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BULLETIN DE LIAISON

DU

CENTRE INTERNATIONAL D'ÉTUDE DES TEXTILES ANCIENS

34, rue de la Charité — 69002 LYON

SOMMAIRE

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ANNONCES / NOTICES

Groupe de travail "Dentelles" au sein du CIETA / The CIETA Lace Group

Le Bulletin d'information n° 6 du Groupe Dentelle contient, entre autres informations intéressantes, l'annonce d'une réunion du groupe au Rijksmuseum d'Amsterdam les 22 et 23 avril 1985 et un rapport illustré sur les collections de dentelles du Musée Textile de Saint-Gall et de celles du Cooper Hewitt Museum de New-York.

Newsletter Number 6 issued by the CIETA Lace Group includes among other matters of interest, an announcement of a meeting of the Lace Group at the Rijksmuseum, Amsterdam, on 22nd and 23rd April 1985, and illustrated accounts of the lace collections at the Textile Museum, St Gallen, and at the Cooper Hewitt Museum, New York.

Groupe de travail "Tapisseries" au sein du CIETA / The CIETA Tapestry Group

Le n° 3 de "La Navette", bulletin d'information du Groupe Tapisserie du CIETA, paru en novembre 1984, contient de la bibliographie, des commentaires sur de récentes expositions de tapisserie. En outre, ce bulletin annonce que le Groupe Tapisserie se propose de fêter les 80 ans d'Edith Standen par un mini symposium tapisserie au cours de la prochaine Assemblée Générale du CIETA à Krefeld les 23 et 24 septembre 1985, ainsi que par la publication d'un numéro spécial du Bulletin du CIETA consacré à la tapisserie.

Issue n° 3 of "The Shuttle", the newsletter of the CIETA Tapestry group, appeared in November 1984. It contains a bibliography and commentaries on recent tapestry exhibitions. It also announces that the Tapestry Group is proposing to celebrate the 80th birthday of Edith Standen with a mini-symposium on tapestry forming part of the next General Assembly of CIETA at Krefeld on 23 and 24 September 1985 and with a special number of the CIETA Bulletin devoted to tapestry.

Le Musée Textile de Barcelone / The Textile Museum of Barcelona

Le Musée Textile de Barcelone vient de changer son nom. Il s'appelle désormais Musée Textile et du Costume. Il a réuni ses collections de tissus (Pasco, Gener, Bertrand) aux collections de costumes de Mr Manuel Rocamora et d'autres donateurs pour constituer un seul musée consacré aux textiles et aux costumes.

De plus, le Musée des Dentelles de Barcelone est devenu une section du Musée Textile et du Costume. De cette façon on a réuni tous les arts et industries textiles.

Le Musée Textile et du Costume possède un atelier de restauration où trois restauratrices : Mme Maria Teresa Alberch, Melle Maria Dolors Gendrau et Mme Pilar Mata travaillent pour le Musée et aussi pour d'autres institutions.

Après la retraite de Melle Pilar Tomas, membre du CIETA, le conservateur est Mme Rosa M. Martin i Ros, membre du CIETA. L'adjoint pour la section des dentelles est Mme Marie Victoria Ticó. L'adjoint pour le département pédagogique est M. Antoni Fabregat.

The Textile Museum of Barcelona has recently changed its name. From now on it will be called The Textile & Costume Museum. To its textile collections (Pasco, Gener, Bertrand) have been added the costume collections of Mr Manuel Rocamora and other donors so as to constitute a single museum of textiles and costumes. In addition, The Lace Museum of Barcelona has become a section of The Textile and Costume Museum.

All the textile arts and industries are thus grouped together in one museum. The Museum includes a textile conservation workshop where three conservators Mrs Teresa Alberch, Miss Dolors Gendrau and Mrs Pilar Mata work for the Museum and other public collections.

Following the retirement of Miss Pilar Tomas, a member of CIETA, the present keeper is Mrs Rosa M. Martin i Ros, also a member of CIETA.

The assistant-keeper in charge of the lace section is Mrs Victoria Ticó ; the assistant-keeper of the education department is Mr Antoni Fabregat.

Wurttembergisches Landesmuseum, Stuttgart

La galerie des tissus du Wurttembergisches Landesmuseum vient de faire l'objet d'une nouvelle présentation. Elle présente maintenant : Costumes et accessoires 1750-1914 - Ornements liturgiques 1350-1870 - Broderies XVIe-XXe siècles - Tapisseries : La Tenture des Nouvelles Indes et tapisseries contemporaines. Elle est ouverte au public du mardi au dimanche de 10 h à 17 h et le mercredi jusqu'à 19 h.

The textile gallery of the Wurttembergisches Landesmuseum has been rearranged. The exhibition now shows : Costume and accessories 1750-1914 - Church vestments 1350-1870 - Embroideries 16th-20th centuries - Tapestries : Nouvelles Indes series and contemporary hangings. Open to the public Tuesday-Sunday 10-17.00, Wednesday 10-19.00.

The Art Institute of Chicago - Diapositives / Slides

Le Département Textile de l'Art Institute de Chicago a ajouté les plaquettes suivantes à sa collection de diapositives désormais en vente :

European and American Velvets I, 1750-1950
European and American Velvets II, 1750- 1950
Italian Velvets I, 1400-1950
Italian Velvets II, 1400-1950

Les commandes doivent être adressées à Miss Linda Pikington, Mail Order Department, The Museum Store, The Art Institute of Chicago, Michigan Avenue, Chicago, Illinois 60603, U.S.A.

The Department of Textiles at The Art Institute of Chicago has made available a new series of slide kits : European and American Velvets... (see above) Each slide kit contains twelve slides and costs $ 10.95, $ 1.60 shipping charges are also to be included. American Express, VISA and Mastercard purchases as well as check and money orders are accepted.

All orders should be placed with Miss Linda Pilkinton, Mail Order Department, The Museum Store, The Art Institute of Chicago, Michigan Avenue at Adams Street, Chicago, Illinois 60603, U.S.A. Telephone inquiries should be directed to Miss Pilkinton at 312 443-3670.

