border

Starting border has a specific technique (Fig. 4). Warp turns at the starting border.

It is not clear how this technique had been taken up. It seems to us that some device had been put on the loom, or some tool like a tablet had been applied to the starting border prior to the threads setting on the loom [Bergman 1975: 30, Fig. 25]. So, this is the technique different from that of the ground structure.

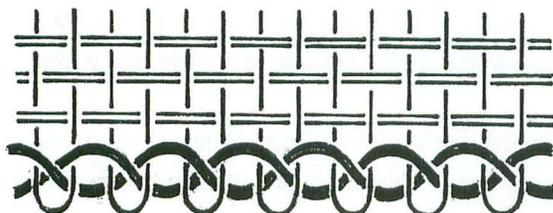


Fig. 4 Starting border



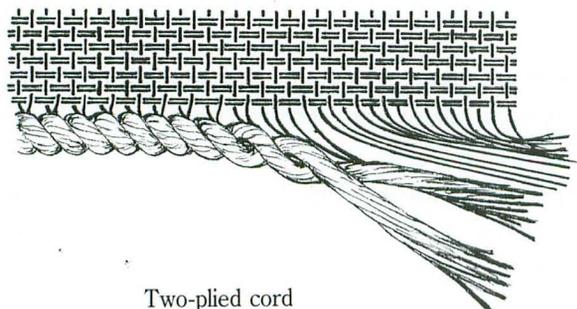
5. Warp finish

There are the following three methods in warp finish:

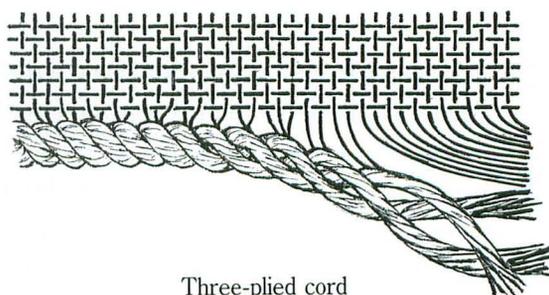
- 1) Fringe
- 2) Folding back and sewing up (hem)
- 3) Warp cord finish

The cord finish is one of the methods with which to treat the warp threads at the cloth edge when the cloth is still on the loom or after it is removed from the loom, which takes the cord shape along the weave end such as shown below (Fig. 5):

First, each set of the selvage cord and a few warp threads are twisted individually in the same direction; next, with the addition of two or three warp threads one after another, they are further twisted in the reverse direction gradually into a cord shape. Be sure to cut these warp threads preliminarily about 3–4 cm in length. With the progress of work, the selvage and warp threads go on twisting together, while gradually replaced by new threads one by one. Consequently the cord gets stable in proper thickness (about 3mm in diameter). At last, having been twisted together with the selvage threads placed on the other side of the cloth, the cord is bundled there with its end stuck into the cloth to have it fixed. The number of the warps to be added there depends properly upon the thickness of the large cloth. Some



Two-ply cord



Three-ply cord

Fig. 5 Warp finish

pieces of cloth uncovered from other caves have six or seven warps added together, whose diameter comes to no less than 5–7 mm. The warp cord finish is commonly composed of two-ply cord. But some cotton cloth is of three-ply cord finish (D-7 C-05-7).

6. Selvage

There are a variety of selvage techniques to fit for the cloth material, thickness and weft density as well as for their association with other portions. That is, the selvages vary one by one when they are used on both sides of the ground, or when they are applied on the edge of the pattern portions.

Given below are four basic types of selvage making methods (Fig. 6):

Type 1: Here, the weft merely turns back at the same weave system of selvage portion as that of the ground. The one in which several warps at the selvage are made into a cord is also included here.

Type 2: The wefts repeatedly turn back several times at the selvage edge where several warps are used, and then the wefts get back to the ground. Not only the adoption of a single selvage warp but also that of a cord into which several warps are set belong to this type.

Type 3: Here, in addition to the simple return of the weft at the selvage, additional threads are woven there to reinforce the selvage in more complicated manner. They are very thick, consisting of several numbers of warps or wefts put together, and are useful in preventing selvage damage and reinforcing weft turning-back portion.

Type 4: The additional weft threads at the decorative selvage portion do not continue to those of the ground, but are joined together by means of dovetailed tapestry. This sort of method functions as reinforcement and decoration of the selvage on the ground (C-12, Textile 2).

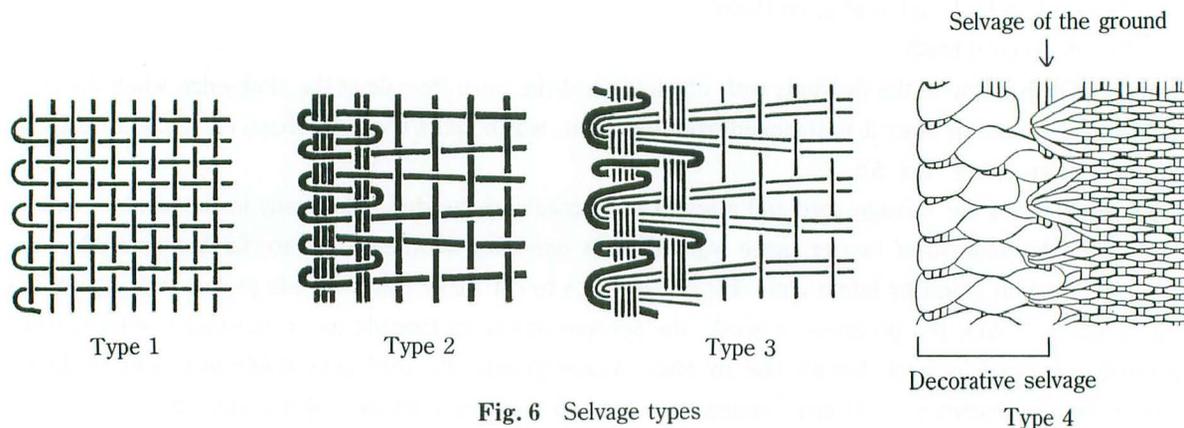


Fig. 6 Selvage types

7. Pile knot

The following five kinds of pile-knotting methods are to be seen among the pile textiles unearthed in at-Tar (Fig. 7):

A-1: In principle, a single or several pile threads encircle each adjacent warp as an axis and the resultant pile tufts come out on one surface from between each pair of warp threads, which is made into a unit.

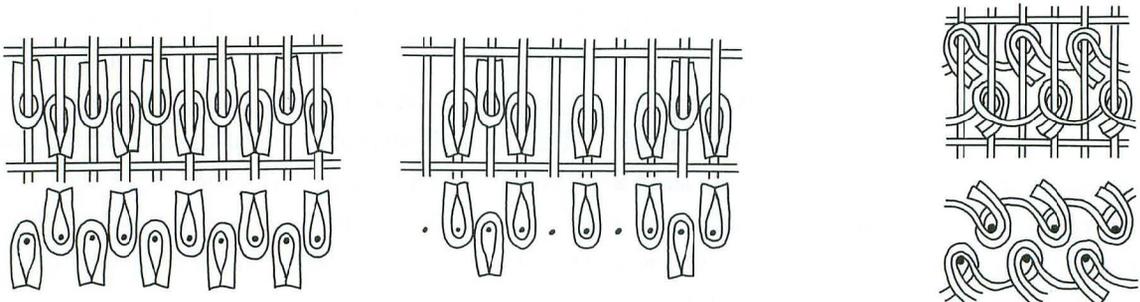
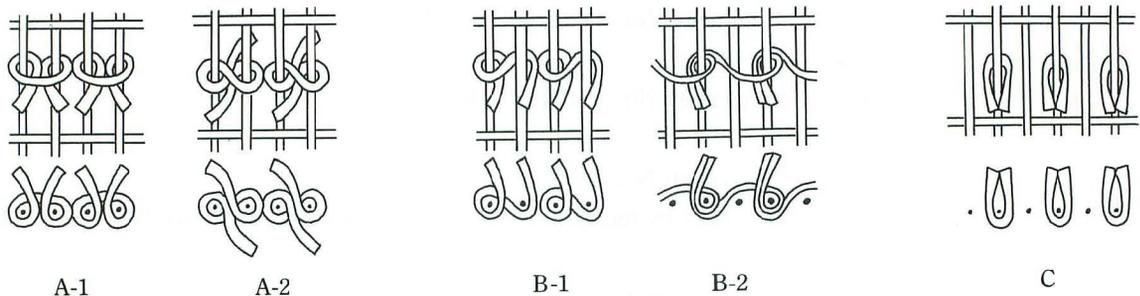
A-2: In principle, a single or several pile threads encircle each adjacent warp as an axis and the resultant pile tufts appear on both surfaces from between each pair of warp threads, which is made into a unit.

B-1: In principle, a single or several pile threads encircle a single warp as an axis and are twisted on the other adjacent warp, thus leading the resultant pile tufts to appear on one surface from each same side of individual warp threads, which is made into a unit.

B-2: In principle, a single or several pile threads encircle a single warp as an axis and are twisted on the other adjacent warp, thus leading the resultant pile tufts to appear on one surface from each same side of individual warp threads, which is made into a unit. In addition, two units of knotting facing the same direction share a single warp. The ones of continuous pile tufts in the loop way are also included in this type⁽³⁾.

C: A single or several pile threads are twisted on a single or several warps, thus resulting in the appearance of the pile tufts on one surface, which is made into a unit⁽³⁾.

Double-faced pile: Double-faced piles have also been uncovered here. They are the ones of their pile tufts coming out on both surfaces of the fabric. We observed double-faced pile textiles knotted with Types B-2 and C. We do not limit them to the ones both surfaces of which can be used as the obverse; the ones whose other surfaces were intended for another use because of the irregular length and density of the pile tufts are also included here.



Double face of Type C

Double face of Type B-2

Fig. 7 Pile-knotting Types

III. Textiles from the inner room

The textiles unearthed here are all fragmentary owing to their having been buried in the sand for thousands of years, whose maximum one is in the dimensions of 150 cm × 75 cm. After all, eleven textiles and a single cabled cord have been indentified from these fragments.

- Textile 1: Small fragments of fine wool textile
Representative Specimen No. T-38 (Pl. 35-a)
- Textile 2: Textile with a flower and tree design band
Representative Specimen No. T-103 (Pls. 27-a, b and 35-b, c)
- Textile 3: Textile with tree design bands

- Representative Specimen No. T-75 (Pls. 28-a and 35-d)
- Textile 4-1: Textile with a dark purple band
Representative Specimen No. T-78 (Pl. 36-a, b)
- Textile 4-2: Textile with black bands
Representative Specimen No. T-71 (Pl. 36-c)
- Textile 5: Black coarse textile
Representative Specimen No. T-72 (Pl. 36-d)
- Textile 6: Brown rough textile
Representative Specimen No. T-56 (Pl. 37-a)
- Textile 7: Yellow brown textile
Representative Specimen No. T-59 (Pl. 37-b)
- Textile 8: Gauze-like textile
Representative Specimen No. T-57 (Pl. 37-c)
- Textile 9: Textile with purple oblong design
Representative Specimen No. T-107 (Pls. 28-b and 37-d)
- Textile 10: Pile textile
Representative Specimen No. T-104 (Pl. 37-e)
- Cord
Textile 11: Representative Specimen No. T-54 (Pl. 37-f)

Now we have obtained the following results by means of careful examinations of the above twelve pieces.

1. Identification and design reconstruction

The identification work, which has been done according to Chapter I, is to be explained here in detail. Many of the fragments are deep yellowish red. This color is specially seen on the large and better-preserved pieces of cloth in Textiles 2 and 3. As the result of our examinations, it has been made known that the deep yellowish red area is woven with a single weft thread in Textile 2, while the same area in Textile 3 is mostly woven with paired weft threads. Thus, it has been proved that all the problematic small fragments of the same color are made of paired weft threads, which have been identified as Textile 3. Fragmentary as they were, these uncovered cloth pieces still had their patterns and colors clearly preserved in the large and better-preserved pieces of cloth. So, it was rather easy for us to identify even very small fragments in relying on their patterns.

4-1 and 4-2 are the textiles with bands woven on the dull reddish yellow grounds. These two are the same binding systems in ground and pattern compositions, nearly equal in warp thickness, and their warp densities are all the same in average. Since 4-2 has a little thicker weft, and its color and width of the band are different from those of the band of 4-1, they have been divided into 4-1 and 4-2; but there is a possibility that they had the same origin.

The details of reconstruction are to be explained only concerning the textiles which were able to be reconstructed.

Textile 2

The reconstruction of the design in Textile 2 (Figs. 8 and 12) was then conducted with much care based on the weave structure and the textile pattern. Representative specimen T-103, which was taken up all together at the time of our excavation and identified into Textile 2, had originally been divided into four main large pieces of cloth, (1), (2), (3) and (4) (Fig. 8). The pieces of cloth (1), (3) and (4) have their selvages preserved behind. Their further study tells us that the selvages of (1) and (4) are different from that of (3) in direction (Fig. 9). That is, it has been proved that the selvages of (1) and (4) are on the same

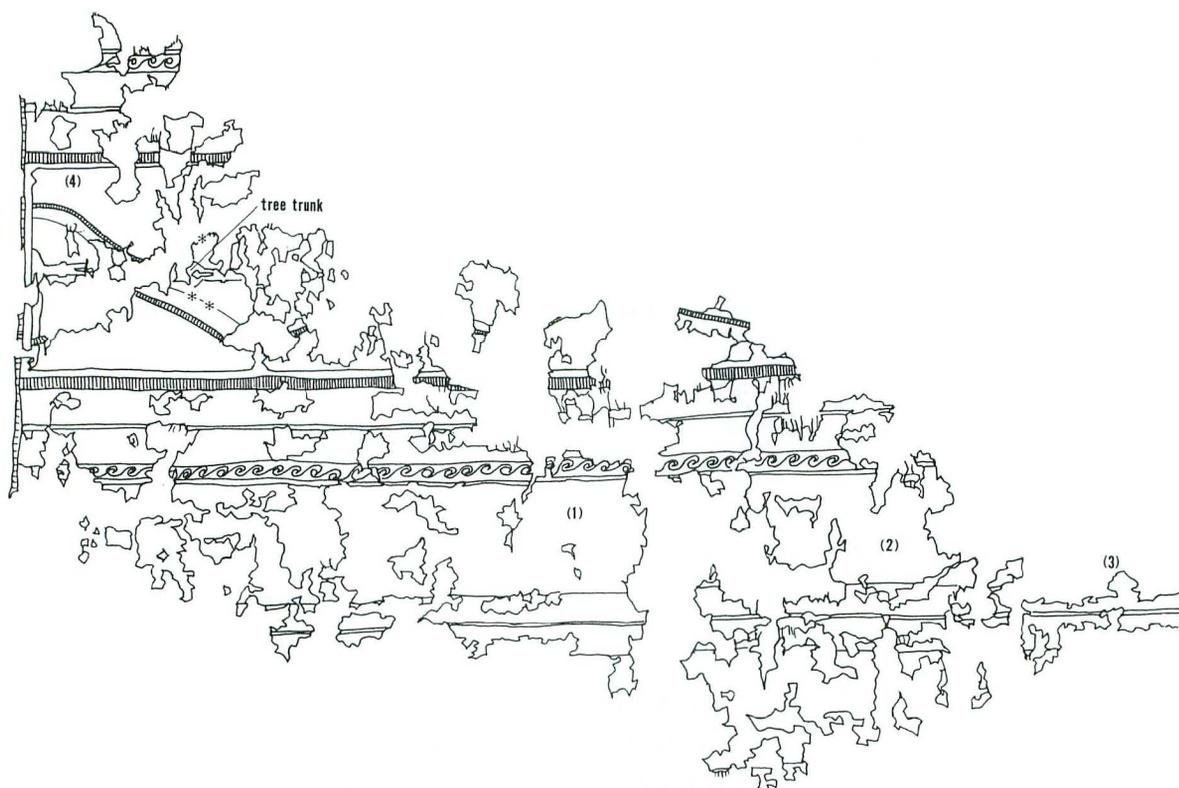


Fig. 8 Allocation of the textile with a flower and tree design band (Textile 2)

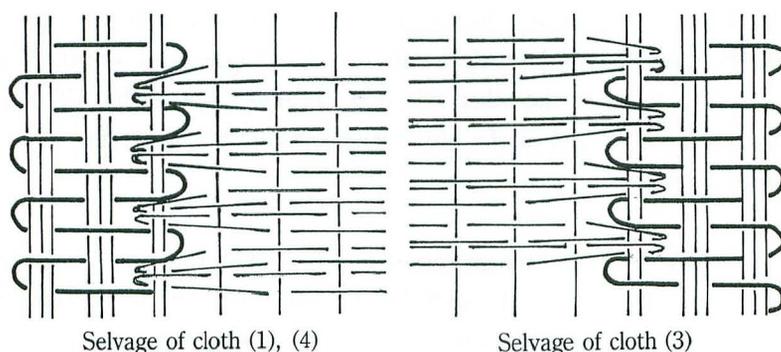


Fig. 9 Selvages of the textile with a flower and tree design band (Textile 2)

line, whereas that of (3) is on the opposite side of (1) and (4). The position of (2) was settled according to the pattern, stripe color, allocation and weft count of stripe. The position of (4) was the most important of all. To begin with, at a close observation of the cloth (1), it contains symmetrical arrangement of some patterns up and down with the central tree trunk pattern (Figs. 8 and 12) as their core placed in the middle (Pl. 27-a, b, 35-b). At the edge edge (*) of the cloth (Fig. 8) there remains an olive thread which is the same color (**) as seen in the wave line including comb (picket fence) pattern (Figs. 8, 12). Thus, it is presumable that the same wave line used to exist along the very edge (*). Second, it is observed that the warp threads in the cloth (1) begin their tilt to the ranges of 10° to 30° as they come closer to the comb-patterned wave line until they turn back inclined toward the reverse way immediately after their reaching the symmetrical axis of the tree trunk. (Pl. 27-a, b, Fig. 12). It is probable that the tilt of the warp threads has been caused by the use of many weft threads with the tapestry-weave technique for the purpose of trying to represent plenty of patterns on a limited area and the use of many non-horizontal wefts

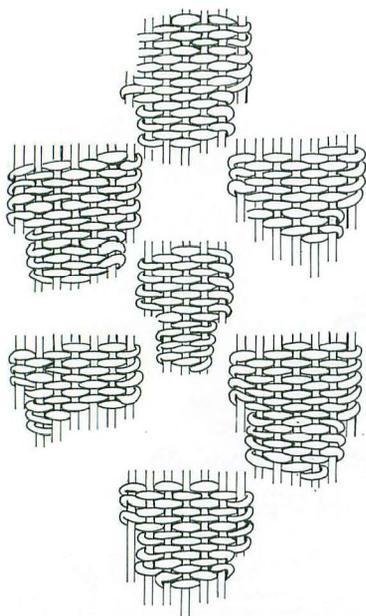


Fig. 10 Weave-method of the rosette (Textile 2)

with the tapestry-weave technique 'Nagashiori' in Japanese.

The warp threads thus go back to the normal position as soon as they reach the tree trunk pattern, from which it is presumable that the similar way of using the weft threads may have been practiced in the reverse order. Such slanting warp threads are seen on the cloth (4), too. Third, the cloth pieces (1) and (4) are both characterized by the representation of the yellow rosettes, that is, the usage of weft threading, where the rosette-weave method enables us to allocate both pieces properly toward a fixed direction. The feature of representing the petal is that the weft threads are always interlaced with the warp threads on one side more frequently than they are on the other side (Fig. 10, upper side each). Thus, in thinking of the aforementioned points so far observed in the some fragments in Textile 2, the cloth (4) may well be positioned as shown in Fig. 8.

Textile 3

As for this textile, two large and better-preserved pieces of cloth with tree design bands on them (Pl. 28-a, 35-d) are not brought into a line in the weft direction, but are so reconstructed as to have the two tree design bands arranged in two rows (Fig. 13). In this case, it was impossible for us to have the design bands continuously lined toward the weft direction, because of the disagreement of the number of the weft threads in the wave pattern bands placed on the both sides of the tree design bands.

Textile 9

In this textile 9 (Pl. 28-b, 37-d), we observed the fragment, in which the remnant of turning weft threads of pale reddish yellow ground still remains along the edge of the dull red purple design area of 7.8 cm in width from the selvage, and the fragment (T-37) where the dull red purple design area with a vivid reddish yellow stripe continues to the ground area in the warp direction. This example coincides with the textiles composed of H-shape patterns and color combination which have ever been uncovered. The textiles with H-shape patterns on them were found accompanied with purple or the like square patterns along the selvages (Pl. 31) [Fujii ed. 1976: Color Fig. No. 47]. So, textile 9 is regarded as the fabric of a H-shape pattern type, whose reconstruction will, therefore, be feasible as its portion.

2. Weave structure

It has been detected by Mr. Ryuzo Onooka, ex-chief Researcher of the Agency of Industrial Science &

Technology, Ministry of International Trade & Industry that the raw materials of the textiles from the inner room are wool and hair only. (camel hair is used as grandrelle yarn⁽¹⁾.) Their structures are mostly of plain weave or its variation (warp 1, weft 2). Besides, only one instance of twill (warp 2, weft 2) has been discovered. The patterns have been provided with various kinds of tapestry-weave technique. The observation of the textile surface (thread spacing), according to the Emery's classification method, is that many of the textiles are weft-faced, apart from one warp-faced (Textile 1) and two balanced (Textile 8 and 9). These grounds are of balanced weave, but the pattern areas are of weft-faced. Now that the yarn is manually spun, not a few differences are observed on the yarn thickness and twist number, even if allowances are to be made for their long passage of age. As for the patterned textiles (Textiles 2, 3, 9), a single S-spun yarn each is used for both the warp and the weft. It is frequently observed that two thin weft threads are passed together. As regards thick textiles (Textiles 5, 6), in the meantime, two plied yarn is used for both the warp and the weft, and Textile 6 has grandrelle yarn adopted for both the warp and the weft. These thick textiles may have been used differently from the patterned textiles. Concerning the yarn used for the shaded color band, the unspun wool, which has been dyed as raw material, is then spun into the yarn of neutral shade with a proper color gradation, which makes the color shifting all the more natural.

There are selvages still preserved in Textiles 2, 3, 9 and 10. Unlike those discovered before, the selvage of Textile 2 has the addition of decorative selvage with red yarn applied to the ground selvage, which functions as both decoration and protection of the ground selvage. The ground selvage and the decorative selvage are joined together by means of dovetailed tapestry technique (Fig. 6 Type 4, Pl. 35-c). Such sorts of selvages as observed in Textiles 3, 9 and 10 (Fig. 11) have often been confirmed on those of textiles so far uncovered at at-Tar. This is the type in which the weft thread interlaces with the warp thread more frequently at the selvage portion. The selvage decorated with red yarn has been unearthed at a tomb (416/10) near Gamai, Lower Nubia (Meroitic Period (0-350 A.D.) or at X Group (350-550 A.D.)), where interlock tapestry technique has been adopted to make it. Likewise, such reinforced selvage has been confirmed on the textiles unearthed at the tombs located between Faras and Gamai, Lower Nubia (Meroitic-Early Christian period (650-750 A.D.)) [Bergman 1975: 38, 39, Pl. 50]. Here, at the inner room are two types of warp finish: one is the warp cord finish and the other is the hem finish after the hem has been folded over. Textiles 3 and 8 take the cord finish for their warps (Fig. 5-left). Both of them have their ends twisted into cord with S-twisting and Z-plying. The pile textile (Textile 10) has an elementary warp finish that the cloth edge has been stitched up after having been turned over. The warp

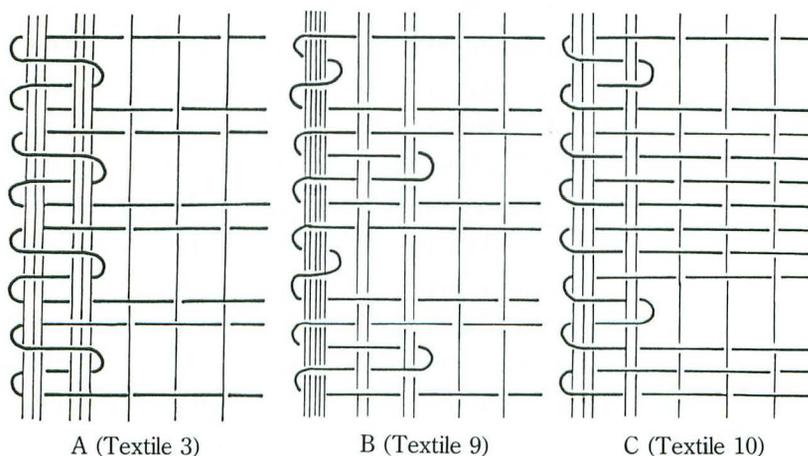


Fig. 11 Type-2 selvages

cord finish has been confirmed on the textiles uncovered at Pazyryk in Siberia, Noin-Ula in Mongolia [Sakamoto 1982/83: 34, 35], Palmyra [Pfister 1934: 33; 1940: 23–24] and Dura-Europos in Syria [Pfister 1945: 14, 17, 23], the Cave of Letters in Israel [Yadin 1963: 201–203], the aforementioned tombs, and Ballana and Qustul in Nubia [Bergman 1975: 32–33; Thurman 1979: 40], from which we have learned that this method had a wide range of use for ages.