NOUVELLES PUBLICATIONS / RECENT PUBLICATIONS

Dentelle / Lace

Catalogue de l'Exposition "Modes et Dentelles" au Musée des Beaux Arts et de la Dentelle, Calais. / Catalogue of the exhibition "Fashion in Lace" at the Musée des Beaux-Arts et de la Dentelle, Calais. 125 pages. 74 illustrations Prix : 80,00 FF.

Catalogue de l'exposition "Dessins de Dentelle" au Musée des Beaux-Arts et de la Dentelle, Calais. / Catalogue of the exhibition "Designs in lace" at the Musée des Beaux-Arts et de la Dentelle, Calais. Dessins de créateurs contemporains / Contemporary lace designs. 10 pages. Illustrations. Prix : 20,00 FF.

Mode et Costume / Fashion

Moda i technika wlokieenicza w Europie od XVI do XVIII Wieku.

(La mode et les techniques textiles en Europe du XVIème au XVIIIème siècles) vient d'être publié par Iréna Turnau. Elle nous avait donné un aperçu de ses recherches dans ce domaine dans le n° 51-52 du Bulletin du CIETA. L'ouvrage a 208 pages et 22 illustrations et comporte un bref résumé en anglais.

(Fashion and technique textile in Europe between sixteenth and eighteenth centuries) has recently be published by Irena Turnau. She has given us a preview of her research in CIETA Bulletin n° 51-52. This work contains 208 pages and 22 illustrations and a brief English summary.

Gakken : British Textile Design in the Victoria & Albert Museum

The three volumes of this publication can now be obtained from :

Mr Kiyoshi Masubuchi
Masubuchi Kobo
4-6-16-125, Kami-Osuki
Shinagawa-Ku
Tokyo - Japon

The price is 29,250 yen per volume, plus postage.

Les trois volumes de cet ouvrage peuvent être maintenant commandés à l'adresse ci-dessus.
Le prix en est de 29,250 yen par volume, plus frais d'envoi.

PUBLICATIONS (suite)

Le Deutsches Textilmuseum de Krefeld a récemment publié le premier volume d'une nouvelle série de catalogues. Ce volume, intitulé Italienische Seidengewebe des 13., 14. und 15. Jahrhunderts, est écrit par Brigitte Tietzel. C'est un travail substantiel de 480 pages ; il décrit 161 soieries médiévales, surtout italiennes, mais inclue aussi quelques pièces attribuées à l'Espagne et à d'autres origines. Chaque pièce est illustrée et est accompagnée d'une analyse technique et de références comparatives. Les problèmes de technique et de styles sont discutés à fond dans plusieurs chapitres d'introduction et l'ouvrage comporte une bibliographie complète.

The Deutsches Textilmuseum, Krefeld, has recently published the first of a new series of catalogues.
Entitled Italienische Seidengewebe des 13., 14. und 15. Jahrhunderts, by Brigitte Tietzel, it is a substantial volume of 480 pages, describing 161 medieval silks in the Krefeld collection, chiefly Italian, but including a few attributed to Spain and other sources. For each piece there is an illustration, a technical analysis and references to comparative material. Technical and stylistic questions are also discussed at length in a series of introductory chapters and there is a full bibliography.

NECROLOGIE / OBITUARY

Larry Salmon 5 mai 1945 - 7 décembre 1984

Au cours du mois de décembre dernier nous avons vu disparaître un autre de nos jeunes collègues. Il y a douze ans, nous avions appris avec regret la mort de Jean-Paul Asselberghs. Puis ce fut le tour de Veronica Gervers. Nous avons maintenant perdu Larry Salmon, le troisième dans cette lignée de brillants jeunes chercheurs au sommet de leurs carrières. Larry laisse une mère et une soeur. Sa fin, grâce à Dieu, fut très rapide.

Larry Salmon naquit à Winfield, Kansas, le 5 mai 1945. Il fit ses classes à Winfield et ses études universitaires à Kansas University où il obtint le diplôme de Bachelor of Art magna cum laude en 1967. Le principal sujet de ses études avait été l'histoire culturelle de l'Europe Occidentale au XIXème siècle. Il poursuivit ses études universitaires à Harvard où il obtint le diplôme de Master of Arts en Histoire de l'Art en 1968. Après un été passé au Musée de St. Louis (Missouri), il fut nommé Assistant Curator of Textiles au Museum of Fine Arts de Boston. J'étais alors conservateur de ce département ; lorsque je quittai le Musée en 1969, Larry assuma mes responsabilités, et fut bientôt titularisé.

Parmi les principales activités qu'il organisa avec l'aide de l'équipe capable et enthousiaste dont il avait su s'entourer, il faut citer une série de belles expositions consacrées aux textiles et au costume, tirées des collections du Musée, et qui s'avérèrent informatives et populaires. L'une des plus importantes de ces expositions fut consacrée à la remarquable contribution de Nancy Graves Cabot à l'étude des sources iconographiques des broderies, tissus imprimés et tapisseries en Amérique et en Europe. La famille de Mrs Cabot fit don aux Musées des matériaux manuscrits et photographiques de ces recherches. Ce ne fut qu'une parmi plusieurs donations de qualité qui enrichirent le Département durant les années où Larry en fut le conservateur. Une autre donation de première importance fut celle de la remarquable collection d'éventails de Miss Esther Oldham. Larry se donna une peine immense pour rendre accessible à tous - étudiants, historiens, dessinateurs et fabricants - de tels objets, car il croyait fermement (suivant la saine tradition de notre profession) que de semblables collections doivent être utilisées comme sources d'inspiration et de création et non présentées simplement comme de charmantes babioles.

Avec la collaboration de Gertrude Markell, puis de Leslie Smith, il stimula l'expansion du service de restauration du Département et tous trois tinrent à y maintenir un très haut niveau de soin et de traitement.

La contribution la plus significative de Larry au Musée et à la muséologie en général a été sa magistrale exposition From Fiber to Fine Art dédiée à la mémoire de Gertrude Townsend qu'il avait connue, admirée, respectée et pour qui il eut une grande affection. Ce fut une exposition exceptionnelle par le sérieux et la sensibilité qui présidèrent à la sélection, l'intelligence et l'élégance de la présentation. Ce fut là une véritable leçon de maître dans l'art de faire une exposition, un parfait exemple de "l'art dissimulant l'art".

Mais, parallèlement à son intelligence, à ses dons de sensibilité, à son sens de l'humour, Larry possédait un esprit sans repos, ne se satisfaisant ni du statu quo ni du confort. Cette sorte de wanderlust en relation avec ses activités

professionnelles le fit quitter deux fois son poste au musée, la seconde fois pour plusieurs années. Mais durant les deux dernières années avant sa mort, il était parvenu à contrôler ce goût du changement et commençait à prendre la voie d'un retour à son ancien métier. Pendant cette période il remplit les fonctions de conseiller du Graduate Department du Fashion Institute of Technology (New York) pour la création d'un cours sur l'histoire textile destiné au personnel des musées. D'autre part il fut chargé d'un cours d'histoire textile au Pine Manor Junior College près de Boston. Il contribua aussi au catalogue d'une exposition de tissus français au Wadsworth Atheneum (Hartford, Connecticut) et se livra à une étude des soieries islamiques médiévales dans les collections du Musée de Boston.

Je revois Larry d'abord comme un étudiant dégingandé et timide qui me dépassait d'une tête et illuminait le Textile Study Room de son intelligence, de son humour et de sa gentillesse. Je sus tout de suite d'instinct - et de jugement - que j'avais là quelqu'un d'assez exceptionnel, et la décision de lui demander de joindre mon équipe fut rapide et facile, décision qui devait plus tard enrichir non seulement ma vie et celles de tous ceux qui eurent à faire à son intelligence, à sa gentillesse et à sa bonté, mais aussi la vie et la direction des institutions auxquelles il avait donné le meilleur de lui-même.

Adolfo S. Cavallo

Larry Salmon May 5, 1945 - December 7, 1984

In December of last year our profession lost yet one more of our younger members. Twelve years ago we learned with great sorrow of the sudden death of Jean-Paul Asselberghs. Then death took Veronica Gervers. Now we have lost Larry Salmon, the third in this line of promising young scholars working in the prime of life and at the height of their careers. Larry is survived by his mother and a sister. He died after a blessedly short terminal illness.

Larry ("No one will believe it, but I really am Larry ; I never was Lawrence !") Salmon was born in Winfield, Kansas, on May 5, 1945. He attended public schools in Winfield before entering Kansas University at Lawrence, Kansas, where he earned his Bachelor of Arts degree, magna cum laude, Phi Beta Kappa, in 1967. His major field of study concerned the cultural history of western Europe in the nineteenth century. With the aid of a Woodrow Wilson Fellowship he attended the Harvard University Graduate School of Arts and Sciences, and there earned his Master of Arts degree in the History of Art, in 1968. He spent the summer working as an intern at the St. Louis (Missouri) Art Museum, specializing in the decorative arts, and in the Autumn he was invited to join the staff of the Museum of Fine Arts, Boston, as Assistant Curator of Textiles. When the present writer left that curatorship in the Autumn of 1969, Larry assumed responsibility for the Department of Textiles and soon was made its Curator-in-Charge and then full Curator.

Among the major programs he planned and supervised with the help of the able and enthusiastic staff he had built up Larry developed a series of handsome, informative and popular textile and costume exhibitions using material from the Museum's collection. Among these was a particularly important exhibition dealing with the extraordinary contribution that Nancy Graves Cabot made to the study of

design sources in American and European embroideries, printed textiles, and tapestries. Mrs. Cabot's study collection of notes and photographs went to the Museum as the gift of her family. It was only one of several major gifts that enriched the collection under Larry's curatorship. Another of prime importance was the gift of Miss Esther Oldham's comprehensive collection of fans. Larry worked tirelessly to make these and other collections and objects readily available for study by students, historians, designers and manufacturers believing (in the good curatorial tradition) that collections like these were meant to be used for inspiration and creative purposes and not just to exhibit as pretty baubles. With Gertrude Markell and then Leslie Smith he fostered the growth of the Department's conservation facilities and with these colleagues insisted on maintaining the highest standards of care and treatment. One of his most sophisticated and significant contributions to the Museum and to museology in general came in the form of the masterful exhibition entitled From Fiber to Fine Art which Larry dedicated to the memory of Gertrude Townsend whom he knew, admired, respected, and loved. Seldom has any textile exhibition been so sensitively and thoughtfully selected, intellectually considered, and elegantly displayed. It was a master's lesson in exhibition production, a prime example of "the art that conceals art".

Along with Larry's finely-honed intellect, his sensitive talent, his entrancing sense of humor, ran a spirit of unrest, of dissatisfaction with things that had been and with a state of ease. This kind of wanderlust in relation to his professional activity caused him to leave his museum post twice, the last time for some years. But during the two years before his death he came to terms with his restlessness and began to walk along a path that would lead him back to his former career. During this period he acted as advisor to the Graduate Department of The Fashion Institute of Technology (New York) in connection with a museum training program in textiles, and he taught a course in textile history at Pine Manor Junior College (near Boston). He also wrote entries for a catalogue of an exhibition of French woven textiles at the Wadsworth Atheneum (Hartford, Connecticut) and made a study of early Islamic silks in the Bostum Museum's collection.

I remember Larry first as a shy, gangling student of twenty-three who towered above me and filled the Textile Study Room with a glow of intelligence, humor and love. I knew instinctively and intellectually that this was someone very special, and the decision to ask him to join the staff was a quick and easy one, one that later enriched not only my life and the lives of everyone who came into contact with this sweet and good and bright young man but also the life and direction of the institutions to which he gave his best efforts.