3. Designs

Among the textiles discovered here, there are flower, tree, wave, comb (picket fence), oblong, triangle, stripe and shaded color patterns. In particular, Textiles 2 and 3 constitute horizontal stripes based on the combination of three kinds of flower and tree design band, wave pattern band and shaded color band. These main portions have a symmetry of these design units with the tree and flower design as the core placed in the middle of the wave pattern band and the shaded color band at its upper part and lower part, respectively.

And further outside of them, we see plain stripes woven. In Textile 2, there are two comb design bands arranged above and below the flower and tree design band as a main role. Moreover, we see two different comb design bands divide the whole into three, drawing waveforms in symmetrical arrangement (Fig. 12). In Division II, the central portion, there are tree trunks, which are the main motif of the whole pattern bands as well as the core of Division II, lying sideways in the weft direction. And hook-shaped leaves ('warabite' in Japanese), flowers and fruits are seen with the tree trunk pattern inserted in-between. Division I and Division III, outer sides of the wave lines, contain the T-shaped linkage of threefold circles. And the threefold circles, provided with trifurcate figures (Pl. 27–b), respectively, look like pomegranate fruits to symbolize fruitfulness⁽⁴⁾. On either side of the threefold circles, there is a symmetrical arrangement of rosettes and black circles inside of which have different color divisions. Below the black circles, knotted ribbons or the like are observed, but it is impossible to specify what they stand for. In the meantime, it is probably because of 'horror vacua' that the spaces around them are filled with minute ovals. These circles and rosettes inside Divisions I and III are in bilateral symmetry with the T-shape pattern at their center. And, at the same time, they are so well-balanced as to produce an up-and-down equilibrium in Divisions I and III. In the whole design band, the patterns with the tree trunks as their core are adjusted in up-and-down proportion and are bilaterally symmetrical about the warps running through the top or the bottom of the wave lines. The repetition of such unit of pattern goes on in the weft direction. Fine gold and strong yellowish red stripes are put in among the shaded color band, dull green broad stripes, and wave pattern bands, whose color contrast makes the division of each stripe more clear. At the same time, such vivid fine stripes make an effective accent. The shaded color bands have their color gradually changed from light toward dark starting from the both sides of the design band as the core of the textile (Fig. 12, Pl. 27–a). This manner of representation is also common to Textile 3 and Specimen C-38-5 uncovered from Cave F-6, Hill A [Fujii ed. 1980: 148–150].

Textile 3 includes two rows of tree bands where trees lie in the weft direction. And there are leaves, fruits, and hook-shaped buds alternately arranged on both the upper and lower sides of the central tree trunks (Fig. 13, Pls. 28–a, 35–d). It seems likely that these trees signify 'arbor vitae' on which ancient people had made their wish for immortality and fruitfulness. Specimen C-38-5 consists of three kinds of shaded color band, wave pattern band, and tree design band combined together, with the symmetrical arrangement of them with the tree design band as their core inserted between. And the main design band has grapevine scroll patterns woven inside. This resembles the tree designs discovered at Cave 12 in the manner of representing grape leaves, fruits and hook-shaped buds placed on either side of the central grapevine. The same is also true of the ornamentalization of the leaves and fruits and the derivation of the

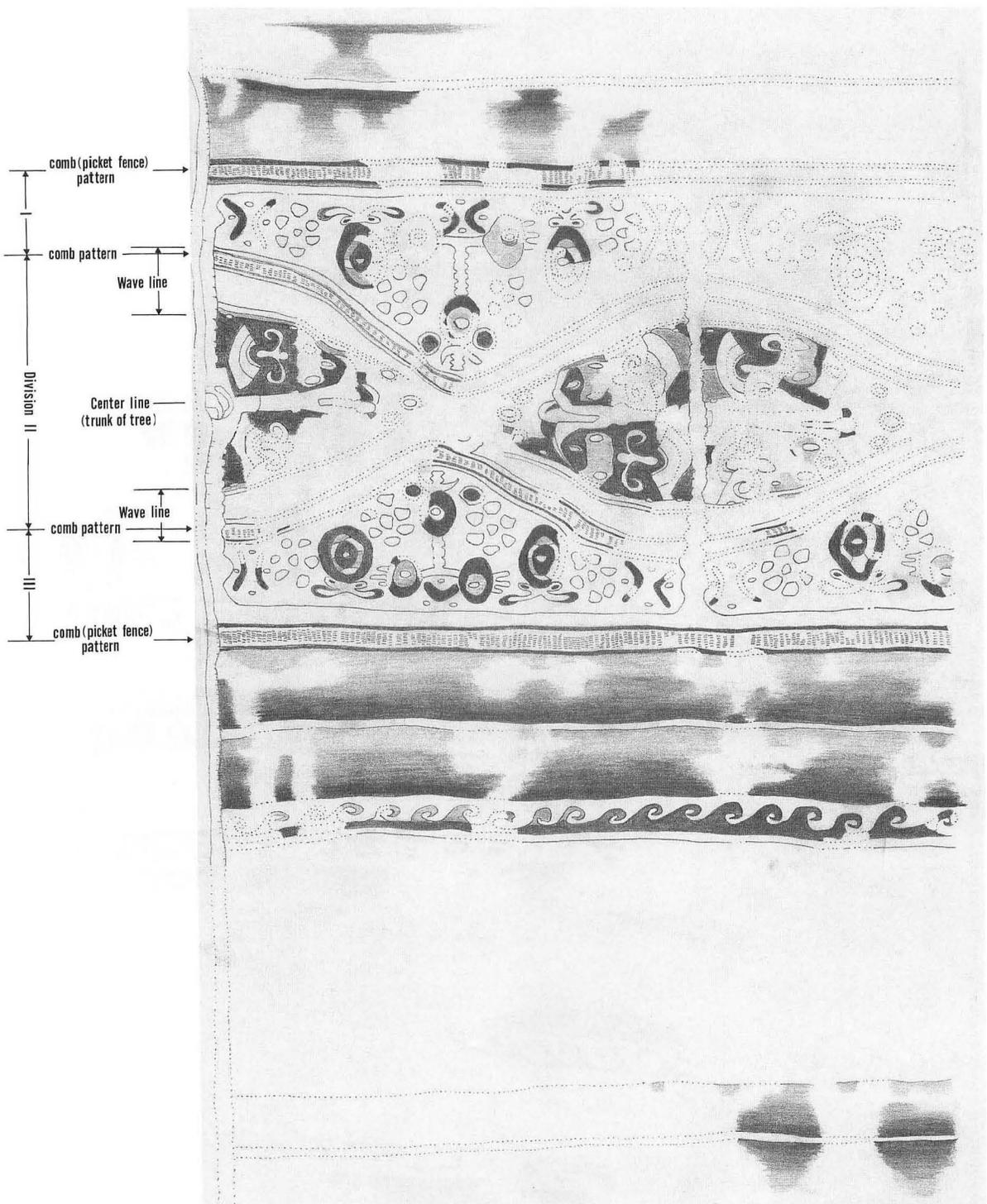


Fig. 12 Reconstruction of the textile with flower and tree design band (Textile 2), see Pl. 27-a, b

slender grapevine and tree twigs in a certain angle. Contrary to the evidence that the grapevine scroll pattern is slightly curved, the tree design patterns uncovered at the inner room are described utterly straight. It is probably suggested to us that this is because of its fidelity to an attribute of the subject itself in spite of its progress in ornamentalization of the leaves and fruits.

Such composition of the horizontal stripes as three different kinds of flower and tree design band, shaded color band and wave patten band are combined together while symmetrically spreading from the

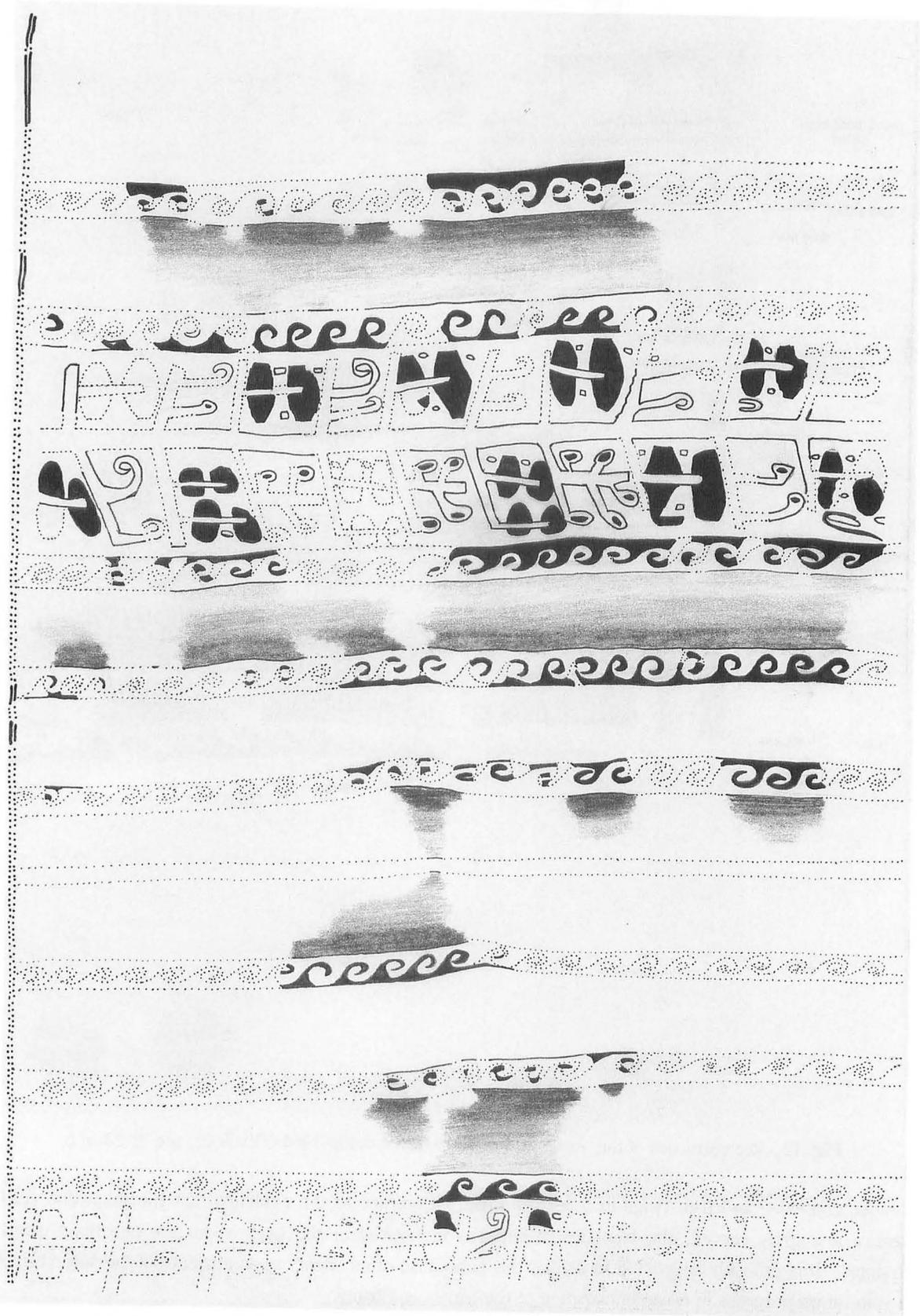


Fig. 13 Reconstruction of the textile with tree design bands (Textile 3), see Pl. 28-a

flower and tree design band placed in-between is also seen in the textiles excavated at Palmyra and Dura-Europos (Pfister 1940: 28, 29, Figs. 13, 14, PL.IX; Pfister and Bellinger 1945: 10, 35, 36, Fig. 2, PL. 3). Moreover, the similar sort of weaving scheme as the above is also confirmed in the wool textiles uncovered at Noin Ula, North Mongolia (Руденко 1962: 108–110 рис. 74, 75 таб. LXVIII, LXIX). However, the design bands observed in these textiles are much narrower in width and their patterns are smaller than those of the inner room, Cave 12, at-Tar. What is more, there we see no such straight-line representation as observed here in the at-Tar ones. The symmetrical wave line structure of the design bands in Textile 2 reminds us of the fabric with the flower and leaf scroll designs uncovered at Palmyra (Pfister 1940: Fig. 12, Pls. VII, VIII). The Palmyra twig wave line is smaller with its twig unified into flowers and leaves, whereas the at-Tar wave line plays a role of dividing the design bands.

Besides, there are many examples of geometrical designs such as H-shape, gamma, square and stripe ones frequently evidenced among the textiles of geometrical patterns on the dull yellow ground as shown in Textiles 4-1, 4-2 and 9. Among these finds, Textile 4-1 has a triangle pattern as well as stripes. Textile 9 includes a fragment of square-like pattern which has apparently come from the portion along the selvage. It is most probable that is the rest of some H-shape pattern textile.

4. Descriptions

Textile 1:

Only two small pieces of wool are listed here. The thread used here is extremely fine for wool textile. At first sight, it looks like linen, but has been proved as wool by means of the photo-microscope and scanning electron microscope⁽⁵⁾.

Textile 2:

Of all the uncovered textiles, this has been found in the best state of preservation with brilliant multiple color designs, so that there was a possibility of its being restored to a large piece of cloth. We understand that this used to be over 143 cm in its original width at the time of production. It still retains its original color or is slightly discolored. The beautiful dyed colors visible on the design bands are similar to the finds at F3, F4 and F6 Caves, Hill A. Plain weave is used in greater part of the cloth and the portion where rather slender wefts are passed together in pairs is of variation of plain weave (warp 1, weft 2). The designs are represented with tapestry technique, which is diagonally threaded for wave line formation. For the comb pattern weaving observed on the wave lines, and above and below the flower and tree band, two shuttles are passed there by turns for the use of different colors. The selvage threads on both sides of the cloth have the same color as that of the weft (1) (see data table), by which the selvage line has been made all the more clear while functioning as protection and decoration of the cloth edge (Type 4 in Fig. 6).

As already mentioned in the part of Designs, the whole design is composed of horizontal bands where the central axis, 25 cm wide flower and tree design band, has the arrangement of vertical symmetry. Inside the design band, there is a repetition of unit designs visible in vertical symmetry and bilateral symmetry. This seems to have been the garment of daily use, judging from the evidence of repair thread at the joint of the tapestry-weave portion.

Textile 3:

Unlike Textile 2, we have the impression that Textile 3 is rather sober in color, which is probably because of discoloration evidenced from the small portion of the fragment whose original color is still retained. Its structure is mainly of variation of plain weave with two paired wefts (warp 1, weft 2). Some parts are simply of plain weave where a single weft is used. The warp in Textile 3 is finer and a little higher in density than in Textile 2. Most of the warps are light yellow brown and about 0.35 mm in diameter, where some other different-quality warps are mixed together. The selvage is so reinforced that

every three warps are made into two cords, where wefts are interlaced in extra frequency (Fig. 11-A). T-131, a fragment of Textile 3, has such a cord finish as two 3–3.5 cm long warps are primarily worked into S-twisting with the addition of some supplementary threads which are the rest of the wefts, and then are Z-plied, thus resulting in the formation of 3 mm cord in diameter. Twist count is about 1.7 times per centimeter (T-91, T-131). Along this warp finish portion, we see a dull green border of 1.2 cm in width. Furthermore, the other two fragments include the same dull green stripes of 3.8 cm and 3.5 cm in width respectively as well, from which it is presumable that at least two border stripes had been either at the beginning or at the end of the woven fabric or at both sides of the woven fabric. We see two selvaged fragments seamed together in such way as one selvage comes into contact with the other, where only one evidence of sewing-thread is preserved (T-82). Just as Textile 2, this is also composed of horizontal stripes where the central axis of 9 cm wide design band is accompanied by the wave pattern band and the shaded color band spreading above and below with the addition of plain borders. There are two rows of tree design bands represented with tapestry-weave technique. The wave pattern bands recognized in Textile 3 are generally smaller and the stripes are narrower than those in Textile 2. Some evidence of a repair thread has been confirmed on the joint of the tapestry area.

Textile 4-1:

This has dark purple geometrical patterns on the dull yellow ground. The ground area is woven into variation of plain weave (warp 1, weft 2) while the pattern area is of plain weave by means of tapestry-weave technique. A dark purple stripe of 3 cm in width is recognized. We see a slit of 4.5 cm in length, which was made along a side of the dark purple triangle, again stitched into closure by another thread (T-79) (Pl. 36-b). The slit is so made that two warps are worked out into a cord on the ground side whereas on the pattern side, two warps are used as they are, thus finished like the reinforced selvage. Its joint portion with the dark purple triangle pattern is put together with dovetailed tapestry technique. The ground within the range of the slit is also of plain weave around the triangles represented with tapestry-weave technique. This portion is very closely threaded in, where the number of threads per centimeter is no less than 44 threads. Accordingly, in spite of its soft ground, the pattern portion is rather solid in texture. There is a fragment whose cut edge is folded in three and then stitched (T-79).

Textile 4-2:

A black band of 10 cm in width is seen on the dull yellow ground. Two pieces of cloth are seamed together in such way as the directions of their warps are arranged at right angles. The ground area is made of variation of plain weave (warp 1, weft 2), while the pattern is of weft-faced plain weave.

Textile 5:

This is a thick fabric produced with both plied warps and plied wefts, loosely woven with thick thread. As the texture of the cloth is very stiff, there is no possibility of its having been used as a garment. Three fractions of twill are stitched on the fabric with the same thread as that of the cloth on its edge. The twill fragments are in poor preservation.

Textile 6:

Grandrelle yarns are used as the warp and the weft. The torn portion in the weave is repaired with thick threads.

Textile 7:

This is a plain textile woven with variation of plain weave (warp 1, weft 2), which seems to have been used by tearing it up into a slender strip for binding.

Textile 8:

This is a very thin fabric produced with considerably fine threads in the openwork way. A fragment on which warp finish can be evidenced has been discovered (T-58, T-86). The warp finish here is that the

warps are cut out at about 2.5 cm from the woven edge; every three warps are S-twisted and then two bundles of them are Z-plied into a cord with the gradual addition of a set of three-warps, thus, the warp thread is worked into a cord of 3 mm in diameter. Twist count is about 1.5 times per centimeter. There is a dark red stripe of 5 mm in width located about 1 cm from the warp finish. Discoloration is severe on the cloth edge fragment and another one. All over the cloth zigzag stitches (2 mm–5 mm in length) are recognized.

Textile 9:

There is a pale purple square pattern woven in the width of 7.8 cm starting from the selvage edge. And a vivid reddish yellow stripe of 3 mm in width is visible between the ground and the square pattern (T-37). Both the ground and the pattern are of plain weave, whose pattern area is weft-faced. Here and there on the ground, paired and thick wefts can be seen. On a single fragment, there are evidences of a portion of selvage, a portion of the pale purple square pattern and a remnant of the ground. The selvage is so contrived that five warps, two warps and two warps each are bundled into three individual cords, starting from the cloth edge, where the selvage is strengthened with the return work of the weft (Fig. 11–B). The pale purple pattern area with the ground area is jointed together with dovetailed tapestry technique.

Textile 10:

This is a plain rug in the dimensions of 150 cm×75 cm which is the largest of all the excavated fragments in the inner room. The warps use grandrelle yarn of sheep and camel fibers. The pile threads are knotted in the way of Type B-1 (Fig. 7): the asymmetry knot at the interval of 1.2–2.2 cm apart, in some pile rows, a pile thread encircles around two warp threads and is twisted on the third warp. The pile length remaining up to now is around 5 cm. The density in the pile knotting is rather low. The selvage has been preserved on one side only, which is so constructed that three warps and two warps each are bundled into two cords, where the wefts turn back to produce a reinforced selvage (Fig. 11–C). The cloth edge is stitched into the ground fabric after folding it over. This is the cloth which was laid under a dead body wrapped with other fabrics at burial, which has been uncovered in the state of its being folded up due to the limits of the burial place. The radiocarbon dating reveals that it is the one of B.P. 2650±120: ca. 700 B.C.⁽⁶⁾.

Textile 11:

This has been found to be on the process of carbonization.

Conclusion of the inner room

From the textiles uncovered here, it is possible to infer the burial state and the combination of the textiles used for the burial of a dead body. The dead person had been buried with the garment of textile with multiple color designs for daily use on (Textiles 2 and 3) and wrapped in the textile of purple geometrical patterns on the dull yellowish ground (Textiles 4–1, 4–2 and 9).

As we have already learned in the tunics from Dura-Europos [Pfister 1945: Fig. 7, Pl. V], some examples from the Cave of Letters [Yadin 1963: Fig. 70, Pls. 66, 77], the statues in Palmyra and Hatra (Pls. 34–b, c) and the wall paintings in the Palmyra temple [Ghirshman 1962: Pl. 59] and the synagogue in Dura-Europos [Pfister 1945: 11, Yadin 1963: 228], the textiles woven with the design of horizontal stripe containing some patterns and those of the weft-direction bands would be used as tunics of vertical stripes or bands (clavi) when they were worn as clothing. On the other hand, the textiles with H-shape and gamma-shape patterns on would be wrapped up over the tunic as mantle. In this way, judging from the evidences of such weave patterns, the uncovered specimens are that Textiles 2, 3, Textiles 4–1 and 4–2 are tunics while Textile 9 is a mantle. They are fastened together with cords. One of the cords is a broad twisted cord (Textile 11) and the other is a strip may be produced by tearing cloth (Textiles 5, 6, 7 and 8).

Under the body, there lies a piece of pile textile which was used as a rug (Textile 10). It was the one with Type B1 pile knotting method. Such burial examples as the pile textile was laid under the body are also confirmed at Cave F 6, Hill A, Cave 12 corridor, Hill C and Cave 17, Hill C [Fujii ed. 1976: 92, 93; Ohnuma and Inaoka 1984/85: 29, 32–33; Matsumoto 1984/85: 39, 42].

With regard to the textiles uncovered here, the radiocarbon dating reveals that the pile textiles date back around 700 B.C.⁽⁶⁾. In the meantime, Textiles 2 and 3, which are regarded to be among the major finds, consist of horizontal stripes in which tree and flower design band, wave pattern band and shaded color band are combined together in symmetrical arrangement with the tree and flower design band as their core. This sort of weaving scheme has also been confirmed in the goods uncovered at Palmyra, Dura-Europos and Noin Ula, all of which are supposedly the ones belonging to the 1st–3rd centuries A.D.. Such resemblances are also seen in the goods excavated at Kerch located on the north coast of the Black Sea which are regarded as stemming from the 1st century B.C. to the 1st century A.D. [Геруцигер 1973: 82, рис. 13, 14]. As far as we are concerned, such instances as the above cannot be cited among the finds belonging to the period later than the 4th century A.D..

And the 'Nagashiori-weave technique' has been adopted to represent flower and tree design. Such technique is clearly observable on the human images uncovered at Cave F3, Cave F6 and Cave 16. The motif of the human image uncovered before and its type of representation by means of the 'Nagashiori-weave technique' have many things to do with the mosaic technique in the Dionysos figure which has been confirmed on the mosaic pavement at Antioch [Fujii ed. 1976: Color fig. No. 84; 1980: 108–114]. Such being the situation, the newly discovered textiles are now believed as the ones dating to the Roman Period (A.D. 1–3 centuries).

(Hideo Fujii, Kazuko Sakamoto)

IV. Textiles from the Slender Corridor

The following are the six textile specimens identified from among lots of fragmentary textiles uncovered at the slender corridor, Cave 12:

- Textile 12: Fragment with gamma pattern
Representative Specimen No. IV-OH-368-14-Ⓐ (Pl. 29–a, –b)
- Textile 13: Fragment with thin band
Representative Specimen No. IV-OH-124 (Pl. 30–a)
- Textile 14: Large cloth with H-shape and square patterns
Representative Specimen No. IV-OH-368-13 (Pls. 30–b, 31, 32–b)
- Textile 15: Fragments with wave pattern and horizontal stripe pattern bands
Representative Specimen No. IV-OH-368-3-Ⓐa, -Ⓐb, IV-OH-121 (Pl. 32–a)
- Textile 16: Gauze-like thin cloth with horizontal stripe pattern
Representative Specimen No. IV-OH-368-10 (Pl. 32–c)
- Textile 17: Pile textile with borders
Representative Specimen No. IV-OH-368 (Pl. 33)

1. Identification and design reconstruction

A great many fragments unearthed here have been classified into the above six with their weave structures, thread-spacing and patterns taken into consideration. Then, small fragments except for the remarkable ones in pattern and weave structure had to be carefully examined one by one.