Adolfo S. Cavallo

EXPOSITIONS / EXHIBITIONS

- Tissus indonésiens
  Museum Ludwig - Cologne - R.F.A.
  septembre - novembre 1984

- The new elegance : Contemporary Wearable Art
  Newark Museum - U.S.A.
  octobre 1984 - janvier 1985

- Modes en dentelles - XVIème - XXème siècles
  Musée de Calais - France
  novembre 1984 - janvier 1985

- The Golden Age of Anglo-Saxon Art
  British Museum - Londres - Grande-Bretagne
  jusqu'au 10 mars 1985

- L'imprimé dans la mode du XVIIIème siècle à nos jours
  Fondation Septentrion - Marq-en-Baroeul - France
  jusqu'au 17 mars 1985

- Du noeud aux nouages, le macramé
  Hôtel de Sens - Paris - France
  jusqu'au 23 mars 1985

- Quilts contemporains américains
  Musée de l'Impression sur Etoffes - Mulhouse - France
  jusqu'au 31 mars 1985

- Master Drawings from the Woodner Collection
  Fogg Art Museum - Cambridge - Mass. U.S.A.
  jusqu'au 31 mars 1985

- Rome 1300-1875 : l'art des années saintes
  Palazzo Venezia - Rome - Italie
  jusqu'au 5 avril 1985

- De la Mode et des Lettres
  Musée de la Mode et du Costume - Paris - France
  jusqu'au 24 avril 1985

- L'art dans la production : textiles, modes et céramiques soviétiques 1917-1935
  Crafts Council - Londres - Grande-Bretagne.
  jusqu'au 28 avril 1985

- Dessins du Musée d'Alençon du XVIème au XIXème siècle
  Musée des Beaux Arts - Rennes - France
  jusqu'au 22 avril 1985

- L'Art des Grotesques du XVIème au XIXème siècle
  Abegg-Stiftung - Bern - Riggisberg - Suisse
  du 5 mai au 27 octobre 1985.

UN TISSU COPTE DE LA COLLECTION GHERZI - DOSSIER DE RECENSEMENT

par Gabriel VIAL

I - Lieu de conservation

Collection particulière - G. Gherzi - Zollikon (Suisse).

II - Attribution

Egypte Copte - Antinoé : V-VIème siècle (cf. commentaire).

III - Provenance

Acquis de TANO - Le Caire, en 1960.

IV - Nature du document

Montage de 4 bandes juxtaposées, formées elles-mêmes d'une dizaine de fragments au moins, de tapisserie, le tout assemblé pour former un tableau (fig. 1) - (schéma 1).
La bande de toile unie latérale, de gauche, est attenante, mais celle de droite est entièrement rapportée et cousue avec un fil moderne.
D'après Monsieur Gherzi, les 4 bandes formaient, à l'origine, une bande continue découpée pour former le tableau actuel que nous avons analysé.

V - Dimensions du document

Hauteur : 51,5 cm environ
Largeur : 29,5 cm environ

VI - Description du décor :

Médaillons circulaires à bandeau, contenant chacun un personnage en buste, barbu et semblant enturbanné de noir, portant un vêtement vert, clair ou foncé, à plastron rouge ou rougeâtre. Les médaillons sont reliés verticalement par une succession de tiges fleuries très stylisées. Chaque bande comporte deux rangées de tiges entre lesquelles se trouvent des quatre-coeurs, décalés par rapport aux fleurs des tiges. Ces fleurs se présentent d'ailleurs selon deux versions qui les font ressembler, tantôt à une fleur de lis, tantôt à un coeur renversé. Polychrome sur fond écru.

VII - Etat de conservation

Malgré l'apparence, le document est très détérioré et présente de nombreux trous dont certains ont été bouchés à l'envers au moyen de fragments de la toile qui sert de bordure latérale. Nombreuses traces de fils de couture moderne, de coloris orange.

VIII - Contexture

Qualification technique : Tapisserie, à base de louisine de 2 fils.

Chaîne : Une seule chaîne.

Matière : Lin 1 bout, torsion "S", écru,

Réduction : 12 fils au cm. (évaluée sur 10 cm)

Trame : Fond : Lin 1 bout, torsion "S", écru

Réduction 24 - 32 coups au cm.

Tapisserie : Laine 1 bout, torsion "S", couleurs diverses.
Lin 1 bout, torsion "S", écru.

Réduction : 40 - 44 coups au cm.

Toile latérale : Lin, 1 bout, "S", écru.

Réduction : 11-13 coups au cm.

Construction interne du tissu

La tapisserie est formée d'une louisine de 2 fils, regroupant par deux les fils qui travaillent individuellement en toile dans les bandes latérales.

A la jonction de cette toile à la tapisserie, on trouve le déplacement classique de certains fils qui se croisent avec leur voisin avant de se grouper par deux dans la Louisine. Le rythme, variable suivant les tissus, semble ici très régulier et l'on rencontre : 2 fils se croisant, 2 fils ne se croisant pas (fig. 2 droite) (schéma 2 droite).

Les deux fils qui se sont croisés aboutissent régulièrement dans deux pas différents de Louisine. Si l'on considère isolément chaque fil, il passe régulièrement une fois sur la trame, une fois dessous, travaillant toujours en quelque sorte en taffetas. Ce taffetas est transformé en Louisine dans la tapisserie, du fait du croisement et du déplacement de deux fils sur quatre.

On peut supposer que ce croisement était pratiqué pour éviter qu'à la jonction entre toile et tapisserie ne se produise la prolongation obligatoire entre ces deux armures. Cependant ceci n'a pas été réalisé partout avec régularité, car l'on remarque certains passages où cette prolongation existe ; des fils terminant la toile par "un pris" recommencent de même dans la louisine et le fil voisin, terminant par "un laissé" recommence de même dans la louisine (fig. 2 gauche) (schéma 2 gauche).

Il n'a pas été possible de déterminer exactement le passage de la partie de construction régulière, à la partie de construction irrégulière, mais la photographie montre bien l'existence des deux parties.

On peut également constater que l'armure taffetas se forme très régulièrement sur le dernier coup de la toile. Ceci semble normal, car elle devait être produite au moyen de lisses.

Un décalage a dû se produire, soit par la production erronée d'une louisine de 3 fils (au lieu de 2), soit encore par le fait d'avoir laissé 4 fils sans croiser (au lieu de 2), soit enfin par le fait d'avoir fait se croiser 4 fils de suite (au lieu de 2). Ceci semble tout à fait compréhensible, car l'opération de croisement des fils, aussi bien que le groupage par 2 dans la Louisine, devaient être opérés manuellement et pouvaient facilement donner lieu à des erreurs.

Tapisserie

Les relais (fentes) entre deux couleurs voisines ont été évités dans les parties verticales des médaillons, au moyen du retour en arrière des trames voisines sur un même fil de chaîne en groupant 8 ou 10 coups de chaque couleur. Cette opération est appelée en vocabulaire de tapisserie

"perfilage simple groupé" (en anglais Dovetailed Tapestry). Cf. N. Viallet : Principes d'analyse scientifique-Tapisserie. Paris 1971. p. 42.

IX - Teinture

Aucune analyse de colorants n'a été effectuée.

X - Condition d'exécution

Métier à lisses pour la production de la toile.
La tapisserie était exécutée manuellement.

XI - Commentaire justifiant l'attribution

L'histoire rapporte que la fondation de la ville d'Antinoë (Antinopolis) en l'an 130 de notre ère, serait due à l'empereur Hadrien (76-138), désireux d'honorer la mémoire de son favori Antinoüs noyé en traversant le Nil à cet endroit.

Cette noyade aurait été accidentelle, Antinoüs ayant voulu par cet exploit prouver son attachement à l'empereur, ou peut-être provoquée, avec l'assentiment d'Antinoüs lui-même (...) se sacrifiant pour prolonger la vie de l'empereur qui accomplissait ainsi une prophétie.

L'empereur éleva Antinoüs au rang de divinité, lui fit élever de nombreux temples et fit même frapper une monnaie en son honneur.

Une légende orale égyptienne, rapportée au propriétaire du document par l'antiquaire Tano, du Caire, prétend que cette étoffe utilisée par les femmes d'Antinoé pour décorer leurs tuniques et que ces têtes très masculines avec cheveux (?) noirs auraient été choisies en réaction, par certaines femmes de la ville, choquées qu'on ait honoré un homme effeminé en lui bâtissant une ville...

Une analogie à signaler concerne la tige fleurie du fond, avec la fleur en coeur (?) renversé, accompagnée du motif quatre-coeurs (!) On la rencontre -bien que complétée par des branches recourbées latéralement- datée des : V-VIème siècles, dans le catalogue : collection of Coptics textiles State Pushkin - Museum of Fine Arts- Moscou 1967, cat. 143-144-145, planches 76-77.

XII - Commentaires justifiant les conditions d'exécution : néant

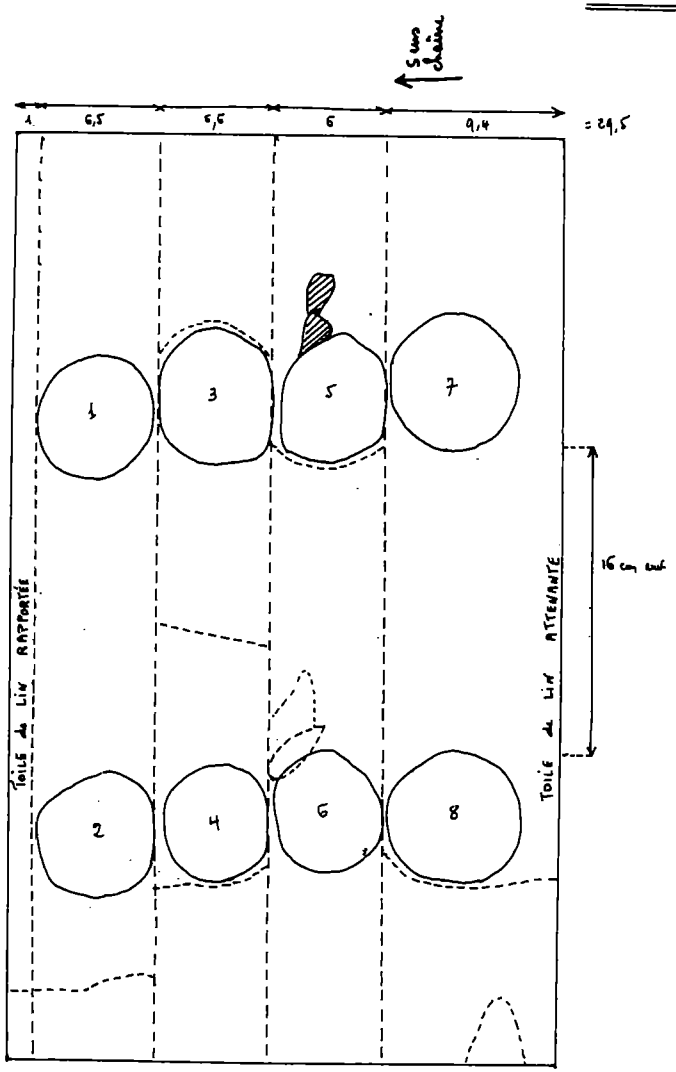
XIII - Autres exemplaires du même tissu : Inconnu

XIV - Références : néant

XV - Date et signature : Lyon, novembre 1980 - Gabriel Vial.

Figure 1 - Document
(Photo Basset, Lyon).

Schéma n° 1



Dimensions : Hauteur : 51,5 cm Largeur 29,5 cm

Légende : ----- Coutures
: ////////// Rafiéçage d'envers

Hauteur des médaillons / Largeur des médaillons	n°	① 6,7 cm / 6,5 cm	② 7 / 6,5	③ 7,5 / 6,9	④ 6,5 / 5,7	⑤ 7 / 5,7	⑥ 6,8 / 6	⑦ 7,5 / 6,9	⑧ 7,1 cm / 7,2 cm