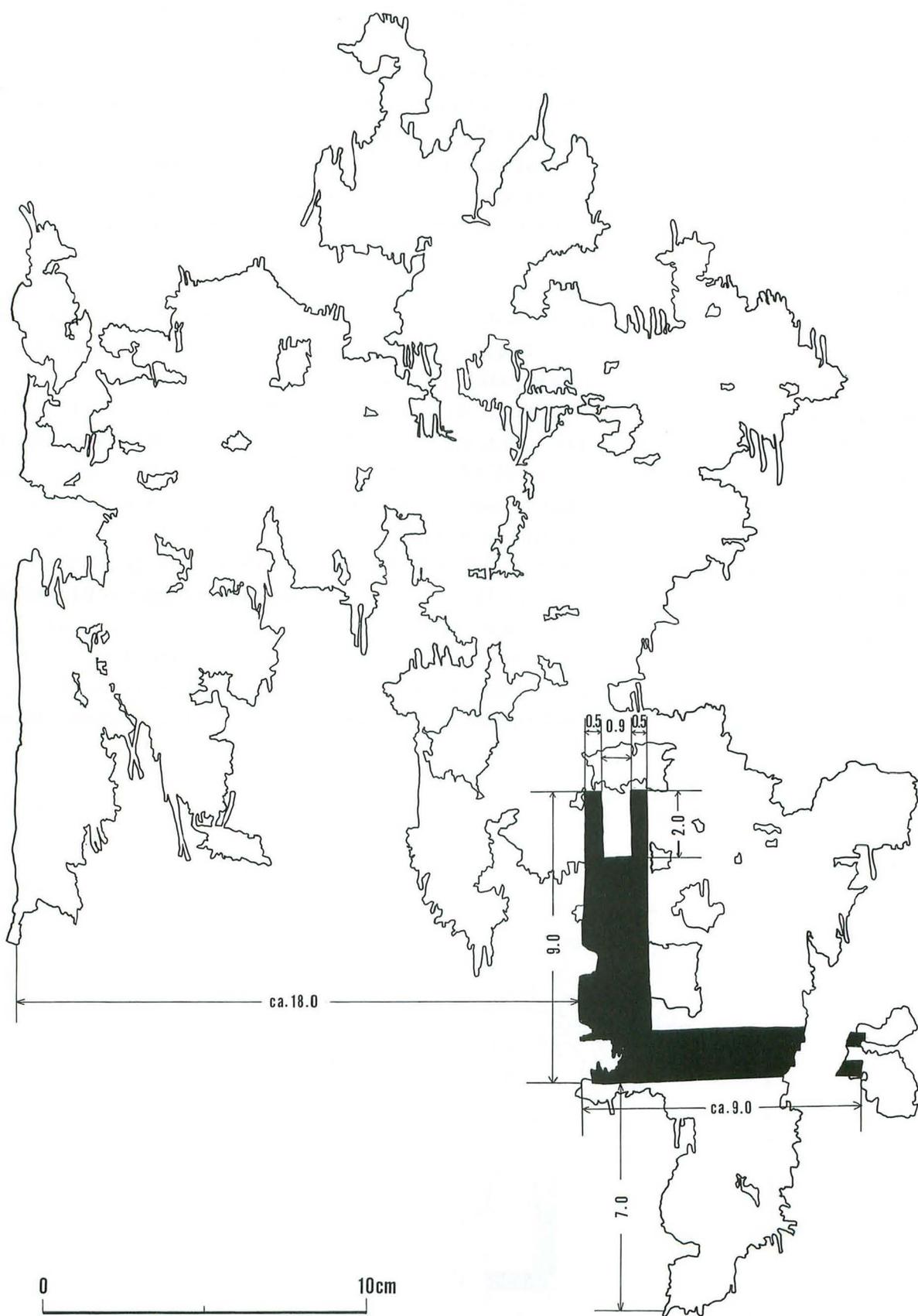


Fig. 14 Position of gamma pattern, Textile 12 (dimension: cm)

The common color of the ground of Textiles 12, 13 and 14 is dull reddish yellow and the like.

According to the systematic observations on their ground and design structures, Textiles 12, 13 and 15 are of plain weave (warp 1, weft 1), whose thread-spacing is weft-faced. Textile 14 is of variation of plain weave (warp 1, weft 2), whose thread-spacing is a balanced type on the ground, and its design parts are of variation of plain weave (warp 2, weft 1), whose thread-spacing is a weft-faced type.

The grounds of textiles 12, 13 and 15 are identical in weave structure and thread-spacing as mentioned above. As for the twist direction of the weft thread used on the ground, however, Textiles 12 and 13 are Z-plied whereas Textiles 14 and 15 are S-plied. From this, we can tell the difference between Textiles 12, 13 and Textiles 14, 15.

Textile 12

The Representative Specimen IV-OH-368-14-**a** is a fair-sized fragment (40.0×25.0 cm) with the gamma pattern woven in tapestry-weave technique about 18 cm inside the selvage (Figs. 14, 15) [Fujii ed. 1980: Pl. VII No. 204]. The gamma pattern portion still remains almost perfect, but its position relative to the weave start or weave finish, i.e., its vertical position, is unable to identify, to our regret. It is further impossible to allocate it from four corners. There are many fragments which are considered to be part of Textile 12, but none of them except Specimen IV-OH-368-14-**a** keep their original patterns. The textiles with the pattern of this sort have not been unearthed from the other caves of at-Tar Site than this. It is reported, however, that the other neighboring sites such as Nubia [Bergman 1975: Pls. 33, 60, 61, 62, 63], Dura-Europos [Pfister 1945: Figs. 1, 5, Pl. XI-25, Pl. XII], Palmyra [Pfister 1940: 21] and the Cave of Letters [Yadin 1963: 238-240, Figs. 75, 78, Pls. 80, 81, 82] have yielded such textiles as this kind of pattern on. From these reports, it is thus deducible that Textile 12 had also been provided with the individual gamma patterns near the four corners of the cloth. There are some other fragments with selvages such as (IV-OH-350) [Fujii ed. 1980: Specimen 88], (IV-OH-368-4) and so on (Fig. 15). Besides, there is a fair-sized fragment with tapestry-weave technique pattern on, which is estimated to be

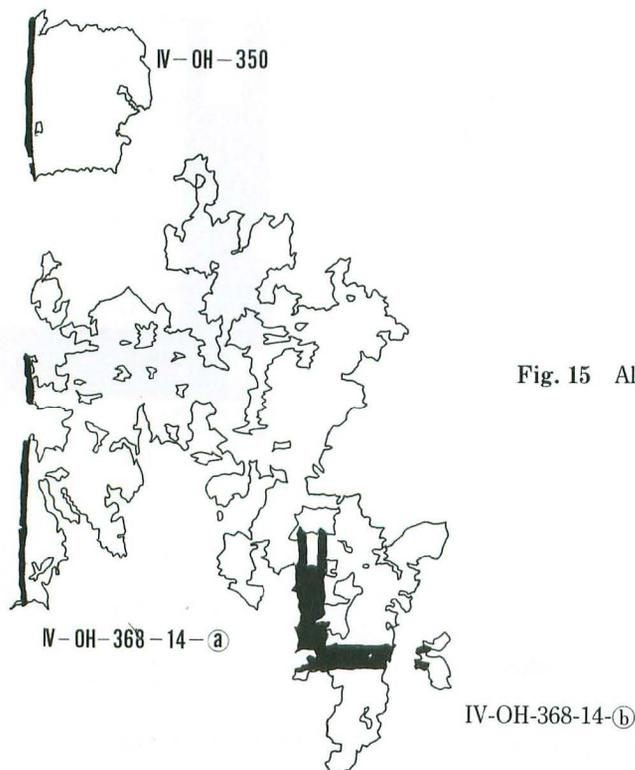


Fig. 15 Allocation of Textile 12

the weaver's mark (Pl. 29-b) located near the warp cord finish (IV-OH-368-5, 21.0×62.1 cm) [Fujii ed. 1980: 281, Specimen 202] (see left of Fig. 5). The examinations of their thread twist direction, thread density and thread-spacing have proved that they can be identified into Textile 12. But their original positions are not traceable.

Textile 13

This is a thin woolen fabric of plain weave, both the ground and pattern of which are weft-faced. It has been badly damaged with its excavated condition tattered into various small fragments. In resting on a number of data as to the ground and pattern portions, such as twist count, twist direction, density, thread-spacing and color of the thread, Representative cloth IV-OH-124 is very similar to Representative cloth IV-OH-368-14-(a), Textile 12. On the contrary, there is a large difference between them in the widths of their pattern portions, i.e., 6.3 cm wide in the pattern of IV-OH-124, while 2 cm wide in the gamma pattern of IV-OH-368-14-(a). It is, therefore, considered that IV-OH-124 has its origin different from that of Textile 12 whose representative cloth is IV-OH-368-14-(a). So, the damaged fragment (IV-OH-312-② 23.5×15.8 cm) presumably coming from Textile 12 (IV-OH-368-14-(a)) is the one woven with deep red purple weft threads, which seems to belong to a part of pattern portion, but it is identified into Textile 13 because of the disagreement of its pattern width (about 4 cm) with that of Textile IV-OH-368-14-(a). It is, therefore, considered that the specimen with the pattern width of over 2 cm does not belong to IV-OH-368-14-(a), but belongs to IV-OH-124. This is why the small fragments which are regarded as belonging to IV-OH-124 have been grouped into Textile 13.

Textile 14

This is a mantle cloth with H-shape and square patterns on (IV-OH-368-13, 238.5×164.0 cm), [Fujii ed. 1980: 282, Specimen 203, Pl. No. 203]. The ground is variation of plain weave (warp 1, weft 2), which is different from Textiles 12, 13, 15 and 16 in weave structure. The pattern is variation of plain weave (warp 2, weft 1), where tapestry-weave technique is applied with the use of dark wine-colored weft threads.

Owing to its difference of ground and pattern structures from those of Textiles 12, 13 and 15, we can easily classify them even if they are similar colored small fragments (Fig. 16). The large cloth (A) (IV-OH-368-13) was unearthed with its weave start, weave finish and both the selvages kept intact in succession, so that we were able to examine carefully the individual pattern allocations, pattern sizes and weave techniques of individual parts on the large cloth with H-shape patterns and square patterns along the selvages. Thus, the very cloth has been the basis for the reconstruction and the study of other large fabrics with H-shape patterns uncovered from the other caves of at-Tar Site. The costume of a large cloth with H-shape patterns has been painted on the wall at the synagogue in Dura-Europos [Pfister 1945: 10-11]. Just as the textiles with gamma patterns, so are the textiles with H-shape patterns uncovered from Dura-Europos [Pfister 1945: Figs. 18, 19], Palmyra [Pfister 1940: 22-24, 30], the Cave of Letters [Yadin 1963: 220-221, Fig. 74, Pls. 68, 83, 84, 87] and Nubia [Bergman 1975: 46, Pls. 59, 60]. In studying the patterns and allocations in the excavation reports from these sites, it is known that there are some similarities between them and these fabrics uncovered at at-Tar. We have learned that all the H-shape and gamma patterns are woven at four separate corners at equal intervals and their sizes properly fit for each cloth, and that the H-shape is accompanied with square pattern along the selvege, avoiding the center of the large cloth. Among the fragmentary textiles which perhaps belong to Textile 14, allocations of such small fragments as can be confirmed as weave start, weave finish and selvege have been almost settled as the result of our investigation. For instance, the fair-sized fragment (B) (IV-OH-100, 37.2×28.0 cm), [Fujii ed. 1980: 257, Specimen 153] can tell us its obverse and reverse from its selvege structure, and its selvege structure is proved to be the left side. This depends on the technique that the additional thread covering

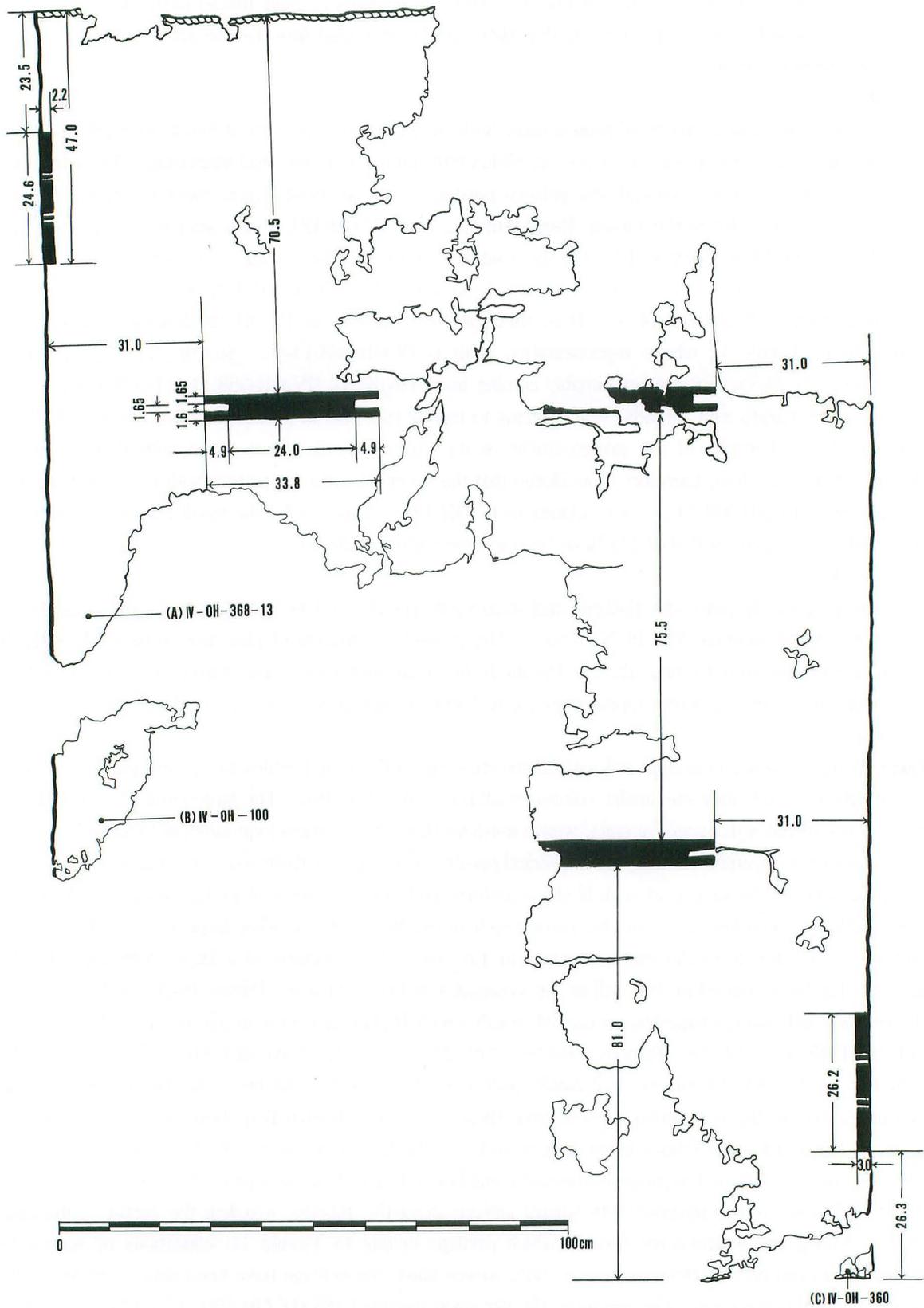


Fig. 16 Identification of Textile 14 (dimension: cm)

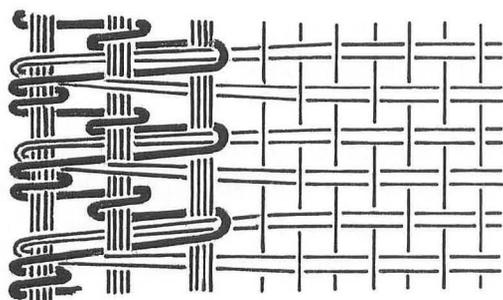


Fig. 17 Type-3 selvage at the ground of Textile 14 (left side)

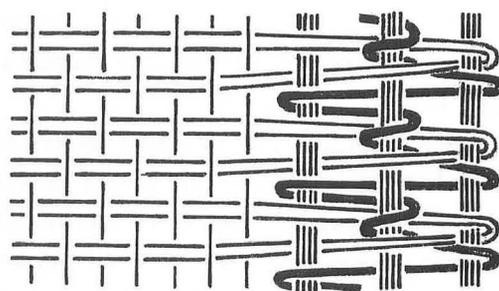


Fig. 18 Type-3 selvage at the ground of Textile 14 (right side)

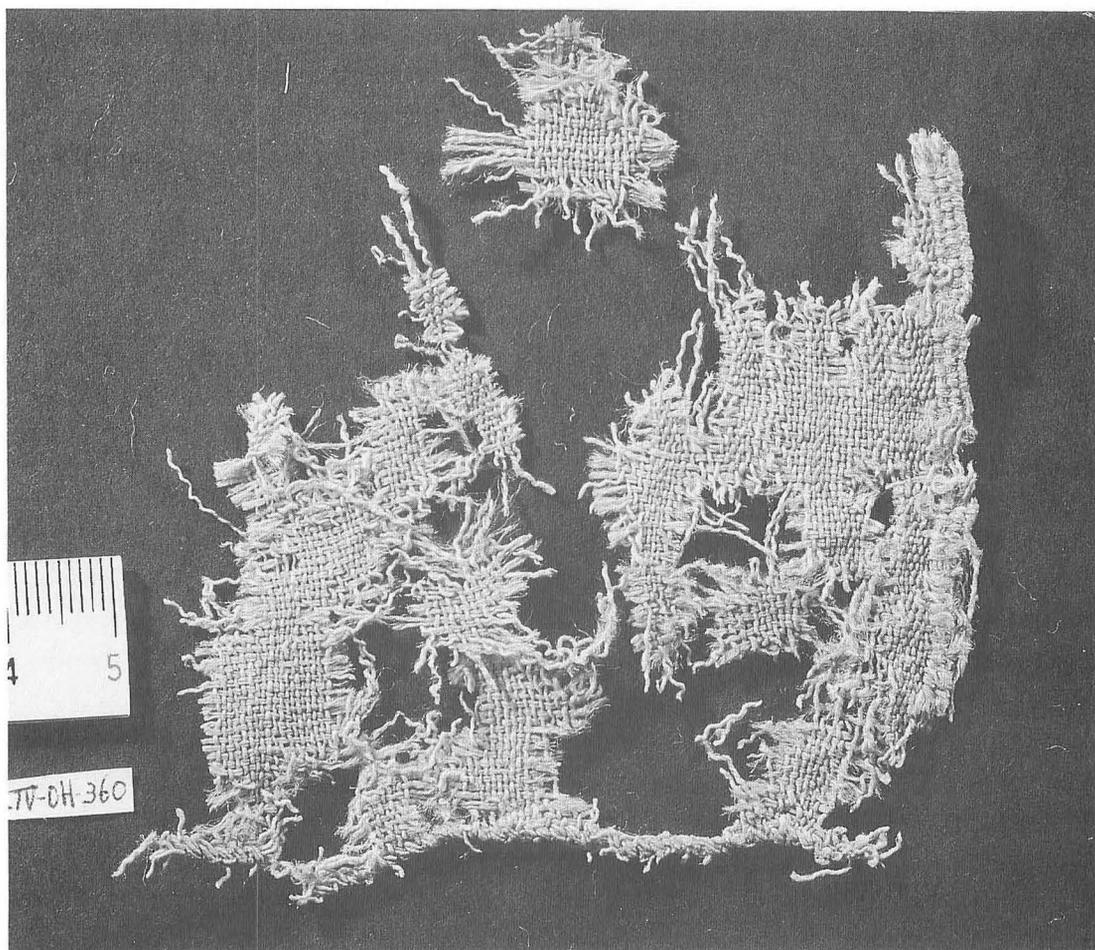


Fig. 19 Weave starting border of Textile 14 (IV-OH-360)

the turning weft on the first cord at the edge of the selvage repeats its rotation twice there, then once at the second cord, and finally turns back at the third cord. The left-side selvage of the large cloth (A) is also woven with the above-mentioned method in technique. Consequently, the selvage of the fragment (B) has the same structure as that of the left selvage, as seen from the weave start, of the large cloth (A) (Fig. 17). As for the selvage structure on the other side, the additional thread turns around the first cord only once (Fig. 18). Such differences in selvage structures as given above have made it feasible for us to allocate these fragments. The starting border-and-selvage-remaining fragment (C) (IV-OH-360, 7.8×7.3 cm, Fig. 19), [Fujii ed. 1980: 258, Specimen 155] has been classified into Textile 14 from its weave structure.

Moreover, its allocation has been found out from its starting border and selvage. Some other small fragments have also been identified into Textile 14 from their ground structures.

Textile 15

This is a tapestry cloth with wave pattern and horizontal stripe pattern bands (Fig. 20). Most of the fabrics which are probably identified with the representative specimen IV-OH-368-3-①a, -①b have gone into fragmentary pieces. The representative cloth is composed of 2 pieces, 1(a) and 1(b): the piece 1(a) is a little larger selvage-remaining cloth (25.2×14.2 cm) which is woven with deep yellowish-red weft threads and of weft-faced plain weave (warp 1, weft 1), which is presumably the ground portion, where a horizontal stripe pattern band of about 3 cm in width is woven with dark blue weft threads; the piece 1(b) is also woven with the same ways as that of the piece 1(a) in weave structure and color. And its edge is decorated with a wave pattern band of about 1.5 cm in width, with the use of dark violet weft threads and dull reddish-yellow ones. Also, another fragment (IV-OH-121, 23.3×23.5 cm) presumably coming from a part of the same specimen contains two wave pattern bands of about 1.5 cm in width each in tapestry-weave technique on both sides, between which there is a horizontal stripe pattern band of about 13 cm in width with the use of deep yellowish-red weft threads. The dark violet heads of both the wave patterns are reversed each other, whose other portions are in the opposite directions, accordingly. A selvage survives on this fragment, too. The allocation of the selvages evidenced on Specimen IV-OH-121 and Specimen IV-OH-368-3-①a on the identical line proves that Textile 15 is composed of two rows of wave pattern bands with deep yellowish-red horizontal stripe pattern inserted in-between, and deep yellowish-red horizontal stripe band containing horizontal stripe patterns with the dark blue band placed in the middle, as is seen in the piece ①a. In addition, there are small fragments with wave patterns (IV-OH-412, 10.9×6.6 cm), (IV-OH-335, 9.1×8.2 cm), [Fujii ed. 1980: 281, Specimen 201, Pl. IV No. 201]. These two fragments

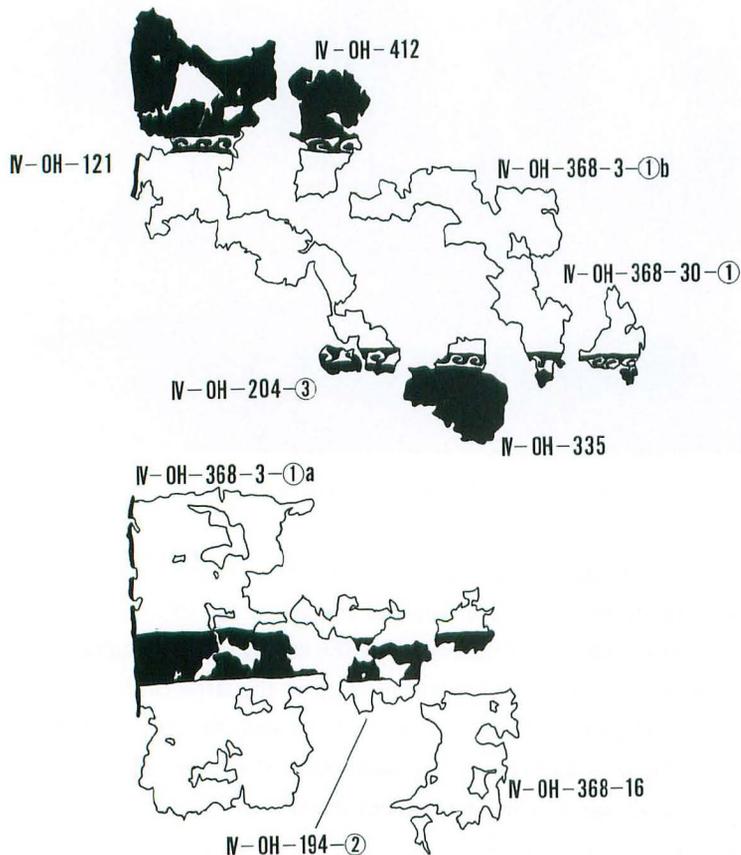


Fig. 20 Allocation of Textile 15

may be allocated as shown in the Fig. 20 from the correlation of the pattern bands.

Textile 16

This seems to be a band-like cloth of about 13 cm in width, probably torn from a veil or a scarf or something like that in the warp direction. It is 121 cm long in the warp direction without any starting or finishing border, whose original size is unknown. The textile includes one more small fragment (IV-OH-222-②) and no more else. It may have been a veil or a scarf of high-quality, whose ground is very thin like gauze, and three rows of horizontal stripe patterns are presumably woven with deep purplish red weft threads near its cloth edge. It may safely be assumed that such horizontal stripe bands had been symmetrically allocated, as similar materials are unearthed from Nubia [Bergman 1975: Pls. 3, 8]. However, we cannot grasp the information of the original cloth because we have not found anything else.