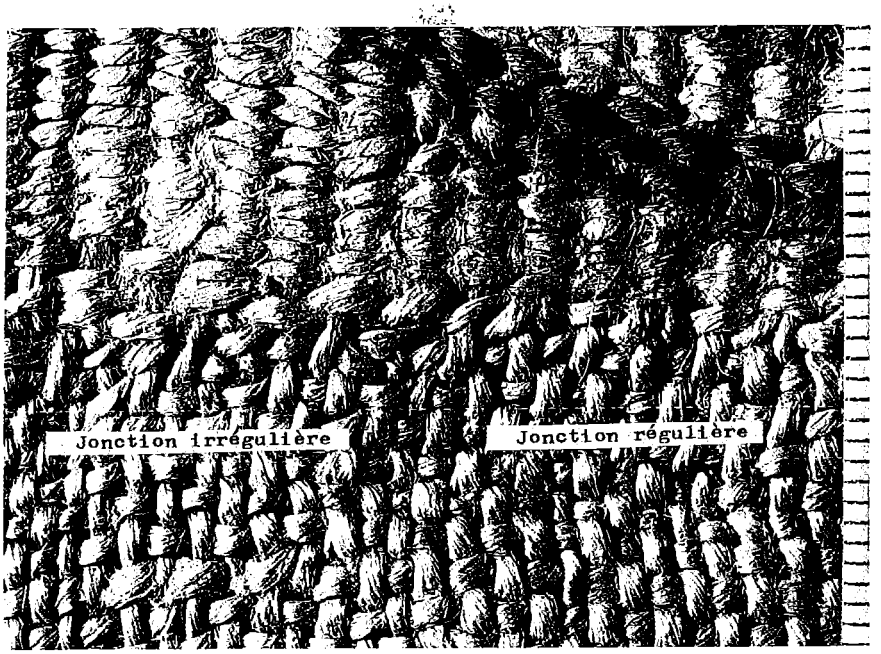
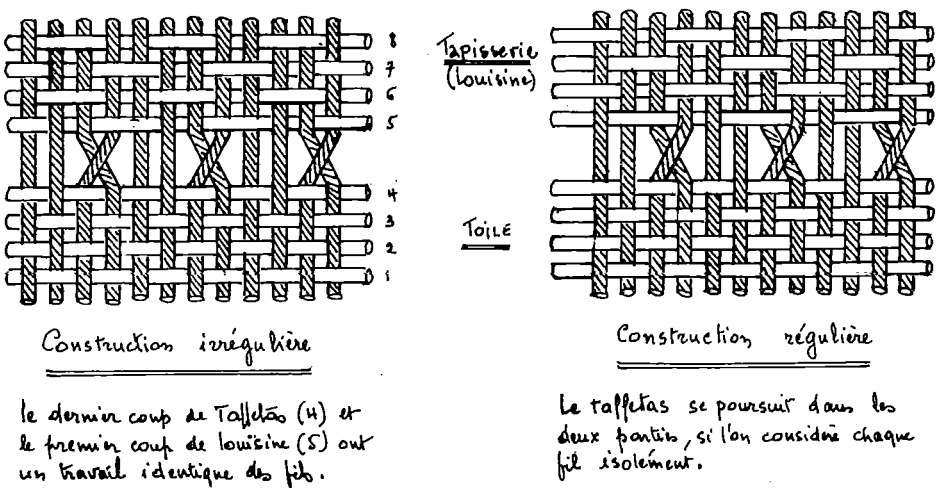


Figure 2 - Jonction toile - tapisserie (endroit)
à droite : jonction régulière
à gauche : jonction irrégulière
(Photo Basset, Lyon).

Schéma n° 2



Summary

A Coptic textile from the Gherzi collection.

This Coptic textile, from a private collection, has an unusual pattern (associated with an amusing legend) and illustrates a small technical problem which generally goes unnoticed. Male heads, with black hair or turbans, form the principal motif, accompanied by floral stems of a more classical type. The technical point relates to the crossing of the threads which normally occurs in this type of textile at the junction of the tapestry proper (louisine on two warp-ends) and the surrounding cloth. In the present example two zones can be distinguished, one with a regular junction, in which the individual warp-ends continue in a regular tabby, the other with an irregular junction, in which the tabby is irregular. This may support the hypothesis that the crossing was made manually at the junction of the two bindings, which has not, to my knowledge, been sustained by a technical argument.

HAN DYNASTY SPECIMENS FROM NOIN-ULA AND MAWANGDUI IN LOOPED-WARP WEAVE

by Krishna RIBOUD

Amongst the impressive quantity of well-preserved silk fabrics unearthed from Tomb Number 1 in the site of Mawangdui in Changsha (Hunan province) figures a particularly significant group of patterned silks referred to by various authors as qimaojin, qirongjin and rongquanjin, all three terms implying a modern Chinese appellation for this specific weave-structure. The Chinese authors translated the term into "pile-loop brocade" in English (1). Certain other Chinese authors had inferred that the character hui found inscribed on ancient bamboo slips, constituting the inventory of the burial goods deposited in the tomb, represented the original name for this particular group of silks, but this has remained a hypotheses and has not been fully confirmed (2). For our own practical purposes we have established the term "warp-faced compound tabby with looped-warp" in English and "taffetas à chaines multiples endroit chaîne avec l'effet bouclé" in French. For the sake of convenience we shall use the abbreviated term "looped-warp" for this group of patterned silks. While recognizing that modern textile terminology in any language is at its best an approximation, in technical analysis however it is quite hazardous to use the ancient terms, for they remain highly ambiguous and very often fail to differentiate between weave effects and weave techniques. Thus the widespread use of the sole term jin (ancient character) in contemporary Chinese texts to indicate weave-structures so fundamentally differing from each other such as the "warp-faced" and the "weft-faced" compound tabby or twill is misleading ; furthermore, to translate jin into "brocade" -a completely different weave-technique and of a much later origin- only helps to augment confusion.

The Chinese experts have postulated that this type of weave-structure with looped warp-threads represents the archetype of velvet, and "technically paved the way for the development of the Changchow and other velvets of a later period" (3). The reasons why they believe that this fabric having an aspect not habitually encountered during the Han Dynasty should be considered as the prototype of velvet are the following : a) the use of twin warp-beams for take-up ; b) the use of three types of warp : the "main" warp, the "binding" warp and the "pile-loop" warp ; c) the use of temporary wefts to form the looped-effect ; once the weaving was done, they were removed. We shall return to discuss whether this looped-warp technique can truly be considered as the earliest precursor of the velvet weave-technique or not.

The particularity of the looped-warp weave technique lies in the fact that in an artfully contrived warp-faced décor, which in fact is the "warp-faced compound tabby" technique (4), small geometric motifs typical of the Han ornamental repertoire are made to stand out in relief (or shallow loops) above the ground, thus giving somewhat of a three-dimensional effect. This ingenious invention required a considerable amount of imaginative skill. Photographic reproductions of silk fabrics executed in this weave were published shortly after the exciting discovery of Tomb Number 1 belonging to the Marchioness of Dai, wife of the Marquess Li Cang, Chancellor to the Household of the Prince (or King) of Changsha (5).