Textile 17 (Fig. 21)

A large cloth (A) of a pile textile has been preserved (IV-OH-368, 86.0×109.0 cm). Part of the deep red plain weave (1) is observable on one edge of this fragment. Between the deep red plain weave and the dark brown pile field, there was a dull blue green thread remaining only a little (2). The portion in which the thread once existed has the gap which is just equivalent to 3–4 weft threads, from which the warp is visible. It seems that some dull blue green stripe pattern used to be here, accordingly. Another selvage-remaining deep red plain weave fragment (B), whose specimen number is equal to that of the large fragment, has an evidence of one edge having been folded over and stitched up, where a thread for sewing is left. This fragment has been uncovered joined together with the large cloth (A). In the meantime, the deep red plain weave cloth (C) (IV-OH-368-11) looks like a long belt in the weft direction. On one of the long sides, we see a portion which is folded over and then stitched up. This is the warp finish of the pile

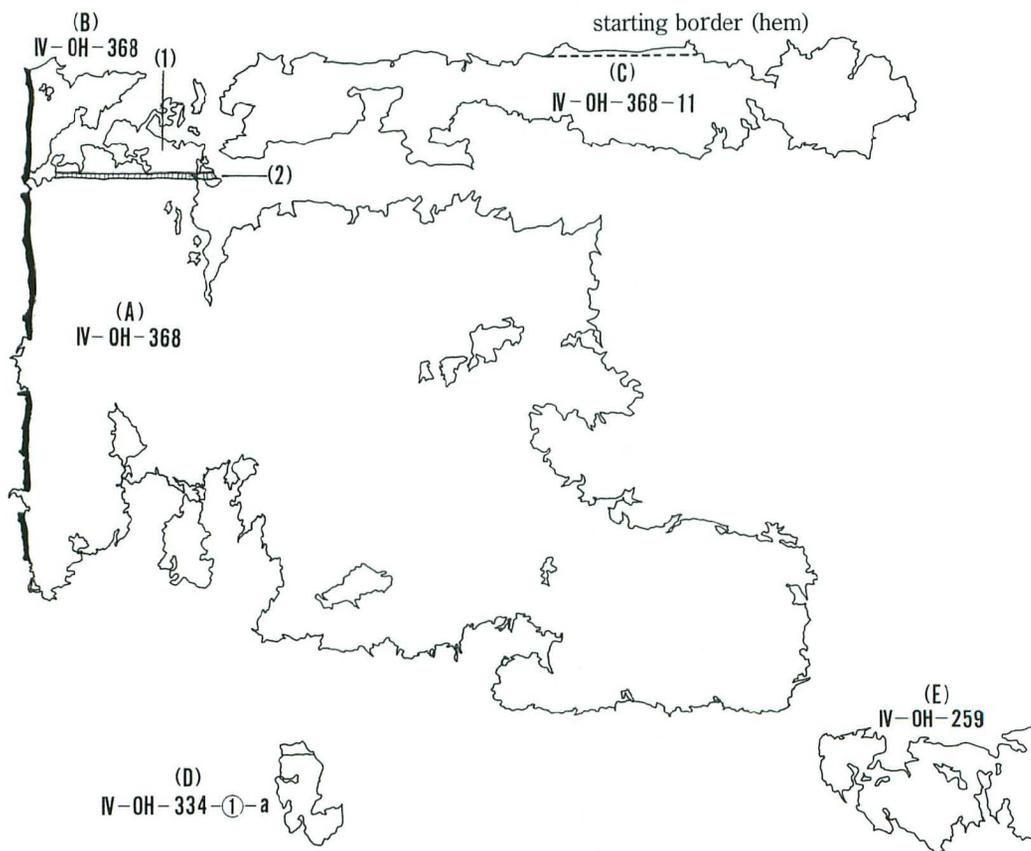


Fig. 21 Allocation of Textile 17

textile, which constitutes a starting border decoration of the textile edge together with the above-mentioned selvage-remaining deep red plain weave (B).

The fragment (D) (IV-OH-334-①-a) is of a deep red plain weave cloth, one edge of which has a portion of dull blue green variation of plain weave in succession. We see ten weft threads remaining there. It does not fit the above-mentioned dull blue green stripe patterned one, so that they cannot connect with each other. So, this is the border placed on the opposite side of the cloth (C). Moreover, the structure of fragment (D) (warp 2, weft 2) suggests to us that it directly continues to the field portion (A) (warp 2, weft 1) and it is a symmetrical border decoration on the other side of the cloth (B) and cloth (C). This is also true of the pile rug from Cave 17, Hill C (IV-MK-1382) [Fujii ed. 1980: 305, 306, Specimens 249, 250; Sakamoto 1985: 10–13, Fig. 6] from its composition. The selvage of the selvage-remaining deep red plain weave cloth (E) has its weft turning direction contrary to that of the large fragment, so that this seems to have been the selvage on the other side. In spite of our discovery of the selvages on both sides, it is unknown as to the size of the original fabric because it is impossible to properly allocate the individual fragments. It is considerable that this was the pile rug with dull blue green and deep red border decorations along the weave start and weave finish.

2. Weave Structure

The fibers of the textiles except for a pile textile uncovered from the slender corridor, Cave 12 are all made of high-quality wool. In reconstruction work of Textile 14, the fibers of the uncovered specimens were carefully examined. The microscopic examination proves that very fine fibers are adopted here, where warps are mostly 16–18 μ while wefts are mostly about 22 μ [Fujii ed. 1984–85: 68–81]. Among the finds from Cave 12, majority of them are actually measured at 0.15–0.35 mm in diameter by 25-fold magnifier. Such fine threads have been frequently observed in the textiles coming from individual caves of at-Tar Site. Very fine threads are used for the weft threads of the pattern in Textile 12 (0.18–0.28 mm), for both the warp threads (0.17–0.30 mm) and weft threads (0.18–0.40 mm) in Textile 14 and for the warp threads (0.20–0.35 mm) and weft threads (0.30–0.40 mm) on the ground and the weft threads (0.12–0.30 mm) on the pattern in Textile 16.

Concerning the weave structure, Textiles 12–16 use plain weave and variation of plain weave. The grounds and the design parts of textiles 12, 13 and 15 are of warp 1 and weft 1, whose thread-spacings are of weft-faced type. The ground of Textile 16 is of warp 1 and weft 1, whose thread-spacing is of balanced type and its pattern is variation of plain weave (warp 2, weft 1, weft-faced type). Textile 14 gives its ground variation of plain weave (warp 1, weft 2) and its pattern is of variation of plain weave (warp 2, weft 1). Its thread-spacing is balanced type on the ground while it is weft-faced type on the pattern. Warp crossing can be seen in Textiles 14 and 16. Such warp crossing technique is visible in some other fragments with H-shape patterns uncovered from the other caves such as C-1006, C-1022 from Cave F5 [Fujii ed. 1980: 188, Specimens 15, 16], C-31 from Cave F4 [Fujii ed. 1976: 160, Specimens 47, 47', Pl. No. 47'] and V-65-1, V-98-1, IV-W-59 from Cave C16 [Fujii ed. 1980: Specimens 208, 212, 283, 205]. So too is in the other supposed-to-be fragment with H-shape pattern IV-MK-469 from Cave C17. The warp crossing technique is also used on some other thin fabrics except for the ones with H-shape patterns. One of the instances is a portion which is shifted into pattern of the thin plain weave cloth with chequered patterns on (Cave C17, IV-MK-1362) [Fujii ed. 1980: 289, Specimen 217], and the other is a cloth fragment with horizontal stripe pattern band which is woven with woolen weft threads on hemp plain weave cloth (Cave C16, V-71-1) [Fujii ed. 1980: 182, Specimen 4].

As one of the weave finish techniques, Textiles 12 and 14 have the method (Fig. 5-left), where two pairs of bundles of 2–3 warps each twisted together are plied into a cord. The cord warp finish method is a

technique often observed in woolen mantles. Such things have been uncovered from other caves of at-Tar Site. The only specimen from Cave D7 (C-05-VII) [Fujii ed. 1980: 183, Specimen 5, Fig. 5-right] takes three-ply finish method. This is a method used in a cotton fabric.

We see the weave starting border evidenced in Textile 14, where the warp edge is the form of U-turn (Fig. 4). It means that warp threads have been arranged with an endless method. The specimen similar to this has been uncovered from Cave F6, Hill A (C-25-3) [Fujii ed. 1980: 254, Specimen 147]. Also such resembling things have been discovered at Nubia [Bergman 1975: 29–30, Figs. 24, 25].

The selvages of Textiles 12 and 14 belong to Type 3 with the use of additional threads. But here, such method of using additional threads as are fit for the ground texture is adopted (Textile 12, Fig. 23; Textile 14, Figs. 17, 18). Textile 15 takes Type 2, i.e., a weft thread turns back after rotating twice around a single cord selvage (four warps) (Fig. 22).

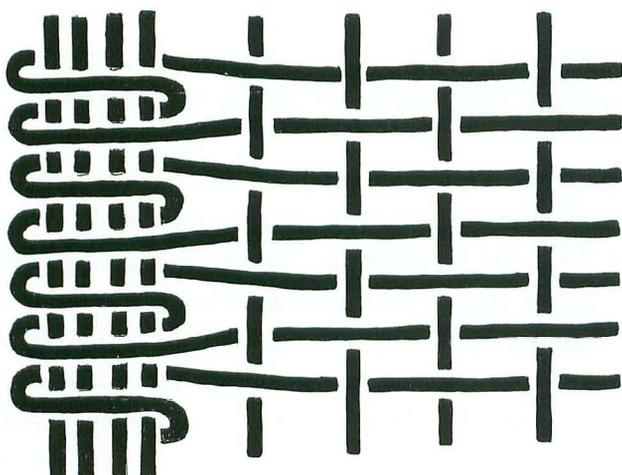


Fig. 22 Type-2 selvage of Textile 15

With regard to the weave marks, a fragment of Textile 12 (IV-OH-368-5), [Fujii ed. 1980: 281, Specimen 202] has its presumable weaver's mark: ◀ pattern, with red weft thread in tapestry-weave technique about 5 cm inside the weave end. The pattern similar to this can be found on a fragment of the large cloth with H-shape pattern from Cave C16 (V-77-2), [Fujii ed. 1980: 273, Specimen 185].

As for Textile 17, sheep and camel fibers are used for a pile rug. The sheep fibers are 18–40 μ while camel fibers are 20–150 μ in thickness⁽⁵⁾. Some camel fibers are very thick. These fibers are separately spun into a single wool thread and a single hair thread. For the warp, both of them are put together into two-ply yarn (grandrelle yarn)⁽¹⁾, whereas for the weft, each single wool thread and hair are used separately at random. All the warp, weft and pile threads are made thick. The pile field of the rug is made of variation of plain weave (warp 2, weft 1); its dull blue green border decoration, variation of plain weave (warp 2, weft 2); its deep red border decoration, plain weave. When the plain weave is shifted into the variation of plain weave (warp 2, weft 2), such warp crossing as some H-shape patterned textiles contain is not recognizable here.

From this, it is considered that four heddle rods had been separately applied here. Just as most of the pile rugs from at-Tar Caves, so is this a weft-faced rug. The selvage is of Type 2 (Fig. 6), where the weft threads are repeatedly turned back to make it thicker and harder than the field portion. The pile knot takes Type A-2 (Fig. 7), where three to four pile threads are put together and then tied. But no piles are knotted together at its border decorations.

3. Design

The six textile specimens coming from Cave 12 have all simple geometrical patterns. Textile 12 seems to have had gamma patterns on its four corners, whose ground is colored dull reddish yellow while the pattern is deep red purple. Textile 13 has horizontal thin bands, colored deep red purple. Textile 14 has H-shape and square patterns which are woven in the similar colors as those of Textiles 12 and 13. Unlike the preceding two, the principal colors of Textile 15 are dark, i.e., deep yellowish red, dark violet and dark blue. With the adoption of the pale dull reddish yellow on the background of the wave pattern bands, the dark violet wave patterns are clearly represented. The whole cloth is red in predominant color, probably aiming at a strong effect on the pattern portion with the use of the dark blue stripes and the tints of the wave patterns.

Textile 16 is a very thin cloth whose ground uses dark blue green warp and weft threads. Three deep purplish red rows of weft-faced horizontal stripes contrast with the dark blue green ground. It is assumed that as a design, another horizontal stripe patterns had been symmetrically arranged near the opposite side. Just as in Textile 15, the textile with wave patterns, it may be said that Textile 16 is also rich in colors evidenced from the remaining designs. These five textile specimens are superior in design as well as weave technique.

As for Textile 17, along the weave start and the weave finish of a pile textile, there are stripe border decorations with the use of colored weft threads which are different from those of the field. This way of border decoration here differs from that of the carpet uncovered at Antinoe, four sides of which are bordered [Dimand 1933: 151–161, Figs. 1, 2] and that of the carpet unearthed at Pazyryk, which is surrounded with borders in fivefold way [Руденко 1968: 41–55, илл 31; Rudenko 1970: 300–302, Pl. 174]. Among the specimens from Dura-Europos, there is a pile textile fragment provided with separate colored border decorations whose pile threads are untied. This is common to the border-remaining pile textile from at Tar in production technique. So it seems likely that the specimen from Dura-Europos also had borders along both the weave start and the weave finish [Pfister and Bellinger 1945: 48, 49, Pl. IV].

4. Description

Textile 12

Textile 12 has been unearthed rather in good state of preservation, which contains in one piece the survival of the gamma pattern on one portion and one side of the selvage which is linked together with the gamma pattern portion (Fig. 15). The gamma pattern is woven in tapestry-weave technique about 18 cm inside the selvage. The gamma pattern is 9 cm in length each with its width of 2 cm in dimensions, and its edge is formed into a notched shape. The dull reddish yellow color ground is about 7.0 cm long below the horizontal portion of the deep red purple pattern. Its original cloth from the weaving start to the weaving end is so fragmentary that we cannot confirm its size. Therefore, it is impossible for us to set an exact allocation of the pattern. The discoveries of the textiles with gamma patterns on have been reported also at the neighboring sites. The Cave of Letters, Nubia, Palmyra and Dura-Europos have yielded large fabrics with such similar patterns arranged on four corners. They are explained as mantles for female use.

Textile 12 has only one spot of gamma pattern identified. On the analogy of some other excavation reports coming from the above-mentioned sites, it is considered that such gamma patterns used to be on four separate corners. The small fragment of the deep red purple weft weave (IV-OH-368-14-①) is regarded as an end part of the notched band in horizontal direction. As for the several fragments woven with deep red purple weft threads, their patterns and allocations are not traceable. In particular, concerning the pattern which is regarded as the weaver's mark, the ◀ pattern on fair-sized fragment (IV-OH-368-5, 21.0×62.1 cm) has been woven about 5 cm inside the warp cord finish application. Cave

16 has a specimen which is very similar to this in pattern and allocation. It is considered as part of a large cloth with the H-shape and square patterns along the selvage (Cave C16 V-77-2), [Fujii ed. 1980: 285, Specimen 210, Pl. VIII, No. 210], where the weaver's mark-like  pattern is woven about 3.5 cm inside the warp finish. In addition, there is a small tapestry-weave technique fragment which seems to be the weaver's mark (Cave F5 C-201-d), [Fujii ed. 1980: 273, Specimen 185], but its allocated position is obscure. Among the specimens coming from the Cave of Letters, there are some patterns which are described as the weaver's marks. Some are allocated about 2 cm inside the weave finish. Others are woven near the square pattern which is arranged along the selvage [Yadin 1963: 225, Figs. 73, 76, Pls. 69, 85]. Nevertheless, we have another assumption that they had been the marks of the persons who ordered the textile production.

Textile 12 has its ground in plain weave of warp 1 and weft 1, whose thread-spacing belongs to Type 1. The selvage is composed of 3 cords, where 3-5 warps are made into a single cord, each. Further, additional threads which are made of three threads each are used to avoid weft thread damage while resting on Type 3 selvage structure (Fig. 6). As the result of our research into selvage-remaining fragments which are identified into the same textile, we have learned that some selvages are composed of the different number of warps which are bundled into a single cord in spite of their same structure. The number of warps in individual three cords is from the selvage side: 4, 5, 3 → ground, 5, 4, 3 → ground, 3, 4, 5 → ground, 4, 4, 3 → ground, etc.. Like this way, each composition of warp threads is different in number. In our thinking, the reason is due to warp threads damage at the selvage or such simple errors of various techniques as the error in calculating the warp number when the warps are got together or the error in taking up the warps when they are set for operation. Such errors are apt to cause when weave work is conducted by hand. Therefore, we cannot jump at the conclusion that the fragments should be taken for another origin, evidenced from the existing difference of selvage composition in number. The selvages standing for Textile 12 have usually the alignment of three cords of 4, 5, 3 → ground. Such sort of alignment is frequently seen in other fragments. The figure of selvage structure has been drawn according to the representative cloth (Fig. 23). The system of the additional threads on this figure is often used for the fabrics of Type 1 in thread-spacing as just as in Type 2 selvage, but Type 3 selvage like Textile 12 is observed on the elaborate fabrics. For example, the system of the additional threads on the square patterns in Textile 14 (Fig. 24) resembles Fig. 23 of Textile 12, which is different from that on the ground of Textile 14 (Figs. 17, 18). And the specimen from Cave C16 (V-21-1) has its ground woven with plain weave technique, warp 1 and weft 1 while its thread-spacing is Type 1. Its weave structure is similar to that of Textile 12 from Cave C12. Both of the selvage structures are similar to each other (Fig. 25).

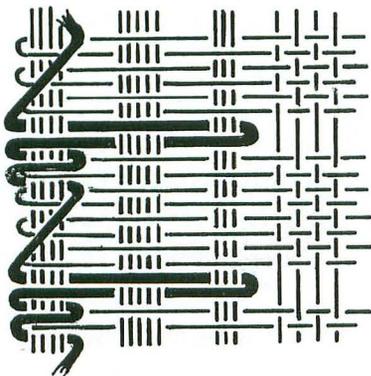


Fig. 23 Type-3 selvage at the ground of Textile 12

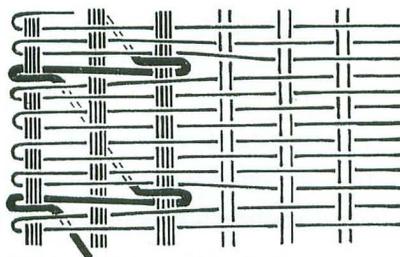


Fig. 24 Type-3 selvage at the square patterns of Textile 14

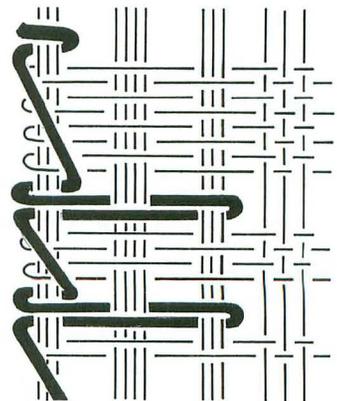


Fig. 25 Type-3 selvage at the ground of C-16 cave, V-21-1

Textile 13

Textile 13 is a thin plain weave, weft-faced cloth. Its ground portion has been woven with a number of fine warp and weft threads, compared with that of textile 12. Its warp twist is strong, and the number of warp twist is a little larger than that of weft twist. The arrangement of more twisted fine warps with rather less twisted wefts has given the cloth an even surface, thus resulting in smooth feeling in touch.

Moreover, the horizontal bands are woven with the wefts predominating on them through the strong application of twisting the deep red purple fine threads. As the result of such device as fine threads are used there, the pattern portion avoids becoming thick.

This is utterly the same weave technique with that of the mantle with the gamma pattern in Textile 12. Viewed from such similarity of ground and pattern portions in weave structure between Textile 12 and Textile 13, we presume that both were woven in a set while using identical color threads at a single workshop at the same time.

The above presumption is based on the following:

- (1) Dyeing: In observation, their warps, ground wefts and pattern wefts are equivalent in color and color grade to each other, so that both seem to have been dyed with a same kind of dyestuff almost at the same time on the initial stage of their raw woolen material dyeing.
- (2) Spinning: Both are similar in quality, thread thickness, twist direction, twist count and thread uniformity.
- (3) Density: There is a close resemblance between the two in all the numeral values of warp density, weft density and thread-spacing.

It is thus considered that Textile 12 and Textile 13 were originally produced as a set with their modification given only on the pattern shaping.

Textile 13 is regarded as a thin tunic with simple horizontal bands. In at-Tar Caves, majority of tunics uncovered are of about 1.5mm medium-thick in cloth thickness. In this connection, Textile 13 is believed to be among good-quality thin fabrics. In observing the garments of persons on the wall painting at the synagogues in Dura-Europos, some are wearing the matle with H-shape or gamma shape patterns over the left shoulder down around the lower right half of the body, inside of which we see them wearing tunics (the Roman tunica) with vertical bands (clavi) down from both shoulders (Pl. 34-c and cf. Pl. 27), [Pfister 1945: 10~11; Yadin 1963: 228; Ghirshman 1962: 42].

In the case of Textile 13 used as clothing, it may correspond to such kind of tunics with vertical bands. There are no grapevine scroll, wave, flower-and-tree patterns in Textile 13. Several fragments of horizontal band patterns only still survive there. Judging from this, there is a possibility that they may be parts of several bands. As shown in the passage of Inner Room, tunics were woven with their patterns in horizontal direction, whereas as garments they were worn with their stripe or band patterns arranged in vertical direction.

Textile 14

Textile 14 has been uncovered in good state of preservation and is the largest of all the at-Tar finds. Although a part of the pattern is defective, the survival is good enough for us to study thoroughly its pattern allocation, pattern size, weave starting and finishing borders, and both the selvages. Therefore, evidently this textile will be an important data to throw light on the solution of weave techniques in ancient Mesopotamia.

Various sorts of analyses to reconstruct the textile turn out that most of the woolen fibers used in the uncovered specimens are superior in quality, as already mentioned in the reports [Fujii ed. 1984-85: 68-80]. Thread spinning technique is excellent with fine threads of uniformity used for both the warp and weft threads. The finest of all are the threads for warp and weft of the fabric unearthed from Cave 17

(IV-MK-1428), which are 0.12–0.23 mm in diameter and are in good quality with uniformity. In Textile 14, the warps are mostly 0.17–0.3 mm in diameter, where rather thick threads are sometimes observed here and there. The wefts are about as thick as the warps. Its ground composition is of variation of plain weave (warp 1, weft 2), whose thread-spacing belongs to Type 2. A single thread each is paired together for the weft thread (Pl. 30–b). This technique is taken up to make the cloth soft in Method 3 of Two-weft picking method in Chapter II, and it is a case where the paired weft threads turn round in the same direction at irregular intervals as indicated in the circle mark in Pl. 30–b. And at at-Tar Site, this is the method frequently used for the large cloth with H-shape patterns. For example, it seems likely that the fragments C16-V-77-2 [Fujii ed. 1980: Specimen 210], C16-V-98-1 [Fujii ed. 1980: Specimen 212] and C17-IV-MK-469 [Fujii ed. 1980: Specimen 165] are the fragmentary cloth pieces with H-shape patterns woven with the similar variation of plain weave as this.

Secondly, the weave structure of the pattern portion is of variation of plain weave (warp 2, weft 1), whose thread-spacing is Type 1. A single warp is used on the ground, but at the shifting point from the ground to the pattern, paired warps each are used after the adoption of warp crossing. The integral point of the weave alteration and warp crossing is indicated in Fig. 3–A. As already mentioned in Chapter II, it is known that the weave technique of altering weave structures by the warp crossing like this way had been aimed at giving better touch to the pattern portion.

In Textile 14, the ground is composed of warp 1 and weft 2 while the pattern is, warp 2 and weft 1 (2.2.2.2/repeat). However, the warp composition of the pattern portion in the specimen (C16-V-98-1), [Fujii ed. 1980: Specimen 212] is an irregular type (2.2.1.1/repeat) (Fig. 3–B). This is a peculiar type unparalleled to anything else.

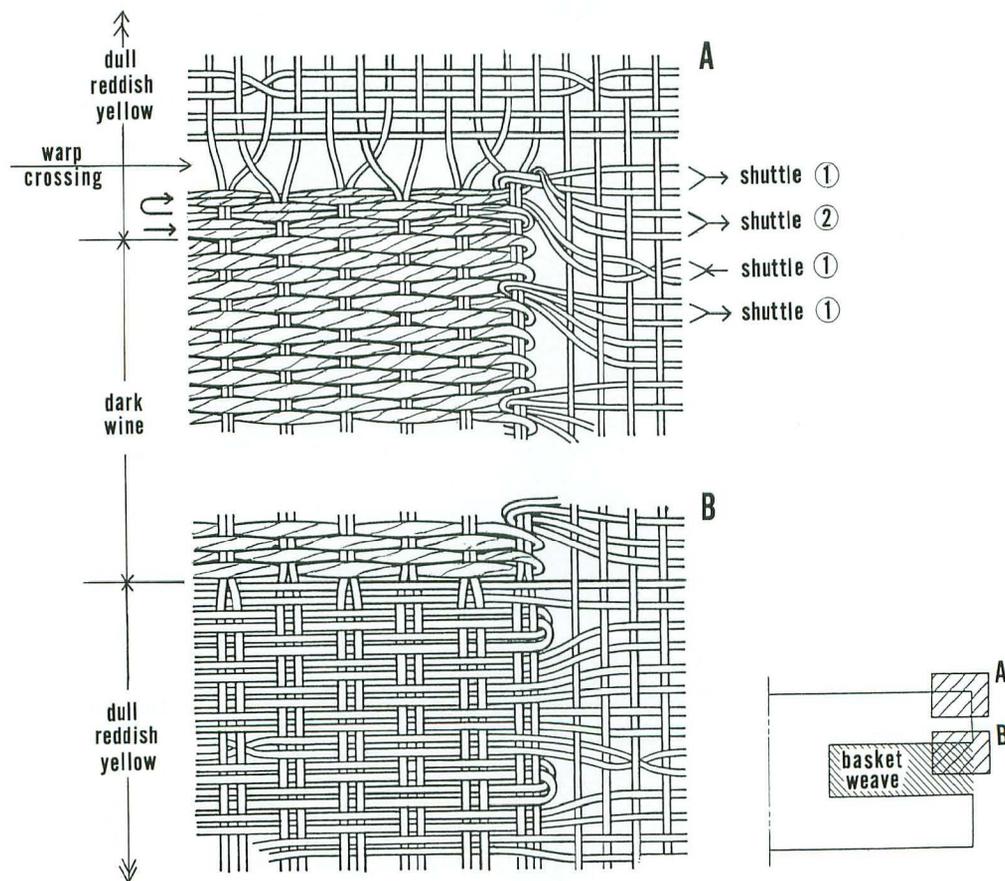


Fig. 26 Structure making around corners of H-shape pattern, Textile 14

In Textile 14, the joint part which consists of mutual U-turn work of the ground weft and the pattern weft at the end of H-shape pattern is so devised that the ground weft and the pattern weft are jointed with dovetailed tapestry technique. And while shifting from the ground woven with the variation of plain weave (warp 1, weft 2, balanced type) to the H-shape pattern, at first, the narrow ground part comes to be woven with the variation of plain weave (warp 2, weft 2) by altering the warp composition into paired warps through warp crossing technique and then, H-shape pattern is woven with a single weft (warp 2, weft 1). Next, when the pattern gets to the shifting part into the notched part, the warp without any alteration of its composition is well interworked with the paired wefts which constitute the ground wefts. In effect, the ground weft threads in the notched part are in the state of paired wefts just as in other ground portions. So, the notched part is composed of the variation of plain weave (warp 2, weft 2), (Basket weave, balanced type). Then, when the notched part comes to the point where it is shifted back to the pattern portion, the pattern is woven with a single weft without altering the warp composition, getting back to the variation of plain weave (warp 2, weft 1). Lastly, at the ending point of the pattern, it goes into the ground woven with the variation of plain weave (warp 1, weft 2) by using warp crossing technique through the narrow ground part (warp 2, weft 2) (Fig. 26).