The date of Lady Dai's burial, through a multitude of evidence, has been determined as circa 168 B.C. or not too long thereafter. Due to the important position of her husband (who was buried in 186 B.C. and whose Tomb Number 2 had been robbed), and also to the advanced economy during the Western Han period (206 B.C. - A.D. 8) of the Southern Chu Kingdom of which Changsha (Lingxiang) at the time was the capital, the elaborate burial furnishings in the undisturbed tomb of Lady Dai contained over a thousand items revealing a unique group of both ritual and everyday articles. Amongst these figured about fifty pieces of clothing including stockings, shoes and gloves ; over fifty pieces of silk fabrics, some with both selvages preserved, and about twenty other pieces of silk for various uses. The fifteen fragments in the looped-warp technique from Tomb Number 1 were used as trimmings for complete garments including floss-waddes robes (for their sleeves, collars, wide borders and sashes), for tablecloth, mirror cover, base of perfume bags and sides of pillow cases. All these finds are kept in the Hunan Provincial Museum, Changsha. These fabrics helped to highlight the importance of the knowledge and use of this technique during the Western Han period (Annex N° 1). It is reported that even a greater number of fragments in the looped-warp technique was found in Tomb Number 3 (that of the son of Marquis and Lady Dai) (6). The date of his burial is inscribed on a wooden tablet and corresponds to 168 B.C., and it was encountered that the contents of Tomb Number 3 had suffered due to fissures in the sepulchral chamber. These fragments have not been yet published. Other reports inform us that in 1968 patterned silk fragments in the looped-warp technique were found in the richly furnished Western Han Tomb Number 1 of Prince Liusheng in Mancheng (Hebei province) buried in 113 B.C. These brittle and not so well-preserved fragments were found as padding on the inside of an iron suit of armour (7) (figs. 5A). A fragment of looped-warp silk was also recovered in 1972 from Tomb Number 62 in Mozuizi (Gansu province). It was pasted as ornamental border on a wooden cane-like object (woshou) held in the male deceased's hand ; the tomb contained a lacquer double flange-handled ovoid cup (erbei) with 8 B.C. as manufacture date, and Chinese experts date this burial from the Wang-mang period of the Han Dynasty (A.D. 9 to 23) (8). It is interesting to note that in all the instances cited above, fragments of looped-warp silk had been used exclusively for ornamental trimmings and not as complete garments. Moreover, to our knowledge, looped-warp fabrics have not been found in other tombs in China nor are they, as of now, known to date outside the early Han period. These fabrics with an effect of relief undoubtedly represented complicated and skillful work and were therefore considered as precious material.

Prior to the Chinese finds, the existence of this rather singular type of looped-warp fabric was known to us through one other Han Dynasty patterned silk of Chinese manufacture, from the site of Noin-Ula (Northern Mongolia) (9). It was found by the Russian explorer P.K. Kozlov in 1925, in the burials of important Xiongnu nomadic chiefs (shanyu), in Barrow 14, and is in The Hermitage Museum Collection in Leningrad (figs. 1 and 2). It is known that the presence of Chinese goods in nomadic burials, and in sites far-flung from the Chinese Empire, is accounted for by the frequent incursions made by nomads (or barbarians as they were then called) inside the Chinese borders, and by the tributary gifts which they received by way of appeasement from the Imperial Court in China.

The ancient Chinese annals, the Han-shu, cites frequent instances when such gifts, including precious textiles, were made to the nomads and their chiefs. W.P. Yetts had stated : "The Hsiung-nu (Xiongnu) were not devoid of culture. They in common with the other horse-riding races of Asia -Scyths, Huns, Mongols, etc.- were eager to acquire the products of civilizations higher than their own, and they were catholic in their tastes" (10). Because of the association of

archaeological finds in Noin-Ula with a lacquer cup, found in Barrow 6, and bearing an inscription giving the date of its manufacture equivalent to 2 B.C., all Noin-Ula finds have received the conventional dating of the beginning of A.D. first century. It is however quite conceivable that some precious artefacts and textiles of greater antiquity than the date of interment were included in these burials. After making comparisons with the textile finds made in Mawangdui Tomb Number 1, I had expressed the thought that certain Noin-Ula patterned silks could have been manufactured during the Western Han Dynasty (11). The close technical and iconographic similarity of gauzes, embroideries, monochrome patterned silks, and the looped-warp fabrics, found in Noin-Ula and in Mawangdui Tomb Number 1 suggest not only a stylistic affinity in the manner of production, but I believe that these specimens from the two sites had a common source of manufacture in the southern region, and were probably all woven within a given time span. This thought is also shared by the eminent Chinese authority, Xia Nai : "This (similarity) cannot be explained solely as cultural influence ; these similar fabrics should be regarded as products of the same workshop exported to different parts of the world" (12).