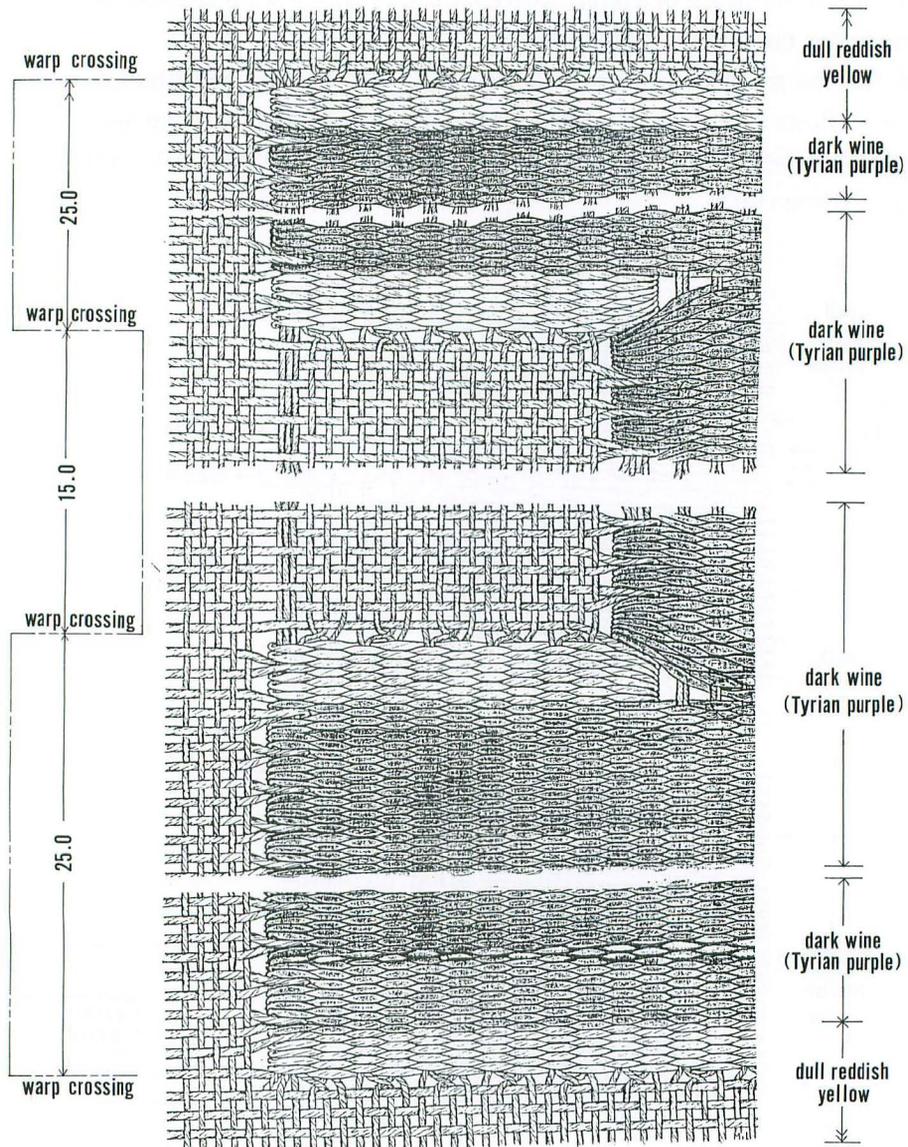


Fig. 27 Structure of H-shape pattern, Specimens F4-C-31, 31'

On the other hand, the specimen with especially wider H-shape pattern (F4-C-31, 31'), [Fujii 1976: Specimens 47, 47', Pl. TEXTILE 47'] also has a wider notched part than the ones of Textile 14. In this specimen, the narrow portion shifting from the ground of the plain weave into the pattern of the H-shape part is woven with the paired warps which are altered by warp crossing to represent the pattern of the variation of plain weave (warp 2, weft 1). Next, at the end of the pattern portion shifted to the notched part, it is altered into plain weave by using warp crossing technique again. Third, at the beginning of the shifting part changed from the notched part into the pattern again, the pattern is woven with the variation of plain weave with its composition altered by warp crossing technique. And then, finally, at the ending of its shifting from the pattern, plain weave is applied on the ground again through the reuse of warp crossing technique (Fig. 27).

Moreover, in Textile 14, we see the evidences of structure alteration by warp crossing technique on the starting and finishing borders of the square pattern portion.

It is assumed that such square patterns had been arranged at four corners. Due to the cloth deterioration, Textile 14 has such patterns surviving only on two portions. In the left of the two, on the third square pattern from the weave finish, structure alteration can be detected inside the pattern portion unusually (Pl. 30-b). The presumption is that the weaver failed to alter the warp structure in shifting to the pattern portion, so that structure alteration was practiced by warp crossing method at the weaving point of about 1.3 cm from the beginning of the pattern. After that, warp 2 composition continues up to the end of the square pattern and then it is altered back to a single warp thread again. Such evidence cannot be traced on the square pattern on the opposite side. The evidence makes us consider that different persons had been engaged in the work at the right and left selvages, respectively.

As shown in the figure of selvage structure Figs. 17, 18, the selvages in Textile 14 are of very elaborate make. They are composed of Type 3 with the adoption of additional threads. The selvage constitutes three cords, each of which is set with four warps. The woven selvage generally feels rather flat and thick. The selvage on the face makes triangle in shape at first sight, with the central cord mounted on both the side cords (Pl. 32-b). It is thinkable that the idea of such shape started from the skillful additional thread binding of the selvage and its actual making has not resulted from the product of chance. It seems to have been due to the weavers' conception to make the selvage portion closer to the starting and finishing borders in shape for the balance of the whole cloth. The interpretation is that such weave technique had been brought about by the idea that all the large cloth should be woven in soft touch with its four sides functioning as a roundish frame. This is probably because the necessity of wearing soft large cloth and representing properly the patterns had led to the production of such uniform hard borders, if the mantle had been the wearer's symbol of social class and dignity.

As for the selvage structure in Textile 14, it slightly differs with individual weavers in charge. But this is the left side selvage which seems to make basic structure, seen from the starting border, because the right side selvage is partially different. On the other hand, the remaining left side selvage is all of the same structure (Fig. 17).

The additional thread on the square pattern is different from the ones of the ground in structure owing to the situation of weft density (Fig. 24). At the square pattern, the number of wefts over which the additional threads stretch is usually 6-10 threads, which is properly changed by the weft thread density of the pattern.

As the result of our careful examination of complete survival of H-shape pattern, we have learned that there are some spots in which two shuttles are used as shown in Fig. 26. At the warp crossing spot in the structure figure, the pattern and the ground are joined together while handling two shuttles ① and ②

skillfully. The shuttle ② seems to have been mainly used between the right and left H-shape patterns, which had been handled by the weaver in charge of the central portion of the cloth. It is, therefore, presumable that two weavers had been enough to weave the ground portion except for the H-shape pattern. For somewhat wider range of work, however, it seems likely that two workers had been needed to take charge of the systematically complex both-side selvage making, in addition to one worker at the central portion.

Textile 15

This is a cloth including horizontal stripe pattern band and wave pattern band which is woven by tapestry-weave technique. It may have functioned as a tunic. The whole cloth is a pretty thick one of plain weave (warp 1, weft 1) whose thread spacing is in Type 1 (weft-faced weave). The weft on the portion which is presumed to be a ground is deep yellowish red in color, where a wave pattern band of about 1.5 cm in width is woven in the colors of dark violet and dull reddish yellow. There are two rows of wave pattern bands whose dark violet colored heads are reversed each other. The space between the two rows is about 13 cm wide, which is woven with deep yellowish red threads. Outside of the two rows of the wave pattern bands, we see dark blue horizontal pattern bands, the width of which is obscure (IV-OH-121). There is another fragment with wave pattern band, dark blue portion and deep yellowish red portion on it (IV-OH-335, 9.1×8.2 cm), [Fujii ed. 1980: Specimen 201: Pl. IV No. 201]. And a little larger selvage-remaining fragment (IV-OH-368-3-①a, 25.2×14.2 cm) includes a dark blue horizontal stripe band of about 3 cm in width. Both sides of the band are presumed as the ground portions woven with deep yellowish red weft threads. The selvages are composed of Type 2, where 4 warps are bundled into a single cord. The other fragment has a part of wave pattern band, a dark blue portion and a deep yellowish red portion on it (IV-OH-412).

The specimen coming from the other cave contains a wave pattern band (black and dull reddish yellow color) and fine horizontal stripes (C16-V-65-6), [Fujii ed., 1980: Specimen 209: Pl. VII No. 209]. The ground is supposed to be brown while the deep yellowish red horizontal stripe band is divided with fine black stripes, further outside of which there are wave pattern bands arranged. It closely resembles Textile 15 in the representation of the wave pattern bands. This is also too fragmentary to grasp the whole information of the patterns.

Textile 16

This is an extremely thin fabric of dark blue green warp and weft plain weave (balanced plain weave) on the ground, one end of which has three rows of horizontal stripe patterns with deep purplish red wefts, using variation of plain weave (warp 2, weft 1) and Type 1 (weft-faced weave). It may safely be assumed that this cloth had been a cord to be used for preventing the fabrics for the use of wrapping the dead body from dispersing away, which had been prepared for use with a portion of a large cloth torn off. This is a torn strip of 121.4 cm in warp direction and 12.8 cm in weft direction. It has numerous fine folds, i.e., wrinkles, in warp direction, where discoloration and damage have been observed. Warp crossing for structure alteration is observed on the part shifting from the ground onto the pattern portion near the cloth edge. But the technique is not applied to the narrow space (about 4 mm) between the 2nd row and the 3rd row of the stripes.

The ground is composed of high density of fine warp threads which are predominant in twist count (thread diameter: 0.20–0.35 mm, twist direction and twist count: S 14.0–16.7/cm, warp density: 22.0–24.0/cm). The weft threads are smaller than warp threads in twist count, and are rather thick with low weft density (thread diameter: 0.30–0.40 mm, twist direction and twist count: S 3.0–4.5/cm, weft density: 17.0–19.0 cm). The ground is of plain weave (warp 1, weft 1, balanced type weave).

The pattern is of variation of plain weave, using warp crossing technique for warp structure alteration

at the turning part from the ground to the pattern (warp 1 → warp 2) (Fig. 28). The weft is deep purplish red fine thread of low twist count (thread diameter: 0.12–0.30 mm, twist direction and twist count: S 7.8–14.3/cm). The weft density is very high (72.0–76.0/cm). Because of its weft-faced weave, warp threads are completely hidden behind, so deep purplish red stripes very clearly appear. As for the horizontal stripe pattern making, a deep purplish red horizontal stripe is woven about 10.7 cm wide with the structure change at the part shifting onto the first row from the bottom of figure; next, turning the structure into plain weave again, the ground is woven about 4.6 cm in dark blue green color; then it is switched into the deep purplish red horizontal stripe weave for about 1.2 cm width, next, dark blue green horizontal stripe of about 4 mm in width is woven with the use of the ground weft; again the horizontal stripes of about 1.3 cm in width are woven with deep purplish red weft threads; then, it eventually gets back to the plain weave with warp crossing technique. That is, four times of structure alterations by warp crossing method have been conducted in the space of about 18 cm until three rows of deep purplish red horizontal stripes are completed. There is no occurrence of disorder in the warp crossing, all of which has been kept in a regular manner. Warp density of the ground is very high, 22.0–24.0/cm. It is, therefore, considered that even an ordinary opening operation was not so easy. It is further conceivable that the opening operation must have been much more difficult when the warp crossing technique was applied there. In this connection, it

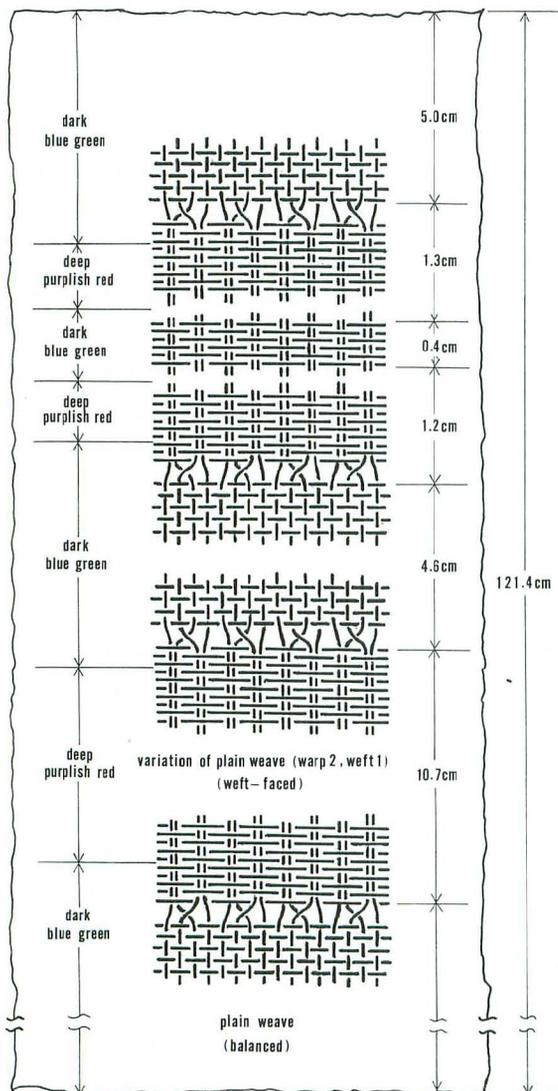


Fig. 28 Pattern composition of Textile 16

can be said that Textile 16 is rich in helpful suggestion for our further study, because we are very inquisitive about what sort of weave technique had been applied to this fabric. Moreover, we must investigate such finds from the neighboring sites.

We have already mentioned that this specimen probably comes from a part of a large cloth. Supposing its original use had been intended for a veil or a scarf, such similar horizontal stripes had been symmetrically arranged near the opposite side. But we cannot determine the size between them. None of the specimens of this sort have been uncovered from the other caves of at-Tar. But there is a specimen from the other site which is regarded as a veil very similar to Textile 16 in design in spite of its large difference in quality. This is a fabric uncovered at Nubia [Bergman 1975: 15, Pl. 8]. Both edges, full length, and pattern band near them still remain on this specimen. It has a symmetrical arrangement of three rows of horizontal stripes on either edge. The size of the fabric uncovered is 135×85 cm. The horizontal size is not its full width, but its remaining width. The ground seems to be a veil-like fabric. It is, therefore, estimated from this fabric that Textile 16 has been over 150 cm in rough size, maybe from the starting border down to the finishing border, including the horizontal stripe pattern bands on both sides.

There is another fabric from Cave C17, which is of plain weave ground of chequered pattern with pattern in tapestry-weave technique (IV-MK-1362-①, -②) [Fujii ed. 1980: 289, Specimen 217], which is different from Textile 16 in pattern. But it is similar to Textile 16 in cloth touch. It looks like a decorative wear rather than a veil.

Textile 17

This is a fairly well preserved cloth of large size. The dark grayish brown pile tufts on the field and the deep red and dull blue green border designs are also kept. It is a thick pile rug with border design. The deep red portion of the border design is of plain weave, and paired warp threads start from the dull blue green portion, where a paired weft is running. There are no pile threads knotted together on the border design. The weft on the border design is finer than that of the field. The field is composed of warp 2 and weft 1, where pile threads are tied with Type A-2 at an interval of 0.8–1.5 cm. This knotting method makes a double-faced pile textile, on both sides of which pile tufts come out. This textile is thick and rough since three or four threads of double plied pile are tied on individual paired warp threads in addition to its thick field threads. To the best of our knowledge, Type A-2 knotting method was peculiar to at-Tar in ancient times. Examples of this sort have been unearthed from Caves B8, D3 and C16. With the application of Type 2 selvage-making method, both selvages of the rug have been thickly and tightly strengthened. The pile tufts are generally long, the longest one of which is no less than 14 cm in length. As for its weave start, the cloth is folded over and stitched up after the rest of warps are cut off. The slender deep red colored plain weave cloth with hem (C) is presumed to have been used as a rope which had been doubled over and to have functioned as binding one edge of the dead body wrapped up in the very rug at burial, which is deduced from the excavated situation. It is said that such a thick, rough finish is typical of Type A-2 rug.

5. Conclusion of the slender corridor

(1) On analysis, it is proved that about ten pieces of the human bones which have been found dispersing among the textiles belong to a female [Fujii et al. 1980: 170–171]. Under the excavated situation, the textiles were not in so dreadful confusion. And all the six uncovered specimens are good-quality fabrics for the most part. In particular, Textile 14, the fabric with H-shape patterns, gives us the information of the cloth size. As the result of our detailed analyses onto the cloth, we have learned that very fine threads and the weave technique to give the whole cloth flexible touch had been applied there. For example, on the ground part, we see the system of a single warp interlacing with two fine weft threads; at the part of

shifting onto the tapestry-weave on the pattern part, the warp crossing technique brings about the change in the warp structure into two warp arrangement, thus resulting in the formation of such prominent pattern parts.

The appearance of weft-faced type on the pattern part is produced by numerous interlacings of a single fine weft passing over the warp threads. It is probable that this technique is a way to give the cloth the pattern texture in accordance with the ground softness.

The problem as to whether or not such technique had been applied to other fabrics with H-shape patterns uncovered at some other sites must be left to the forthcoming comparative researches. At any rate, it is true that such technique has been often used on the pattern portions of not only the textiles with H-shape patterns but also other thin ones at at-Tar Caves.

Deduced from the wall painting of the costume with H-shape pattern band seen at a synagogue in Dura-Europos and the textiles of this sort, uncovered at Dura-Europos [Pfister and Bellinger 1945: 5, 11, Pls. X(18), XI(19)], the Cave of Letters [Yadin 1963: Pls. 68, 83, 84] and Nubia [Bergman 1975: 46, Pls. 59, 63(3)], they are regarded as a mantle for male use.

As regards the H-shape pattern, however, the report from the Cave of Letters says that it is a notched band [Yadin 1963: 220–221, 223], while the report from Palmyra that 'la band fourchue dans les bouts', giving examples of T35 and T36. Furthermore, they correspond to an ornament for male mantle by comparison with the plaster bust of a boy (3rd century A.D.) exhibited in the Cairo Museum [Pfister 1937: 14, 16]. Then, after due consideration, it is assumed that the purple pattern on L92, is H-shape pattern, which corresponds to the design on the Conon figure of a fresco shown at the Palmyra Temple in Dura-Europos (1st century A.D.), [Pfister 1940: 22–30].

At Palmyra, Specimen L19 has been uncovered. This is a woolen fabric with square patterns which presumably consist of a set of three 'pourpre' square patterns in tapestry-weave technique along the selvage [Pfister 1934: 35]. Furthermore, it is reported that L105, L108, L110 and L111 also contain square patterns (in purple color) along their selvages [Pfister 1940: 23–24].

At at-Tar Caves, the existence of the square patterns woven along the selvage on a large fabric coincides with that of H-shape patterns as shown in Textile 14. At at-Tar, Cave F4 also yielded a large cloth with H-shape pattern, named F4-C31, with a set of three square pattern bands along the selvage [Fujii ed. 1976: 160, Specimen 47', TEXTILE No. 47' in color plate]. This is a thin cloth of good quality whose patterns are woven with the weft threads dyed in Tyrian purple⁽⁷⁾. It is presumed from these textiles that all the textiles with H-shape patterns uncovered at at-Tar had been with a set of three square pattern bands along the selvages. It is, therefore, probable that the specimens L19, L105, L108, L110, and L111 from Palmyra also contained H-shape pattern bands just like Textile 14 and F4-C31 from at-Tar Caves. Just as in the case of Palmyra, No. 24 and No. 28 [Yadin 1963: 224, Fig. 76] uncovered at the Cave of Letters also contain a set of three square patterns each along the selvages. Thus, these specimens are considered to belong to the textiles with H-shape patterns on, deduced from the specimens coming from at-Tar. Textile 9 discovered at the inner room of Cave 12, at-Tar Caves has a square pattern along the selvage, too. So, it can be regarded as a cloth remain of H-shape patterns.

(2) At at-Tar Caves, the fabric with 'gamma' pattern designs has notched parts in the vertical and horizontal directions. This is also common to the ones at Nubia, the Cave of Letters and Dura-Europos, and to the specimen L73, woolen cloth from Palmyra [Pfister 1940: 21]. Another specimen T89, 'toile', has its brown woolen pattern portion woven in tapestry-weave technique [Pfister 1940: 16]. If the figure had been drawn in the warp direction, this specimen could have had a 'gamma' pattern, since a notched part should be quite naturally at the end of the pattern in the warp direction. On the contrary, however, if the fine lines in the pattern had represented rib, the figure could have been drawn in the weft direction.

Accordingly, there may be no reason to say that the resultant one is a 'gamma' pattern. Sometimes, it may rather be a H-shape pattern.

In spite of fragmentary state, Textile 12, accompanied with gamma pattern, is a little thicker cloth than Textile 14, and its pattern is clearly evidenced. The textiles of such patterns have also been unearthed at the Cave of Letters, Dura-Europos, Palmyra and Nubia. The interpretation is that the gamma pattern on the pattern portion is originated in a mantle for female use, resting on the wall painting at a synagogue, Dura-Europos.

The thin large textiles with H-shape and gamma patterns which are unearthed at at-Tar Caves have their weavers' marks beside the weave finish portions. There is no example of their weavers' marks having been discovered anywhere near the selvages. In the meantime, it has been identified that the specimens from the Cave of Letters have such marks located beside the weave finish or close to the inside of a set of three square patterns woven along the selvage.

(3) Textile 15 seems to be a tunic style textile. It is presumable that its patterns had a symmetrical arrangement of wave pattern band and horizontal stripe band. It has been woven into a beautiful stripe fabric, since light orange warp threads are interlaced with deep yellowish red weft threads on the ground and with dark blue weft threads and dark violet ones on the pattern. We can see such similar designs containing wave patterns on the fabrics (V-65-6; IV-OH-2) from the caves, C16 and C7 respectively, and on the textiles unearthed at Dura-Europos [Pfister and Belinger 1945: Pl. XVII (126, 127)].

(4) The ground of Textile 16 is densely composed of fine warp threads of more twist count than those of Textile 14, whereas fine weft threads of less twist count than the warp threads are well balanced into warp threads, thus resulting in the formation of gauze-like finish. It makes the cloth agreeable to the touch. In addition, it is thinkable that, near the cloth edges, there are more than six rows of clear red horizontal stripe pattern bands woven on the dark blue green ground, caused by the warp crossing structure alteration.

(5) We can understand that the discoveries of the brilliant colored textiles, Textile 15 and Textile 16, accompanied with the gamma patterns of supposedly female use quite naturally correspond to the female dead body unearthed there. Nevertheless, it is all the more interesting to notice that the textiles with H-shape patterns of supposedly male use have been found covering all over the fabrics which wrapped up the dead body. It is evidently true from the several excavation reports mentioned above that there was a wide distribution of H-shape and gamma patterns for several centuries during the Roman Empire, ranging from East Mediterranean coastal areas down to Egypt. Under the circumstances, we can hardly refrain from putting much more questions as to the real significance of the H-shape and gamma patterns. For example, one of the questions is why they had notched parts on both edges, and the other is why the straight use was intended for male, while the right angle use, for female.

(6) Furthermore, a pile textile of Type A-2 knotting method has been found lying directly under these five specimens. The textile of Type A-2 pile knotting method is peculiar to at-Tar, which is unparalleled to any other site, as far as the researches up to the present day are concerned. This is a very interesting problem viewed from the diffusion and formation of cultural trait. For it is little known as to what has caused such unique Type A-2 pile knotting as is quite strange in any other site to appear here in at-Tar, though all the discoveries of knotting types are clarified as mentioned in Chapter I.

In addition, the fabric V-79-5, which is similar to Textile 17 from the slender corridor in both the knotting type and ornamental border, has been found at Cave C16. It also has Type A-2 knotting, and the borders with horizontal stripe patterns, corresponding to weave start and weave finish parts, are of plain weave without any pile knotting. Most of the pile textile from at-Tar with borders have a marked feature that these borders have been evidenced only along the weave start and weave finish, no matter what kind of pile knotting their fields may have. It attracts our attention since they can be compared with the specimen

from Dura-Europos mentioned before. For reference, the *tatami-facing*-like rush mats which seem to have been used as floor mat are uncovered at Caves F6 and C16. Their borders along the weave start and weave finish are made of wool with colorful chequered patterns [Fujii ed. 1980: 313]. In this respect, it is considered that the pile textiles with borders had been produced mainly for floor use.

We have already mentioned about the marked features of the textile specimens uncovered at the slender corridor. In comparative studies, the result is that Dura-Europos and Palmyra have yielded the textiles with H-shape patterns, the textiles with gamma patterns, the textiles with square patterns and the textiles with a set of wave pattern and horizontal stripe patterns; The Cave of Letters and the sites of Nubia have the large fabrics with H-shape and gamma patterns, but not the ones with a set of wave patterns and horizontal stripe patterns; they have the fabrics with mere stripe patterns. Needless to say, therefore, further study will be necessary mainly focussed on pattern and material. All the specimens from the slender corridor are similar to the ones of Palmyra and Dura-Europos. However, our overall observation leads us to the view that they are closer to the ones from Dura-Europos in the combination of their characteristic elements.

V. Conclusion of the unearthed textiles from Cave 12, Hill C

In examining all the specimens uncovered from the two areas of Cave 12, this corridor has the mantles with H-shape and gamma-shape patterns, the tunics with wave and stripe patterns, and a piece of torn cloth for binding, all of which are together with the pile rug with A2 Type knotting. In the meantime, the inner room has yielded the tunics with flower-and-tree design, tree patterns and bands, the mantle with square patterns, several pieces of band-like cloth and a cord, all of which are also followed by the pile rug with B1 Type knotting. The existence of their associated relation is of great importance.

The other at-Tar Caves also, have a considerable number of pile textiles with B1 Type, A2 Type, A1 Type, B2 Type and C Type knotting methods. How should we understand such differences of pile knotting methods as we have observed? Basically speaking, we think that this may have arisen from the differences of technical inheritance in the pile knotting methods relevant to the custom of dwelling life in those days. In addition, it is generally observed that every cave has been associated with the clothing materials of such similar patterns and weave structures and the pile textiles of several types of pile knottings, as already mentioned in the case of Cave C12. Therefore, in the future, it will be necessary for us to solve the question of why such an associated relation should exist there. In this point of view, such features on the patterns, weave structures and pile knotting ways as already dealt with in this report are the matters worthy of note. Henceforth, it is expected that our thorough study for clarifying the associated relationship between the combination of clothing specimens and dwelling specimens (pile knotting methods) already unearthed at individual caves will certainly lead to the classification of their characteristics peculiar to every cave. Moreover, this will also facilitate our comparative research between our data and those from the other sites in the above-mentioned surrounding area, which will further help us contribute to the progress of comparative studies of cultures.

To our regret, however, the fact is that the detailed report on pile knotting methods has only been limited to that from Dura-Europos and the sites of Nubia. Thus, it seems all the more necessary for us to make careful investigations into the knotting methods of pile textiles unearthed around there in the future.

There are some kinds of specimens with H-shape patterns among the ones uncovered at at-Tar Caves. The lengths of the H-shape patterns in the warp direction so far identified have roughly two kinds of types in dimensions: (Fig. 29). The typical examples, are shown below.

- 1) about 25 cm length (Cave F4: C-31)

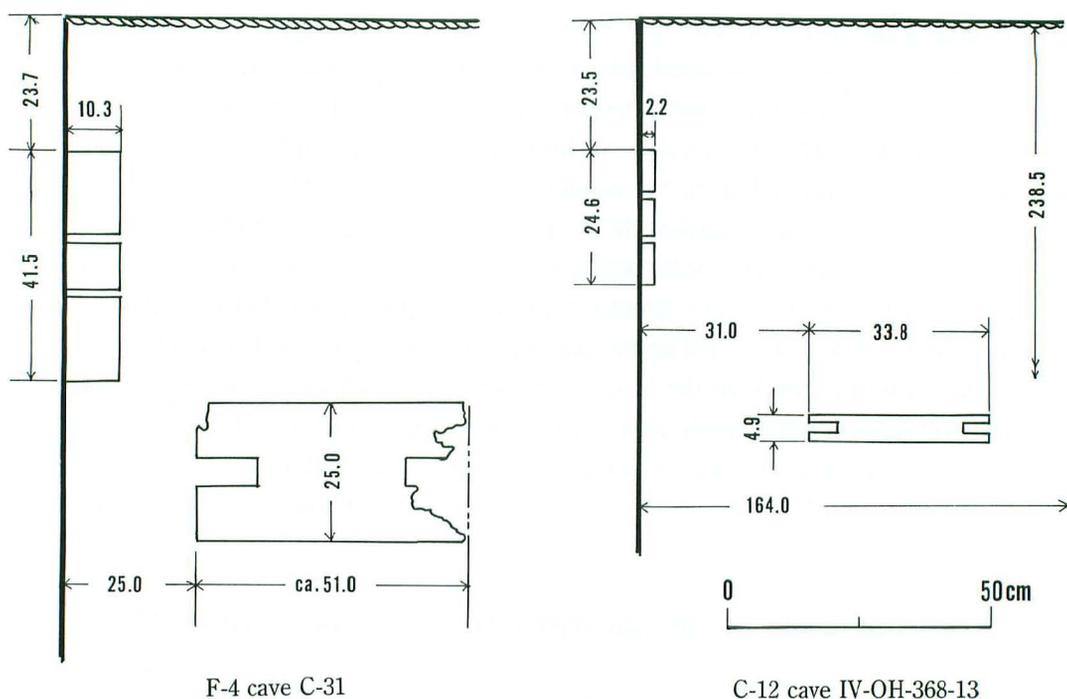


Fig. 29 Lengths of H-shape Patterns

- 2) about 4.9–6 cm length (Cave C12; IV-OH-368-13 (Textile 14), Cave F6: C38-19-a, Cave C16: V-126-3, IV-W-59, Cave F5: C1006...cotton)

In the above mentioned C-31 and Textile 14, we have confirmed that the sizes of a set of three oblong patterns are in proportion to the sizes of the H-shape patterns.

Of them all, dominant in number are the specimens with H-shape patterns of about 5 cm length. There is only one evidence (Cave F4: C-31) whose H-shape pattern is the longest, and according to Prof. Tsuneo Yoshioka's analysis, its weft threads on the pattern portion are dyed presumably with Tyrian purple [Fujii ed. 1980: 106]. On the other hand, Prof. Yoshioka and Prof. Yutaka Takagi assumed that Textile 14 is dyed with a compound of Kermes or Madder and indigo. In this connection, some examples of H-shape patterns whose bands are rather long and others whose bands are rather short can be observed on the wall paintings of Dura-Europos. Belonging to the former case are the mantles which priests are wearing in the shrines VI, X and XI, Hatra (Pl. 34–C shows an example of the shrine VI) and the Conon figure of a fresco, in the Palmyra temple, Dura-Europos [Ghirshman 1962; Pl. 59], while the wall paintings of the synagogue in Dura-Europos belong to the latter case. It is likely that the evidences similar to these two kinds of mantles with H-shape patterns depicted on them will be the ones from Cave F4: C-31, the former, and Textile 14 (Cave C12, OH368-13), the latter.

Hence, our pursuit of long-short relation of the H-shape pattern bands in connection with that of those uncovered at other sites such as Dura-Europos, Palmyra and the Cave of Letters will certainly furnish one of the keys for the solution of the cultural complex lying in the religious and social back grounds of groups of ancients that had been buried at at-Tar Caves in old days.

Accordingly, it is pointed out that they bear striking resemblance to the finds from the East Mediterranean coastal areas in quality and design. They show some unique features resulting from acculturation. This is also true of the other articles from some other caves of at-Tar. We wonder how such features had occurred. Is it impossible to consider that a new culture was born here, greatly influenced by the stream that with the eastward advance of the Hellenism and the Roman Empire culture

out of the Mediterranean coastal areas, the cultural traits (design composition) of the Syrian district, which had been gradually formed as the result of cultural change, further went on advancing eastward through the desert road, and that the Mesopotamian cultural trait turned out to join with the Syrian cultural trait? In particular, not to speak of such peculiarity as seen in Type A2 pile knotting method, we have found here the articles of superior quality in material, weave structure and design representation such as the large cloth with H-shape patterns and gamma pattern, the tapestry combined with flower and tree design, wave pattern and shaded color band, all of which are considered as belonging to the 1st-3rd centuries A.D., and are similar to or slightly different from the ones of the Syrian district and the Levant coastal area. From these evidences, it may safely be assumed that a group of people settled somewhere in an oasis near at-Tar Caves, leading a fair-scale of social life, and engaged in spinning, dyeing and weaving such textiles at some independent workshop. In this connection, therefore, we can hardly recognize that the discovery of the rush mat with woolen chequered pattern woven on the starting and finishing borders just like 'tatami facing' had merely resulted from the production activity of some nomads or the carrying of caravans.

As mentioned at first, at-Tar is geographically located on the border between the Iraqi Southwestern Desert and the fertile land along the Euphrates. In this neighborhood, there is a concentration of numerous wadis running into this area from the southwestern desert. All along these wadis, there are lots of oases with the rush growing in, most of which are regarded as archaeological sites [Fujii 1973: 61-86]. By inference, therefore, it is not until these archaeological sites have been thoroughly investigated that the cultural formation of these at-Tar textiles and their historical significance will come to be finally clarified.

Notes

- (1) According to the Japanese Industrial Standard, grandrelle yarn is defined as a sort of decorative thread which is produced by twisting two or three threads of different colors together. In this report, however, grandrelle yarn means a plied yarn where a single thread of different quality is twisted together with the other, not used as decorative thread.
- (2) Plain weave is also called 'tabby'. However, the term 'tabby' stems from Attâb, great-grandson of Omeyya. It was a textile woven at attâbiy, name of a quarter of Baghdad in which his family used to live. And this stuff was manufactured there. The striped silk taffeta was originally called Attabiya, afterwards applied also to silks of uniform color waved and watered.
In considering the above origin, therefore, we have decided not to use here the term 'tabby' for woolen textiles.
—The Oxford English Dictionary, 1961
The Oxford Illustrated Dictionary, 1978—
- (3) I. Emery calls this type slip-loop.
- (4) Advised by Dr. A. Jerusalemkaya, Hermitage.
- (5) Detected by Mr. Ryuzo Onooka, ex-chief Researcher of the Agency of Industrial Science & Technology, Ministry of International Trade & Industry.
- (6) Studied in Kigoshi Laboratory, Gakushuin University.
- (7) Analyzed by Dr. Yutaka Takagi, Professor of Ōsaka Kyoiku University.

Bibliography

- Bergman, I.
1975 *Late Nubian Textiles*, Scandinavian University Books, Stockholm
- Dimand, M. S.
1933 "An Early Cut-pile Rug from Egypt" *Metropolitan Museum Studies*, IV, part 2, pp. 151-161
- Emery, I.
1966 *The Primary Structures of Fabrics*, The Textile Museum, Washington, D.C.
- Fujii, H.
1973 "Al-Tar Caves Hill-A Excavations in 1971", *Sumer* Vol. 29, pp. 61-86

Fujii, H. ed.

1976 *AL-TAR I*, The Institute for Cultural Studies of Ancient Iraq, Kokushikan University, Tokyo

1980 "A Special Edition on the Studies on Textiles and Leather Objects from al-Tar Caves, Iraq" *Al-Rāfidān* Vol. I, The Institute for Cultural Studies of Ancient Iraq, Kokushikan University, Tokyo

Fujii, H., Takagi, Y., Sakamoto, K., Okada, H., Ichihashi, M.

1982/83 "Textile from At-Tar Caves, Iraq", *Al-Rāfidān* Vol. III-IV, pp. 89-96, Pls. 8-11.

Fujii, H., Kasahara, A., Ohnuma, K., Takase, T., Sakamoto, K.

1984/85 "Working Report on Excavation at Cave-12 of Hill-C, at-Tar Caves", *Sumer* Vol. 43 No. 1-2, pp. 246-251

Fujii, H., Sakamoto, K.

1986 "New Discovery of Textiles from Cave 12 of at-Tar near Kerbala", *Al-Rāfidān* Vol. VII, pp. 37-54

1987 "Roman Textiles from At-Tar Caves in Mesopotamia", *Mesopotamia* XXII, pp. 215-231, Figs. 68-86

Fujii, H., Sakamoto, K., Ohnuma, K.

1987 "The 6th Excavation at Cave 12 of HillC, at-Tār Caves", *A.F.O.* Band, XXXIV, pp. 131-140

Герцигер, Д. С.

1973 "Античные Ткани в Собрании Эрмитажа", *Памятники Античного Прикладного Искусства*, Аврора, стр. 71-100

Ghirshman, R.

1962 *Universum der Kunst, Iran*

Kawana, T.,

1984/85 "Physiographic Setting of Caves along the Cliffs of the Kerbala Plateau", *Al-Rāfidān* Vol. V-VI, pp. 6-13

Kawashima Bunka Jigyodan Limitid

1984/85 "Reconstruction of the Textiles from al-Tar Caves", *Al-Rāfidān* Vol. V-VI, pp. 67-95

Matsumoto, K., Wada, K.

1984/85 "Excavation in Hill-C-17 Cave (Cave C-17)", *Al-Rāfidān* Vol. V-VI, pp. 37-50

Ohnuma, K., Inaoka, H.

1984/85 "Excavation in Hill-C-12 Cave (Cave C-12)", *Al-Rāfidān* Vol. V-VI, pp. 28-36

Owari Textile Research Institute, Aichi Prefectural Government ed.

1985 *Textile Handbook*

Pfister, R.

1934 *Textile de Palmyre I*, Paris

1937 *Textile du Palmyre II*, Paris

1940 *Textile de Palmyre III*, Paris

Pfister, R. and Bellinger, L.

1945 *The Excavation at Dura-Europos*; Final Report IV; part II, New Haven

Руденко С. И.

1962 *Культура Хуннов и Ноинулские Курганы*, Академия Наук СССР

1968 *Древнейшие в Мире Художественные Ковры и Ткани*, Искусство

Rudenko, S. I.

1970 *Frozen Tombs of Siberia*, University of California Press

Sakamoto, K.

1982/83 "On the Loose Fitting Trousers from Noin-Ula in North Mongolia", *Al-Rāfidān* Vol. III-IV, pp. 31-46

1985 "Ancient Pile Textiles from at-Tar Caves in Iraq", *Oriental Carpet & Textile Studies* Vol. I, pp. 9-17, HALI; OCTS, London

Thurman, C. C. M. and William, B.

1979 *Ancient Textiles from Nubia*, The Art Institute of Chicago

Yadin, Y.

1963 *The Finds from the Bar Kokhba Period in the Cave of Letters*, The Israel Exploration Society, Jerusalem

Aknowledgments

In completing the report, we highly appreciate the cooperation from Dr. Tomio Takase who is a Visiting Scholar of the Institute for Cultural Studies of Ancient Iraq (ICSAI) Kokushikan University and he advised us in interpreting R. Pfister, "Textiles de Palmyre" and the assistance of Mr. Yoshiro Sato, the administrative staff of ICSAI, who contributed towards our preparing the data tables of the textiles and also the efforts of Mr. Tsuyoshi Kato, student of Kokushikan University, and Mrs. Junko Matsumoto, who worked with us for

making up various figures, and also Mrs. Maya Ikuma, who kindly proofread this report.

List of the data of textiles from the Cave 12, Hill C

Explanatory Notes

The following textile data indicate the analyses based on the research method specified in Chapter I.

1. The number shown below 'Textile Number' indicates the representative specimen of the identified fragmentary specimens whose numbers were given at the time of the excavations.
2. 'Size' is determined by "the maximum length of warp direction \times the maximum length of weft direction".
3. 'Thickness' is given by "Peacock dial thickness gauge, H 0.01–10 mm (OZAKI MFG. Co., Ltd.)".
4. The color of the all textiles is chiefly given to its representative specimen in accordance with 'Jacal color cards 220', following the signs shown in the revised Munsell Table. But markedly discolored representative specimens are replaced by some other better colored ones from among fragmentary specimens for naming, if available.
5. 'Thickness, diameter, twist count and thread density' are shown with their minimum-mean-maximum values. 'Diameter' shows the yarn diameter measured with the 25-fold magnifier (Monocular 8 \times 30, Asahi Pentax).
6. The weft density in the case of two or more wefts used at one shed is indicated as follows: It is shown by the number of shed and the weft number which is passed at a single opening operation. For example, the data description is: (12–13–14) \times 2/cm; the figures in the parentheses show the minimum-mean-maximum values at the spots where the frequencies of shed are measured. ' \times 2' means paired weft; ' \times 3' means three wefts. And the multiplied value is equivalent to the actual number.
7. The thread number of selvage cord is so arranged as to start from the selvage edge in regular order.
8. When a selvage or an edge is observed in the fragmentary specimen, its detail and specimen No. are additionally written.
9. The figures and photos shown here all accord with the warp direction, and textiles with edges are positioned with their weave finish up and weave start down in the warp direction except for Fig. 21.

The data taken up here in the case of the slender corridor are the figures resulting from the re-examination of the data shown in AL-RAFIDAN Vol.I, with some more addition to insufficient ones as well as with some corrections made in the wrong measurement values.

[Inner room]

Textile 1 Small fragments of fine wool textile

Representative specimen No. T-38

Size (cm): 3.5 \times 0.4

Structure: Variation of plain weave: warp 1, weft 2, warp-faced

Thickness (mm): 0.535

	Warp	Weft
Raw material:	Wool	Wool
Color:	Dull reddish yellow 2.5Y7.5/6	Dull reddish yellow 2.5Y7.5/6
Diameter (mm):	0.25–0.30–0.35	0.15–0.20–0.25
Twist, Twist No. (/cm):	—S(10.0–12.5–14.3)	—S(10.0–10.5–12.5)
Density (/cm):	23.8	11.3 \times 2
Selvage:	none	
Edge:	none	

Fragmentary specimens

T-38 T-120

Textile 2 Textile with flower and tree design band

Representative specimen No. T-103

Size (cm): 93.5×143.0 [(1)54.0×74.0 (2)52.0×38.0 (3)12.0×25.5 (4)31.5×26.0] (Fig.8)

Structure: Ground Plain weave, weft-faced

Design Plain weave and variation of plain weave: warp 1, weft 2, weft-faced, tapestry-weave technique

Design: Flower, Tree, Comb, Wave, Stripe patterns and Gradation

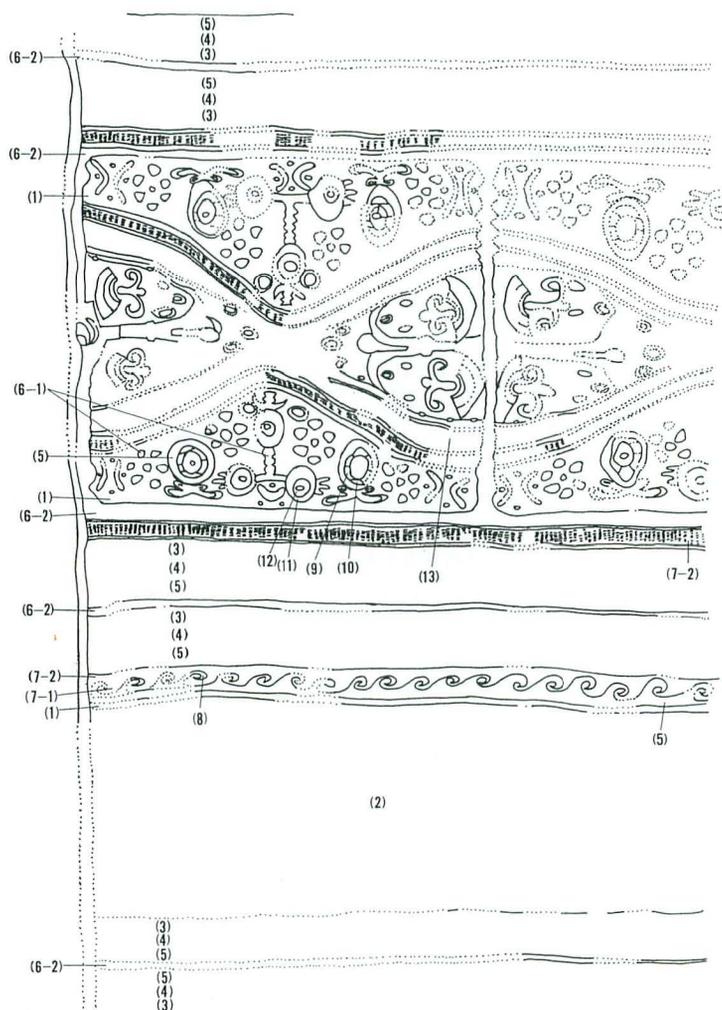
Thickness (mm):	Ground	1.07-1.20-1.46
	Design	
	flower and tree design band	0.95-1.37-1.64
	comb pattern	1.07-1.11-1.14
	wave pattern	1.16-1.44-1.70
	stripe pattern	1.08-1.10-1.11
	gradation	0.92-1.08-1.27

	Warp	Weft (1) flower and tree design band, stripe pattern, selvage	Weft (2) ground	Weft (3) flower and tree design band, gradation
Raw material:	Wool	Wool	Wool	Wool
Color:	Dull reddish yellow 2.5Y 7.5/6	Strong yellowish red 7R 4.5/12	Dull green 5G 5/4	Deep yellowish red 7R 4/10
Diameter (mm):	0.35-0.48-0.60	0.30-0.52-0.70	0.35-0.50-0.60	0.35-0.50-0.70
Twist, Twist No. (/cm):	—S(7.0-9.9-14.3)	—S(5.0-6.3-10.0)	—S(3.3-3.7-5.0)	—S(3.3-4.7-8.3)
Density (/cm):	6.0-6.8-8.0	24.0-26.0-28.0	22.0-25.9-29.0	24.0-25.2-26.0

	Weft (4) gradation	Weft (5) flower and tree design band, comb, wave pattern, gradation	Weft (6-1) flower and tree design band, stripe
Raw material:	Wool	Wool	Wool
Color:	Dark red 4R 2.4/5	Dark greyish brown 5YR 2/1.5	Gold 2.5Y 6/8
Diameter (mm):	0.30-0.46-0.55	0.40-0.50-0.70	0.50-0.64-0.80
Twist, Twist No. (/cm):	—S(3.3-4.4-6.2)	—S(3.3-4.1-5.0)	—S(5.0-6.7-10.0)
Density (/cm):	24.0-24.8-25.0	24.0-25.6-28.0	20.0-22.5-26.0

	Weft (6-2) flower and tree design band stripe pattern	Weft (7-1) wave pattern	Weft (7-2) comb, wave patterns	Weft (8) flower and tree design band, wave pattern
Raw material:	Wool	Wool	Wool	Wool
Color:	Gold 2.5Y 6/8	Dull reddish yellow 2.5Y 7.5/6	Dull reddish yellow 2.5Y 7.5/6	Olive 5.5Y 4/4
Diameter (mm):	0.25-0.30-0.35	0.40-0.55-0.70	0.20-0.33-0.45	0.40-0.53-0.70
Twist, Twist No. (/cm):	—S(4.2-4.6-6.2)	—S(3.8-5.1-8.3)	—S(3.8-5.2-6.2)	—S(3.3-4.2-5.0)
Density (/cm):	(17.5-19.5-21.0)×2			
	Weft (9) flower and tree design band	Weft (10) flower and tree design band	Weft (11) flower and tree design band	Weft (12) flower and tree design band
Raw material:	Wool	Wool	Wool	Wool
Color:	Deep greenish blue 5B 3/8	Yellow pink 10R 7.5/7	Dark bluish green 10G 2.4/3	Deep yellow green 5GY 5/8
Diameter (mm):	0.35-0.49-0.60	0.40-0.50-0.55	0.40-0.46-0.50	0.45-0.53-0.60
Twist, Twist No. (/cm):	—S(4.5-5.5-10.0)	—S(5.0-5.7-7.1)	—S(5.0-6.0-7.1)	—S(4.5-5.0-5.5)

Raw material:	Weft (13) Flower and tree design band Wool	Thread for repairing Wool
---------------	---	------------------------------



Color: Light reddish brown 10R 5.5/6

Diameter (mm): 0.40-0.46-0.55

0.70-0.80

Twist, Twist No. (/cm): —S(3.3-4.4-5.0)

S
Z(2.5-3.3)
S

Gradation Weft(3)—(4)—(5)

Selvage: Type 4, cord (3, 3, 2) T-103

Edge: none

Fragmentary specimens

T-30 T-39 T-41 T-42 T-53 T-77 T-81 T-89 T-90 T-92 T-95 T-96 T-99 T-101 T-102
T-103 T-105 T-106 T-111 T-112 T-121 T-122 T-123 T-124 T-125 T-126 T-127 T-128 T-129

Textile 3 Textile with tree design bands

Representative specimen No. T-75

Size (cm): 40.0×38.3

Structure: Ground Variation of plain weave: warp 1, weft 2, weft-faced

Design Plain weave and variation of plain weave: warp 1, weft 2, weft-faced, tapestry-weave technique

Design: Tree, Wave patterns, Gradation

Thickness (mm): Ground 0.97-1.19-1.49

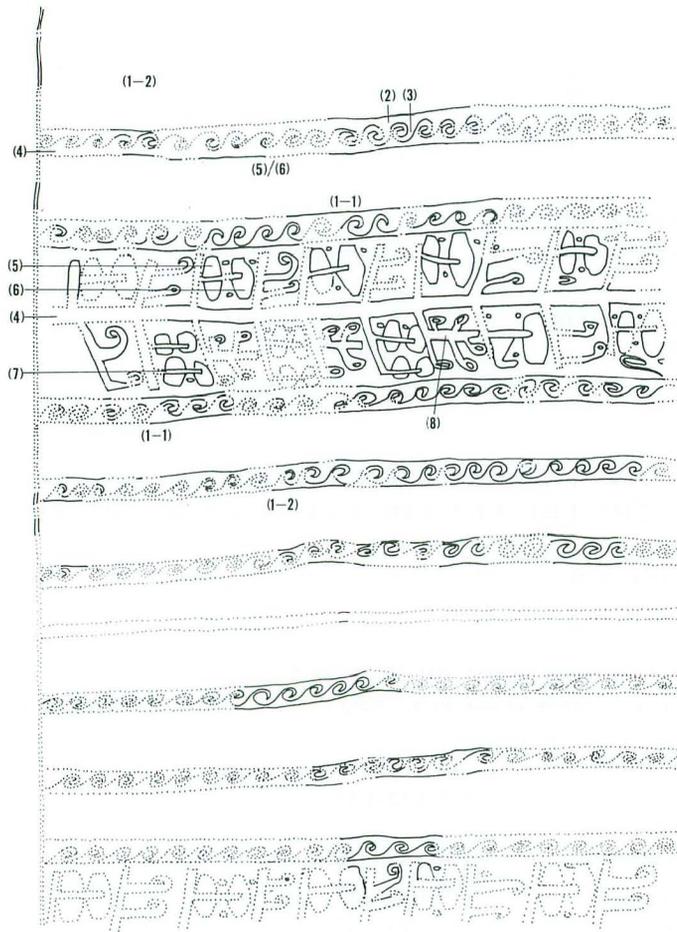
Design

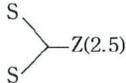
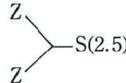
tree design band 1.20-1.47-1.69

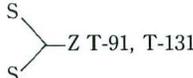
wave pattern 0.82-1.37-1.59

horizontal band 0.87-1.24-1.57

	gradation	1.03-1.15-1.66		
Warp		Weft (1-1) tree design band, gradation	Weft (1-2) ground	Weft (2) wave, stripe patterns
Raw material:	Wool	Wool	Wool	Wool
Color:	Light yellowish brown 9YR 6.5/5	Deep yellowish red 7R 4/10	Deep yellowish red 7R 4/10	Black N1
Diameter (mm):	0.30-0.40-0.55	0.40-0.46-0.60	0.25-0.36-0.50	0.25-0.33-0.40
Twist, Twist No. (/cm):	—S(10.0-11.3-15.1)	—S(2.5-3.9-5.0)	—S(3.3-5.0-6.2)	—S(4.0-6.8-10.0)
Density (/cm):	6.0-7.0-8.5	28.0-31.0-32.0	(21.5-23.1-24.0) × 2	
	Weft (3) tree design band, wave pattern	Weft (4) tree design band, wave pattern		Weft (5) tree design band
Raw material:	Wool	Wool		Wool
Color:	Dark brown 5YR 2.4/4	Dull reddish yellow 2.5Y 7.5/6		Dark blue green 5BG 2.4/3
Diameter (mm):	0.20-0.24-0.30	0.25-0.29-0.30		0.25-0.34-0.40
Twist, Twist No. (/cm):	—S(5.0-5.5-6.2)	—S(5.0-6.4-8.3)		—S(5.0-7.1-10.0)
Density (/cm):	Unmeasurable	Unmeasurable		Unmeasurable
	Weft (6) tree design band, stripe pattern	Weft (7) tree design band		Weft (8) tree design band
Raw material:	Wool	Wool		Wool
Color:	Dark yellowish green 10GY 3/4	Brownish gold 9YR 5.5/8		Pale reddish yellow 2.5Y 9/2
Diameter (mm):	0.50-0.59-0.70	0.20-0.32-0.40		0.45-0.57-0.70



Twist, Twist No. (/cm):	—S(4.3–4.8–5.0)	—S(4.5–4.9–5.5)	—S(4.5–5.1–6.2)
Density (/cm):	Unmeasurable	Unmeasurable	Unmeasurable
Raw material:		Thread for repairing (1) Wool	Thread for repairing (2) Wool
Diameter (mm):		0.80–0.90	0.60
Twist, Twist No. (/cm):			

Gradation	Weft (1)—(5) and, or (6)
Selvage:	Type 2, cord (3, 3) T-75, T-82, T-83, T-110
Edge: Weave start	none
Weave finish	cord 

Fragmentary specimens

T-1	T-2	T-6	T-11	T-12	T-16	T-17	T-20	T-22	T-24	T-25	T-33	T-44	T-62	T-64
T-65	T-75	T-82	T-83	T-84	T-85	T-87	T-88	T-91	T-93	T-94	T-98	T-100	T-108	T-110
T-130	T-131	T-132	T-133	T-134	T-135	T-136	T-137							

Textile 4-1 Textile with a dark purple band

Representative specimen No. T-78

Size (cm): 13.5×20.0

Structure: Ground Variation of plain weave: warp 1, weft 2 and plain weave, weft-faced

Design Plain weave, weft-faced, tapestry-weave technique

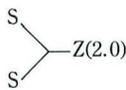
Design: Triangle pattern, Horizontal band

Thickness (mm): 0.84–0.99–1.14

	Warp	Weft (1) ground	Weft (2) pattern
Raw material:	Wool	Wool	Wool
Color:	Dull reddish yellow 2.5Y 7.5/6	Dull reddish yellow 2.5Y 7.5/6	Dark purple 7.5P 1.5/4
Diameter (mm):	0.20–0.41–0.50	0.25–0.28–0.35	0.30–0.39–0.50
Twist, Twist No. (/cm):	—S(8.3–12.6–20.0)	—S(5.5–6.7–7.1)	—S(5.0–7.4–10.0)
Density (/cm):	10.0–10.7–12.0	(13.0–15.8–20.0)×2	32.0–36.0–38.0

Raw material: Thread for sewing

Diameter (mm): Wool 1.00–1.50

Twist, Twist No. (/cm): 

Selvage: none

Edge: none

Other: A slit in 4.5 cm length along the triangle pattern, again stitched into closure

Fragmentary specimens

T-28	T-46	T-50	T-69	T-70	T-76	T-78	T-79	T-80	T-97	T-138	T-139	T-140	T-141
------	------	------	------	------	------	------	------	------	------	-------	-------	-------	-------

Textile 4-2 Textile with black bands

Representative specimen No. T-71

Size (cm): 8.0×22.8+19.0×16.0

Structure: Ground Variation of plain weave: warp 1, weft 2, weft-faced

Design Plain weave, weft-faced

Design: Horizontal band

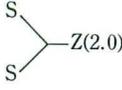
Thickness (mm): 0.81–0.10–1.17

	Warp	Weft (1) ground	Weft (2) horizontal band
Raw material:	Wool	Wool	Wool

Color:	Dull reddish yellow 2.5Y 7.5/6	Dull reddish yellow 2.5Y 7.5/6	Dark greyish brown 5YR 2/1.5
Diameter (mm):	0.30-0.42-0.50	0.30-0.33-0.40	0.35-0.39-0.45
Twist, Twist No. (/cm):	—S(8.3-12.6-20.0)	—S(7.1-8.5-10.0)	—S(5.5-7.0-10.0)
Density (/cm):	10.0-10.7-12.5	(16.8-17.3-18.0)×2	30.0-33.0-36.0

Raw material: Thread for sewing
Wool

Diameter: 2.0

Twist, Twist No.: 

Selvage: none

Edge: none

Other: Two pieces of cloth are seamed together.

Fragmentary specimen

T-71

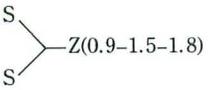
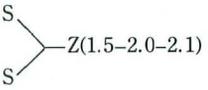
Textile 5 Black coarse textile

Representative specimen No. T-72

Size (cm): 68.0×12.0

Structure: Plain weave, weft-faced

Thickness (mm): 3.29-3.58-4.20

Raw material:	Warp Hair	Weft Hair
Color:	Dark greyish brown 5YR 2/1.5	Dark greyish brown 5YR 2/1.5
Diameter (mm):	1.40-1.78-2.10	1.30-1.70-2.00
Twist, Twist No. (/cm):		
Density (/cm):	2.5-2.6-2.7	5.7-5.8-6.0
Selvage:	none	
Edge:	none	

Fragmentary specimen

T-72

Piece of cloth sewn on this textile

Size (cm): 6.0×2.0

Structure: Twill (2:2), Balanced

Thickness (mm): 1.71

Raw material:	Warp Wool	Weft Wool
Color:	Brownish gold 9YR 5.5/8	Brownish gold 9YR 5.5/8
Diameter (mm):	0.60-0.70-0.90	0.45-0.50-0.60
Twist, Twist No. (/cm):	—Z(6.7)	—S(6.7)
Density (/cm):	8.0	9.0-10.0-11.0
Selvage:	none	
Edge:	none	

Textile 6 Brown rough textile

Representative specimen No. T-56

Size (cm): 51.0×12.0

Structure: Plain weave, weft-faced

Thickness (mm): 3.05-4.02-4.70

	Warp (grandrelle yarn)	Weft (grandrelle yarn)
Raw material:	Wool and camel	Wool and camel
Color:	Dull reddish yellow 2.5Y 7.5/6	Dull reddish yellow 2.5Y 7.5/6
	Brown 5YR 4/4	Brown 5YR 4/4
Diameter (mm):	1.40-1.73-2.00	1.50-2.10-2.50
Twist, Twist No. (/cm):	Z S(2.0-2.3-2.8) Z	Z S(1.0-1.3-1.7) Z
Density (/cm):	3.0-3.3	6.5-7.0

	Thread for repairing
Raw material:	Wool and camel
Diameter (mm):	2.00-2.50-3.00
Twist, Twist No. (/cm):	Z S(1.5-2.0-2.5) Z
Selvage:	none
Edge:	none
Other:	The torn portion in the weave is pieced with thick thread
	Fragmentary specimen
	T-56

Textile 7 Yellow brown textile

Representative specimen No. T-59
 Size (cm): 4.5×39.5
 Structure: Variation of plain weave: warp 1, weft 2, weft-faced
 Thickness (mm): 1.29-1.46-1.73

	Warp	Weft
Raw material:	Wool	Wool
Color:	Brownish gold 9YR 5.5/8	Brownish gold 9YR 5.5/8
Diameter (mm):	0.30-0.44-0.55	0.30-0.40-0.50
Twist, Twist No. (/cm):	—S(8.3-10.0-12.0)	—S(5.0-7.0-10.0)
Density (/cm):	6.5-7.1-7.6	(12.5-14.0-16.0)×2
Selvage:	none	
Edge:	none	
	Fragmentary specimens	
	T-40 T-52 T-59 T-60 T-61 T-142 T-143	

Textile 8 Gauze-like textile

Representative specimen No. T-57
 Size (cm): 69.0×12.0
 Structure: Ground Plain weave, balanced, cover factor: warp 35% weft 35%
 Design Plain weave, weft-faced

Design:	Stripe pattern			
Thickness (mm):	0.75-1.01-1.37			
	Warp	Weft (1)	Weft (2)	Weft (3)
		ground	horizontal band	horizontal stripe
Raw material:	Wool	Wool	Wool	Wool
Color:	Brownish gold	Brownish gold	Reddish brown	Dark red
	9YR 5.5/8	9YR 5.5/8	10R 3/5	4R 2.4/5
Diameter (mm):	0.25-0.35-0.40	0.25-0.35-0.40	0.25-0.41-0.50	0.40-0.50
Twist, Twist No. (/cm):	—S(8.3-10.7-14.3)	—Z(3.3-4.1-5.0)	—Z(2.0-2.9-3.3)	—Z(3.3-5.0)
Density (/cm):	8.0-10.0-11.5	8.0-10.0-13.0	8.0-11.0-12.0	12.0

Thread
 Raw material: Wool
 Diameter (mm): 0.6-1.0
 Twist, Twist No. (/cm): $\begin{matrix} S \\ \diagdown \\ \diagup \\ S \end{matrix} - Z(1.5-2.0)$
 Selvage: none
 Edge: Weave start, none
 Weave finish, cord $\begin{matrix} S \\ \diagdown \\ \diagup \\ S \end{matrix} - Z$ T-58, T-87
 Other: Zigzag stitches are recognized
 Fragmentary specimens
 T-55 T-57 T-58 T-74 T-86

Textile 9 Textile with purple oblong design

Representative specimen No. T-107

Size (cm): 17.0×14.5

Structure: Ground Plain weave, balanced

Design Plain weave, weft-faced, tapestry-weave technique

Design: Oblong, Stripe patterns

Thickness (mm): Ground 1.31-1.39-1.49

Design 1.78-1.95-2.13

Warp	Weft (1) ground	Weft (2) oblong pattern	Weft (3) stripe pattern
------	--------------------	----------------------------	----------------------------

Raw material: Wool	Wool	Wool	Wool
Color Pale reddish yellow 2.5Y 8.5/3	Pale reddish yellow 2.5Y 8.5/3	Dull red purple 7.5RP 4.5/6	Vivid reddish yellow 2Y 8/14
Diameter (mm): 0.70-0.86-1.30	1.00-1.27-1.90	0.70-0.82-0.90	0.90-1.00
Twist, Twist No. (/cm): —S(4.0-6.7-10.0)	—S(2.0-2.4-2.5)	—S(2.5-2.8-3.3)	—S(2.5)
Density (/cm): 4.5-5.0-5.5	6.4-7.0-8.0	16.6-17.1-18.0	13.2
Selvage: Type 2 cord (5, 2, 2) T-107			
Edge: none			
Fragmentary specimens T-10 T-35 T-37 T-107 T-113 T-144			

Textile 10 Pile textile

Representative specimen No. T-104

Size (cm): 150.0×75.0

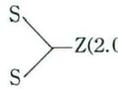
Structure: Ground Plain weave, weft-faced

Pile knot Type B-1 open to the right

Thickness (mm): Ground 2.61-3.40-3.72 7.25-7.85 (with pile)

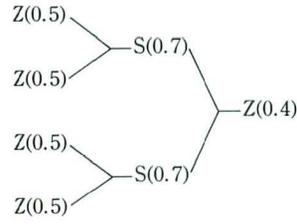
Raw material: Wool and camel	Weft Wool	Pile Wool
Color: Dull reddish yellow 2.5Y 7.5/6 Dark brown 5YR 2.5/4	Dull reddish yellow 2.5Y 7.5/6	Dull reddish yellow 2.5Y 7.5/6
Diameter (mm): 1.0-1.2-1.5	0.9-1.2-1.7	1.8-2.6-3.0
Twist, Twist No. (/cm): $\begin{matrix} Z \\ \diagdown \\ \diagup \\ Z \end{matrix} - S(3.0-3.8-4.0)$	—Z(2.5-2.6-2.9)	$\begin{matrix} S \\ \diagdown \\ \diagup \\ S \end{matrix} - Z(1.0-1.5-2.0)$
Density (/cm): 3.7-3.9-4.0	12.0-14.2-18.0	(5-7)×(13-20) (pile knot/dm)

Hem-stitched thread

Raw material: Wool
 Diameter (mm): 2.0-2.5
 Twist, Twist No. (/cm): 
 Selvage: Type 2, cord (3, 2) T-104
 Edge: Weave start, warp finish (hem), T-104
 Weave finish, none
 Other: Longest pile thread 5 cm Space of pile knotting row 1.2-2.2 cm
 Fragmentary specimens
 T-3 T-4 T-7 T-9 T-13 T-14 T-18 T-19 T-21 T-23 T-26 T-27 T-29
 T-31 T-32 T-34 T-36 T-43 T-47 T-48 T-49 T-51 T-63 T-66 T-67 T-68
 T-104 T-109 T-114 T-115 T-116 T-117 T-118 T-119

Textile 11 Cord

Representative specimen No. T-54
 Length (cm): 16.7
 Raw material: Hair
 Color: Dark yellowish brown 9YR 3/3

Diameter (mm): (1) 0.4-0.5 (2) 0.6-0.8 (3) 1.0-1.4
 Twist, Twist No. (/cm): 

Fragmentary specimens
 T-5 T-45 T-54

[Corridor]

Textile 12 Fragment with gamma pattern

Representative specimen No. IV-OH-368-14-^a

Size (cm): 40.0×25.0

Structure: Ground Plain weave, weft-faced

Design Plain weave, weft-faced, tapestry-weave technique

Design: : Gamma pattern

Thickness (mm): Ground 1.13-1.19-1.24

Design 0.89-0.97-1.11

Warp	Weft (1) ground	Weft (2) gamma pattern
------	-----------------	------------------------

Raw material: Wool	Wool	Wool
--------------------	------	------

Color: Dull reddish yellow 2.5Y 7.5/6,	Dull reddish yellow 2.5Y 7.5/6	Deep red purple 7.5RP 3/9
--	--------------------------------	---------------------------

Diameter (mm): 0.25-0.35-0.45	0.45-0.55-0.63	0.18-0.22-0.28
-------------------------------	----------------	----------------

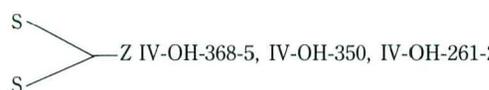
Twist, Twist No. (/cm): —S(8.5-9.2-14.0)	—Z(1.0-1.1-1.5)	—S(15.0-16.4-20.0)
--	-----------------	--------------------

Density (/cm): 10.0-10.2-11.0	32.0-36.8-42.0	48.0-53.3-60.0
-------------------------------	----------------	----------------

Selvage: Type 3, cord (4, 5, 3) VI-OH-368-14-^a, (5, 4, 3) IV-OH-368-15-^①, (4, 5, 3) IV-OH-368-1, (3, 4, 5) IV-OH-368-31-^②, (4, 4, 3) IV-OH-368-15-^②, (5, 5, 5) IV-OH-350

Edge:

Weave start none

Weave finish cord 

Other: Weaver's mark (arrow ⇐) IV-OH-368-5 (about 5 cm inside the weave finish)

Fragmentary specimens

IV-OH- 34-^① IV-OH- 56 IV-OH- 65-^① IV-OH- 77-^② IV-OH- 96 IV-OH- 98

IV-OH-101	IV-OH-102	IV-OH-107-①	IV-OH-108	IV-OH-115	IV-OH-120
IV-OH-122	IV-OH-130-②	IV-OH-132	IV-OH-146-②	IV-OH-146-④	IV-OH-147-②
IV-OH-156	IV-OH-175-①	IV-OH-175-②	IV-OH-192-③	IV-OH-196-①	IV-OH-199-③
IV-OH-202-①	IV-OH-203-②	IV-OH-203-③	IV-OH-210	IV-OH-213-③	IV-OH-218-④
IV-OH-222-④	IV-OH-235-②	IV-OH-238-②	IV-OH-257	IV-OH-261-②	IV-OH-263-②
IV-OH-266	IV-OH-284-①	IV-OH-288-①	IV-OH-300	IV-OH-307-①	IV-OH-315
IV-OH-332	IV-OH-336	IV-OH-341-②	IV-OH-343-③	IV-OH-350	IV-OH-357-②
IV-OH-357-③	IV-OH-368-①	IV-OH-368-4	IV-OH-368-5	IV-OH-368-14-④,⑥	IV-OH-368-15-①
IV-OH-368-15-②	IV-OH-368-31-①	IV-OH-368-31-②	IV-OH-376	IV-OH-377-②	IV-OH-389-②
IV-OH-395-①	IV-OH-398-②	IV-OH-407-①	IV-OH-419-②	IV-OH-423-③	IV-OH-424-②
IV-OH-428-②					

Textile 13 Fragment with thin band

Representative specimen No. IV-OH-124

Size (cm): 13.7×12.7

Structure: Ground Plain weave, weft-faced

Design Plain weave, weft-faced

Design: Horizontal band

Thickness (mm): Ground 1.13–1.29–1.40

Design 1.05–1.11–1.20

Warp

Weft (1) ground

Weft (2) horizontal band

Raw material: Wool

Wool

Wool

Color: Dull reddish yellow 2.5Y7.5/6

Dull reddish yellow 2.5Y7.5/6

Deep red purple 8.5RP3/9

Diameter (mm): 0.27–0.35–0.40

0.35–0.39–0.43

0.20–0.28–0.35

Twist, Twist No. (/cm): —S(7.7–9.8–11.8)

—Z(1.0–1.1–1.4)

—S(12.5–14.3–15.0)

Density (/cm): 8.7–9.3–10.0

28.0–33.2–38.0

50.0–55.6–60.0

Fragmentary specimens

IV-OH-34-③	IV-OH-104	IV-OH-124	IV-OH-168	IV-OH-296	IV-OH-299
IV-OH-312-①	IV-OH-312-②	IV-OH-362	IV-OH-368-2-①	IV-OH-368-2-②	IV-OH-368-3-②
IV-OH-401-①					

Textile 14 Large cloth with H-shape and Square pattern

Representative specimen No. IV-OH-368-13

Size (cm): 238.5×164.0

Structure: Ground Variation of plain weave: warp 1, weft 2, balanced

Design Variation of plain weave: warp 2, weft 1, weft-faced, tapestry-weave technique

Design: H-shape and Square patterns

Thickness (mm): Ground 0.58–0.65–0.74

Design 0.97–1.02–1.05

Warp

Weft (1) ground

Weft (2) H-shape and Square patterns

Raw material: Wool

Wool

Wool

Color: Dull reddish yellow 2.5Y7.5/6

Dull reddish yellow 2.5Y7.5/6

Dark wine 7.5RP2.4/5

Diameter (mm): 0.17–0.22–0.30

0.18–0.25–0.35

0.25–0.32–0.40

Twist, Twist No. (/cm): —S(12.0–14.4–15.0)

—S(10.0–13.6–16.0)

—S(12.0–14.0–15.0)

Density (/cm): 16.0–16.9–18.0

(12.0–12.9–13.5)×2

44.0–48.0–52.0

Selvage: Type 3, cord (4, 4, 4) IV-OH-368-13 IV-OH-100

Edge: Weave start, cord-like (U-turn warp) IV-OH-368-13

Weave finish, cord

S — Z IV-OH-368-13, IV-OH-131

Remarks: Notched part of H-shape pattern: Variation of plain weave, warp 2, weft 2 (basket weave), balanced

Fragmentary specimens

IV-OH- 34-④	IV-OH- 51	IV-OH- 52	IV-OH- 54-②	IV-OH- 55	IV-OH- 57
IV-OH- 65-②	IV-OH- 77-③	IV-OH- 79-②	IV-OH- 81-③	IV-OH- 81-④	IV-OH- 91
IV-OH-100	IV-OH-107-③	IV-OH-112	IV-OH-130	IV-OH-130-④	IV-OH-146-⑤
IV-OH-147-①	IV-OH-150	IV-OH-158	IV-OH-159	IV-OH-192-②	IV-OH-218-③
IV-OH-222-①	IV-OH-262	IV-OH-263-⑤	IV-OH-298	IV-OH-307-④	IV-OH-341-③
IV-OH-343-④	IV-OH-348	IV-OH-357-④	IV-OH-360	IV-OH-361-①	IV-OH-364
IV-OH-365	IV-OH-367	IV-OH-368-13	IV-OH-371-②	IV-OH-377-④	IV-OH-395-④
IV-OH-423-②					

Textile 15 Fragment with wave pattern and horizontal stripe pattern bands

Representative specimen No. IV-OH-368-3-①a, -①b, IV-OH-121

Size (cm): IV-OH-368-3- ①a 25.2×14.2 (horizontal band)

IV-OH-121 22.3×23.5 (wave pattern)

Structure: Ground Plain weave, weft-faced

Design Plain weave, weft-faced, tapestry-weave technique

Design: Wave and Stripe patterns

Thickness (mm): Ground 1.18–1.25–1.34

Design

Horizontal band, 1.10–1.29–1.50

Wave band, 1.53–1.61–1.68

Warp

Weft (1) ground

Weft (2) stripe pattern

Raw material: Wool

Wool

Wool

Color: Light orange 5YR 7.5/8

Deep yellowish red 7R 4/10,

Dark blue 3PB 1.5/4

Diameter (mm): 0.30–0.42–0.53

0.30–0.34–0.40

0.50–0.56–0.65

Twist, Twist No. (/cm): —S(7.0–7.1–7.5)

—S(4.5–5.6–7.2)

—S(2.5–3.1–3.5)

Density (/cm): 7.0–7.1–7.0

44.0–48.0–52.0

32.0–34.0–36.0

Weft (3) wave pattern

Weft (4) wave pattern

Raw material: Wool

Wool

Color: Dull reddish yellow 2.5Y 7.5/6

Dark violet 9RB 1.5/4

Diameter (mm): 0.40–0.53–0.65

Twist, Twist No. (/cm): —S(0.5–0.5–1.0)

—S(1.0–1.2–1.5)

Density (/cm): 18.0–19.0–20.0

16.0–20.0–24.0

Selvage: Type 2 cord (4) IV-OH-368-3- ①a, IV-OH-121

Fragmentary specimens

IV-OH- 34-②	IV-OH- 65-⑧	IV-OH-103	IV-OH-110	IV-OH-117	IV-OH-118
IV-OH-121	IV-OH-130-①	IV-OH-144	IV-OH-146-③	IV-OH-157	IV-OH-176
IV-OH-181	IV-OH-192-①	IV-OH-194-②	IV-OH-199-②	IV-OH-203-①	IV-OH-204-③
IV-OH-218-②	IV-OH-221-①	IV-OH-227-①	IV-OH-229-②	IV-OH-263-③	IV-OH-284-②
IV-OH-312-③	IV-OH-319-①	IV-OH-326	IV-OH-328	IV-OH-335	IV-OH-339
IV-OH-343-②	IV-OH-353-①	IV-OH-356	IV-OH-368-3-①a	IV-OH-368-3-①b	IV-OH-368-16
IV-OH-368-30-①	IV-OH-377-①	IV-OH-383	IV-OH-389-①	IV-OH-395-③	IV-OH-405-①
IV-OH-407-②	IV-OH-412	IV-OH-428			

Textile 16 Gauze-like thin cloth with horizontal stripe pattern

Representative specimen No. IV-OH-368-10

Size (cm): 121.4×12.8

Structure: Ground Plain weave, balanced, Cover factor: warp 6.2%, weft 6.3%

Design Variation of plain weave: warp 2, weft 1, weft-faced

Design: Stripe pattern

Thickness (mm): Ground 0.48–0.53–0.56

	Pattern 0.61-0.65-0.69		
	Warp	Weft (1) ground	Weft (2) stripe pattern
Raw material:	Wool	Wool	Wool
Color:	Dark blue green 5BG 2.4/3	Dark blue green 5BG 2.4/3	Deep purplish red 1R 3/10
Diameter (mm):	0.20-0.27-0.35	0.30-0.36-0.40	0.12-0.21-0.30
Twist, Twist No. (/cm):	—S(14.0-15.3-16.7)	—S(3.0-3.7-4.5)	—S(7.8-9.4-14.3)
Density (/cm):	22.0-22.8-24.0	17.0-17.6-19.0	72.0-74.4-76.0
Fragmentary specimens			
IV-OH-368-10	IV-OH-222-②		

Textile 17 Pile textile with borders

Representative specimen No. IV-OH-368

Size (cm): 86.0×109.0

Structure: Field Variation of plain weave: warp 2, weft 1, weft-faced

Border (dull blue green) Variation of plain weave: warp 2, weft 2, weft-faced
(deep red) Plain weave, weft-faced

Pile knot Type A-2, double-faced, 3-4 pile yarns together

Design: Stripe border

Thickness (mm): Ground 3.74-4.19-4.61 7.25-8.32-9.58 (with pile)

Border 1.70-2.07-2.55

Warp (grandrelle yarn)

Raw material:	Wool	Camel	Weft (1) field
Color:	Dull reddish yellow	Yellowish brown	Wool
	2.5Y 7.5/6	9YR 4/4	Dull reddish yellow
			2.5Y 7.5/6
Diameter (mm) :	1.00-1.30-1.70		1.50-1.83-2.30
Twist, Twist No. (/cm):	Z S(2.5-3.1-3.5) Z		—Z(1.3-1.4-2.5)
Density (/cm):	border 2.5-3.5-3.8	field(1.3-1.7-1.9)×2	5.0-7.5-9.0

Weft (2) field

Weft (3) border

Weft (4) border

Pile

Raw material:	Camel	Wool	Wool	Wool
Color:	Dark brown	Deep red	Dull blue green	Dark grayish brown
	5YR 2.4/4	4R 3.5/10	5BG5/4	5YR2/1.5
Diameter (mm) :	1.50-1.83-2.30	0.80-0.96-1.15	0.80-1.03-1.30	1.70-2.01-2.60
Twist, Twist No. (/cm):	—Z(1.3-1.4-2.5)	—Z(1.7-2.1-2.5)	—Z(1.5-1.9-2.5)	S Z(1.6-1.9-2.8) S
Density (/cm):	5.0-7.5-9.0	18.0-20.0-22.0	18.0-20.0-22.0	(5.0-5.6-6.0)×(7.5-8.1-9.0) (pile knot/dm)

Hem-stitched thread

Raw material:	Wool
Color:	Light orange 5YR 7.5/8
Diameter (mm):	1.00
Twist, Twist No. (/cm):	S Z(2.0) S

Selvage: Type 2, cord (3, 2), IV-OH-259, IV-OH-368, IV-OH-368-17, IV-OH-368-20-①

Edge: Weave start, warp finish (hem), IV-OH-368-11

Weave finish, none

Other: Space of pile knotting row 0.8–1.4–1.5 cm. Longest pile yarn 14 cm

Fragmentary specimens

IV-OH-116-①	IV-OH-119	IV-OH-259	IV-OH-263-①	IV-OH-264	IV-OH-305	IV-OH-312-①
IV-OH-334-①-a	IV-OH-334-①-b	IV-OH-342	IV-OH-357-①	IV-OH-368	IV-OH-368-11	IV-OH-368-17
IV-OH-368-20-①	IV-OH-418	IV-OH-419-①	IV-OH-423-①			

Condolences to Prof. Dr. Phil. Leo Trümpelmann

On the 21st of August in 1989, I received the notice that Dr. Phil. Leo Trümpelmann (1931–1989), Professor of the Institut für Vorderasiatische Archäologie, Ludwig-Maximilian Universität, passed away. I am sorry and grieve to hear of his death as one of his friends. I have various memories about him. Particularly impressive is that Dr. Trümpelmann took a deep, enthusiastic interest in the structural remains from the Parthian Period, Tell Abqa, which he was in charge of in 1978–79 when the Iraqi and some other expeditions from abroad were carrying on their excavation researches in the sites which were planned to be sunk under water in the Himrin Basin. To add to this, in November, 1988 when I visited at his institute for the purpose of making joint researches into the subject of 'The Archaeological Research on the 2nd Millennium B.C. in Mesopotamia', Dr. Trümpelmann said during the intermission of our debate that he was eager to make his own opinion open to the public in 1989 regarding the subject of the reconstruction of the Central Structure, Level VII, Tell Gubba which had been investigated by ourselves. To my sorrow, however, one of our expectations is gone away forever. Please accept our deepest condolences and we only pray for the soul of the late Dr. Trümpelmann.

(Hideo Fujii)



a. General view of the textile with a flower and tree design band (Textile 2)



b. Pattern portion of the textile with a flower and tree design band (Textile 2)





a. Fragment with gamma pattern
(Textile 12)



b. Warp cord finish (two-ply cord) and weaver's
mark (Textile 12)

a. Fragment with thin band
(Textile 13)



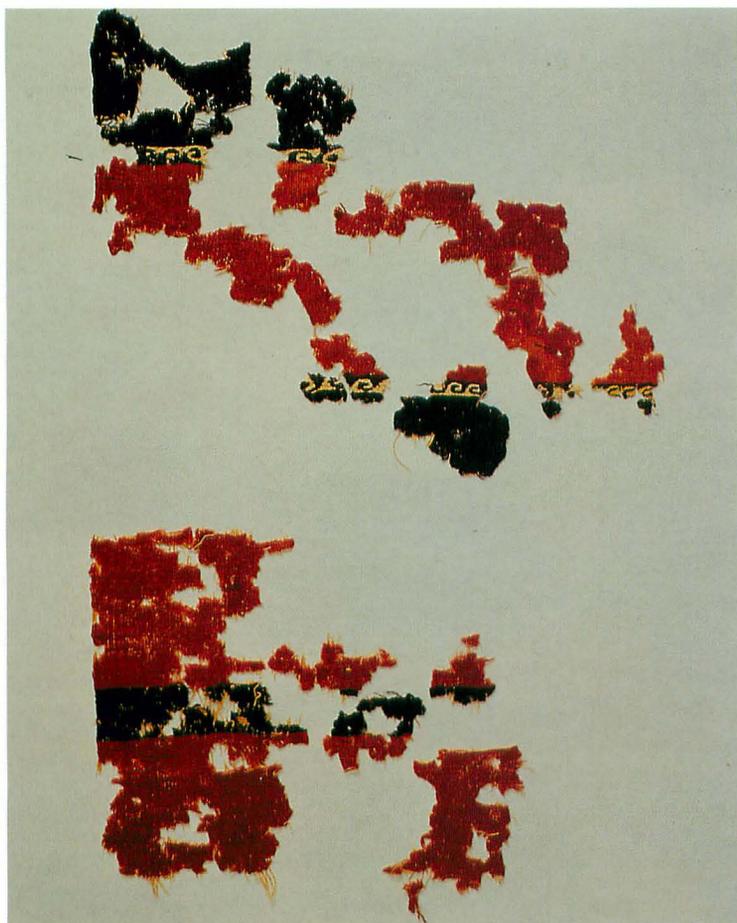
b. Twist portion of weft thread (near the square pattern of Textile 14)

weave finishing border

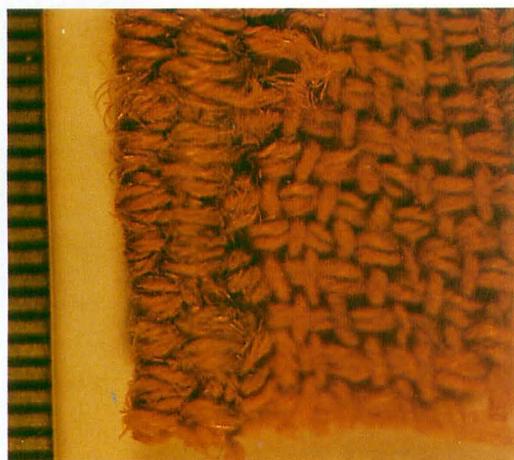


Large cloth with H-shape and square patterns
(Textile 14)

weave starting border



a. Fragments with wave pattern and horizontal stripe pattern band (Textile 15)

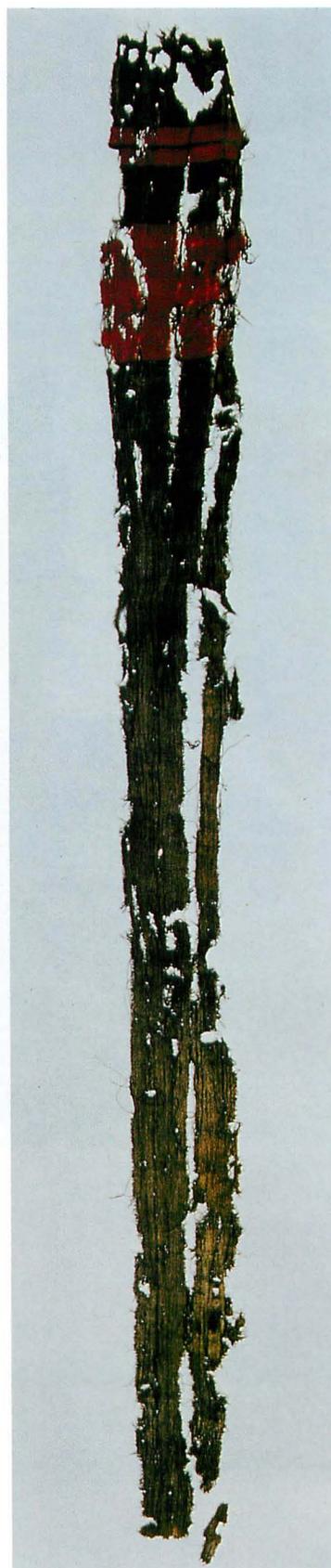


Plan



Section

b. Selvage of Textile 14



c. Gauze-like thin cloth with horizontal stripes (Textile 16)



Pile textile with borders (Textile 17)



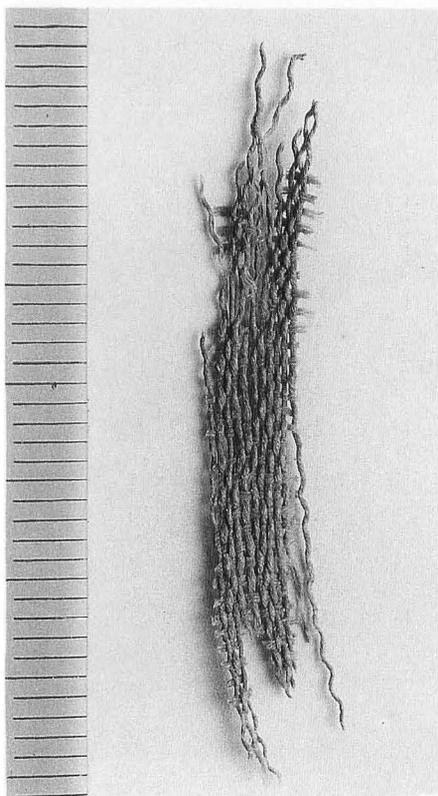
a. General view of Hills A(left) and C at Tar Caves



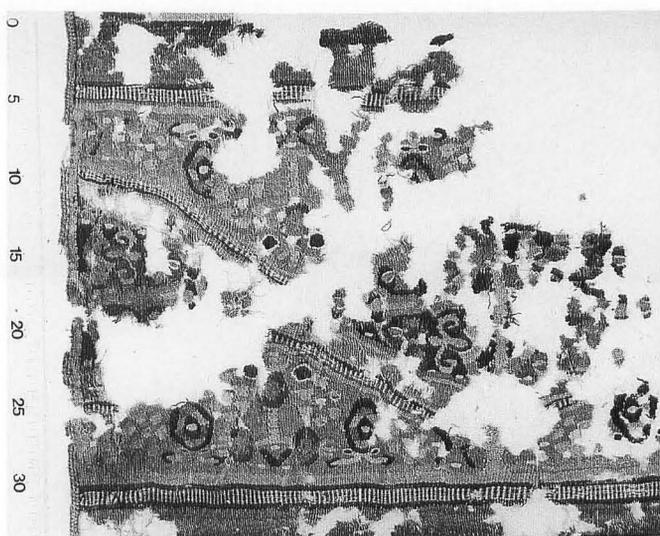
b. Wearing the tunic with grape vine scroll pattern, Hatra (NIHRA; second son of SANATRUQ I, Iraq Maseum, IM73001)



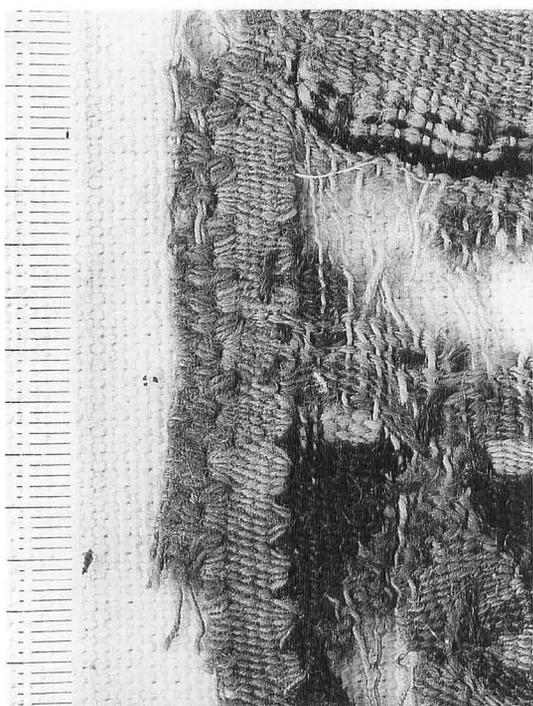
c. Priest wearing the mantle with H-shepe pattern, Hatra (No. Six, Shrine, Iraq Museum, IM 58085)



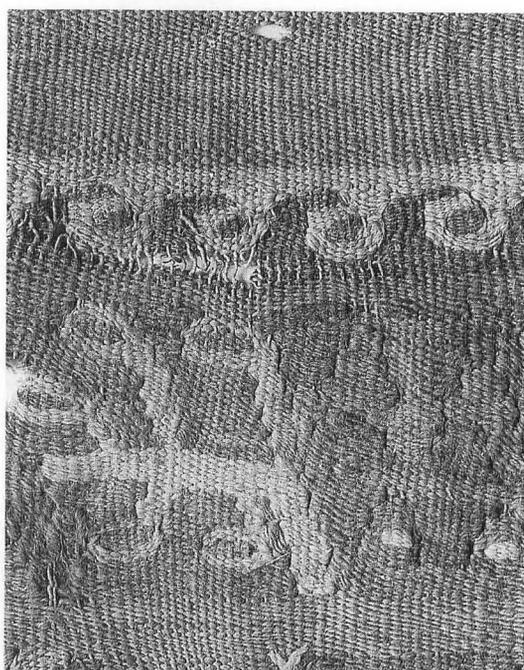
a. Small fragments of fine wool textile (Textile 1)



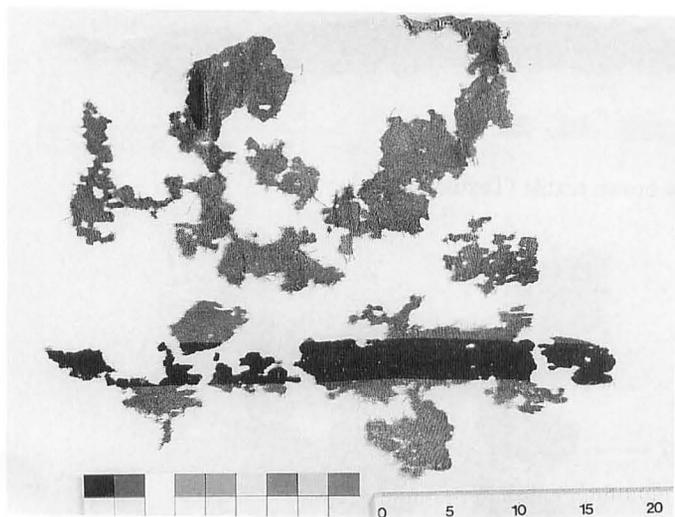
b. Central pattern portion of the textile with a flower and tree design band (Textile 2)



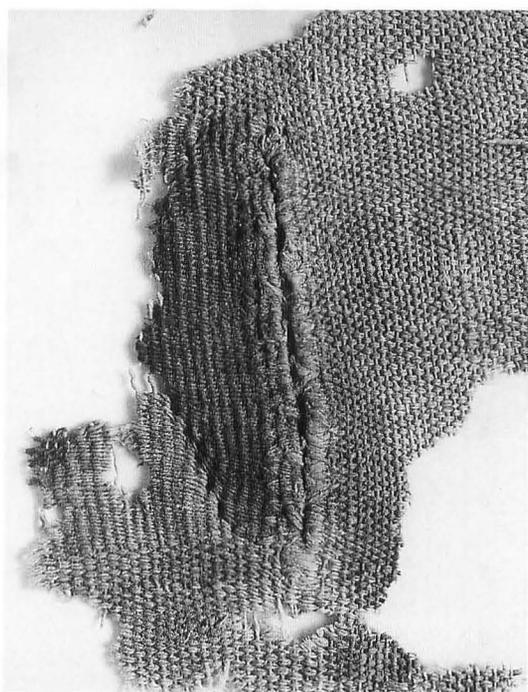
c. Selvage of Textile 2



d. Textile with tree design bands (Textile 3)

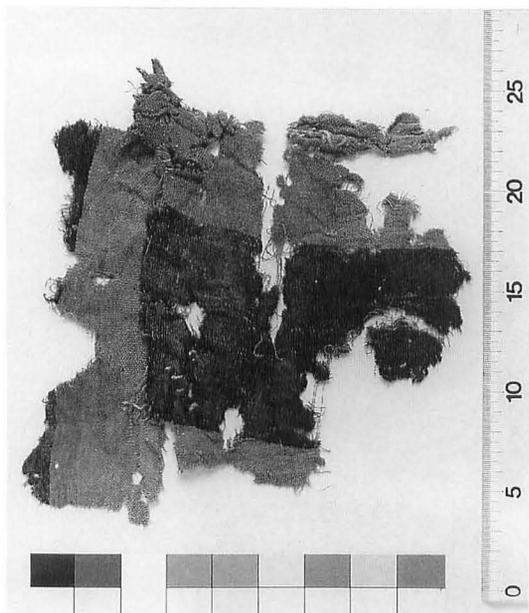


a. Textile with a dark purple band (Textile 4-1)

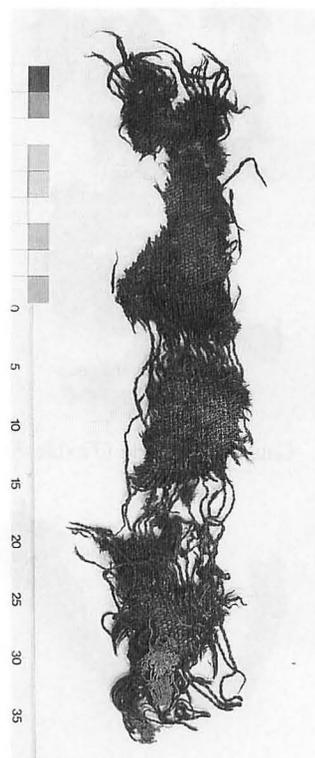


b. Textile with a dark purple band (Textile 4-1)
Slit with tapestry-weave technique

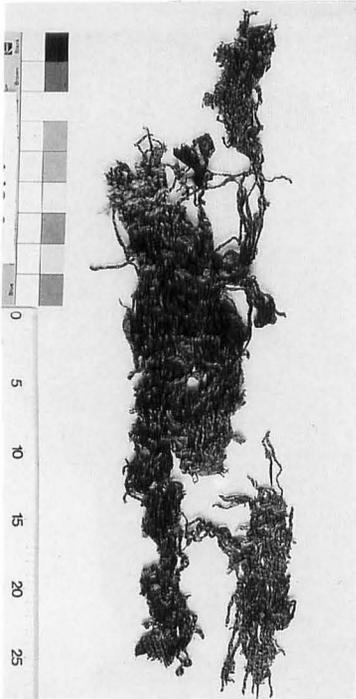
Sewing-joint
warp direction | weft direction

 A diagram showing a vertical line representing a sewing joint. To the left of the line is a horizontal double-headed arrow labeled "warp direction". To the right of the line is a horizontal double-headed arrow labeled "weft direction".


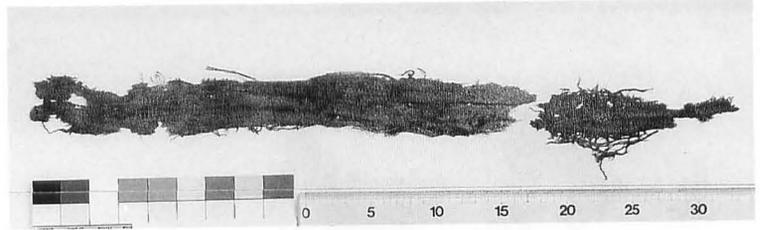
c. Textile with black bands (Textile 4-2)



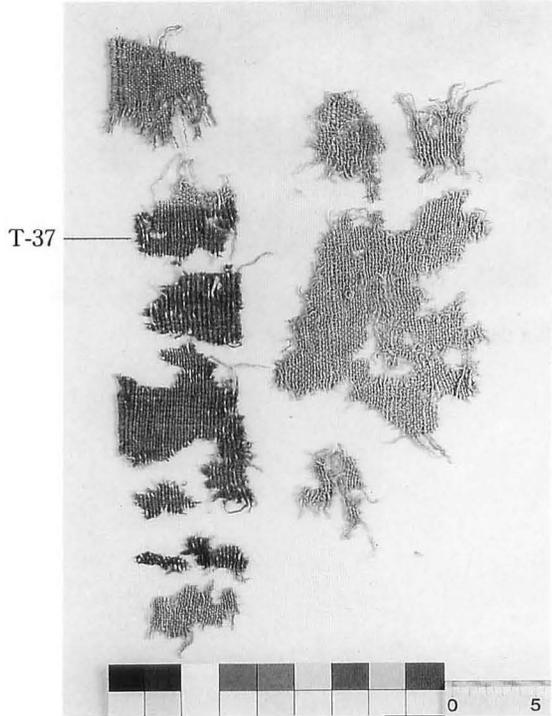
d. Black coarse textile (Textile 5)



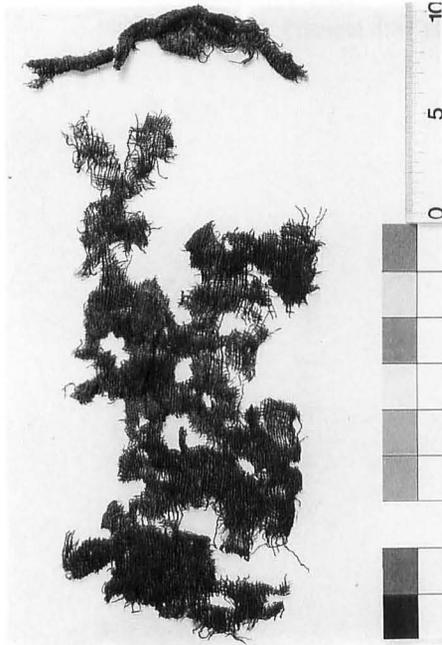
a. Bound rough textile (Textile 6)



b. Yellow brown textile (Textile 7)



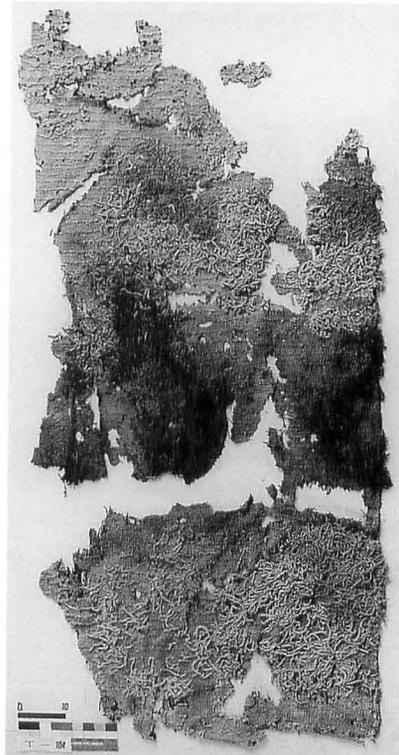
d. Textile with purple oblong design (Textile 9)



c. Gauze-like textile (Textile 8)



f. Cord (Textile 11)



e. Pile textile (Textile 10)