Earlier, Lubo-Lesnichenko and I had proposed that controlled workshops which manufactured precious fabrics for the Imperial Court were located in Chang-an (modern Xi'an), the capital of the Western Han (13). Xia Nai makes some other propositions : "According to Chinese texts, Linzi county of Qi province (modern Shandong province) and Xiangyi county of Chenliu province (modern Henan province) were some ot the most important places for silk textile workshops. The former was famous for embroidery and the latter for brocade during the Han period. These workshops were under the control of officers sent by the central court" (14). It must be pointed out that until 1949, except through literary and historical sources, we knew little about the actual cultural patterns of the Chu Kingdom. Until recent times the objects pertaining to this particular civilization were relatively rare and confined mainly to some lacquer objects, arms and rare fragments of plain silks used for painting or writing purpose. They were obtained through uncontrolled means and dispersed in different Museum Collections of the world ; it was not possible to carry out scientific studies on the basis of these finds. The discovery of these three Mawangdui and several other tombs in the Changsha region, together with tombs of the Warring States Period (475-221 B.C.) in the ancient Chu Kingdom in Hubei province have helped to shed an entirely new light regarding the everyday life and the religious beliefs of the highly sophisticated Chu culture. Important textile finds have been made in almost all the tombs I have just mentioned, and I have had the good fortune of seeing many textiles in the site museums (15). They all attest to a very high level of skill, finesse and ornamental repertoire. The motifs on the silks, like the inlaid bronzes and lacquer, represent the ornamental legacy of the old kingdom of Chu, and contrary to previous beliefs, it now seems clear that the Chu culture in the southern regions had been a forceful rival of the classic and dominant culture of Imperial China. It therefore becomes legitimate to ask at present whether controlled workshops could have existed in the environs of Changsha, and whether the complex weave patterned silks could have been regionally produced (16). With its unique regional traditions and consummate skill as manifested in lacquerware and textiles, it is more than conceivable that the fine fabrics and lacquer objects found in Noin-Ula and in the Mawangdui tombs were manufactured in the south.
It must however be pointed out, that in spite of this "air de famille", there is one essential difference between the Mawangdui and the Noin-Ula patterned silks : on five polychrome patterned silks from Noin-Ula, Chinese inscriptions in lishu style are present, denoting wishes for felicity, longevity and immortality. The inscriptions -extending up to twelve different characters in a single fabric-

are woven horizontally, in the weft sense, and each character is different ; these fabrics therefore consist of a single repeat in the width. Such long woven inscriptions are totally absent in the Mawangdui textile finds and may therefore indicate different types of patronage (17).

For us it represents a very valuable experience to examine the specimen in the looped-warp weave from Noin-Ula -the only one which is so far known to exist outside of China- and to compare it with the Chinese finds. With the participation of E.I. Lubo-Lesnichenko, specialist of the Noin-Ula textiles at the Hermitage Museum in June 1983, a close study of the looped-warp specimen was made possible and a technical analysis on a small sample from this fabric has been carried out by G. Vial and D. de Jonghe (figs. 4A + B). The specimen from Noin-Ula (Reference N° MR 14029) measures approximately 19,5 cm in length and 9,4 cm in width. Like the Mawangdui specimens, it is woven in cultivated silk, and the ornamental motifs, typical of the Han decorative styles consist of diagonal rows of small geometric motifs which are rhomboids and other angular forms ; these motifs resemble very closely the ones figuring on the Mawangdui finds (on which eighteen different types of geometric motifs were found (cf. Annex VI). It has a two-series warp, and the colour at present appears to be brown, although in places a faded reddish brown is preserved. The condition of this fragment is only fair compared to some of the remarkably preserved Mawangdui looped-warp fragments. In his study of this specimen, Lubo-Lesnichenko, in 1961, had already pointed out that the weave technique on this specimen was the "warp-faced compound tabby" the classical weave which has been encountered on almost all Han Dynasty patterned silks having warps of two or more series and one weft. He gave the warp density as 70 per cm (total of 140 ends) and 40 picks per cm. He indicated that "repeat along warp is 6,7 cm (?) and along weft 2,8 cm" (my own assessment is that the height of repeat is approximately 3 cm -same as Mawangdui N6-2 (fig. 5C). and repeat in width is incomplete) (18). Lubo-Lesnichenko had pointed out that the only difference consisted in that the pattern was executed in relief. He stated : "Probably the weaver achieved it (the raised effect) by loosening at certain intervals the second patterning warp, and after fastening it with the weft threads, tightened it again. As a result, the thread formed shallow loops, but remained fastened by the weft. Thanks to this process, the ornament on the textile showed up not only in colour, but also in relief. Using this manner of weaving where the ornament appears also in relief was particularly important for a design of small dimensions, because a supplementary clarity could be achieved, and the pattern resembled an embroidery" (19). Although technical analysis of the Noin-Ula sample has later proved that the Chinese weavers employed an astute device for forming the motifs in relief, the initial assessments made by Lubo-Lesnichenko that it is in the warp-faced compound tabby technique and that only warp number two is raised to form the loops are correct ; warp number one forms the float over three wefts as in the regular compound tabby. In 1973, a Japanese catalogue entitled Archaeological Treasures Excavated in the Peoples' Republic of China published for the first time a technical diagram of the weave (20) (fig. 3). This diagram showed with great accuracy the weave structure of the looped-warp fabric used for the base of the perfume bag (Ref. N° 65 : 1) which was exhibited in Japan. The diagram unmistakably showed that the basic weave-structure was the warp-faced compound tabby. The diagram also indicated that at desired intervals, an extra weft resembling a rigid rod was inserted beneath the patterning warp to create the looped effect. It was clear that this rod was a temporary weft which was removed after weaving. Chinese specialists have since stated that this temporary weft (of which no surviving example was found) was probably composed of ramie or hemp threads or fine bamboo fibres assembled to make single wefts ; in any case, it must have required considerable skill

to remove this temporary weft without damaging the looped-warps. In 1974, textile experts in Shanghai published an article based on two specimens (N6-1 and N6-2) (figs. 5B and C) and provided many technical explanations with diagrams (Bib. 1). They indicated that one of the two specimens (N6-2) consisted of four-series warp, and had a total of 176-224 ends x 41-50 wefts per cm. The existing repeat in the width was 13,7 cm. Assuming that the original width of this fabric corresponded to the standard Han width of 50 cm, it would then have had a total of 8000-11000 ends. They concluded that for purposes of patterning, harness shafts might have been applied to lift and to lower the threads ; they also assumed that in order to control and regulate such a magnitude of warp-ends, and in addition to create the effect of relief ("pile-loops"), an equipment akin to a drawloom was used. We do not agree with this hypotheses ; it seems incredible that such a vast number of warp-ends could have been individually controlled without creating great physical obstacles ; it would have necessitated a number of people working simultaneously to draw the cords (21). From all evidence gathered from the technical analysis of the Noin-Ula sample, our specialists firmly believe that the pattern-rod type of loom, which was used for manufacturing the classical warp-faced compound tabby, was also utilized for the execution of this type of weave-structure. We therefore find the term "pile-loop" unsatisfactory, for pile-loop implicates an extra warp whose unique function is to form pile above the ground weave.

The 1980 publication by the combined teams of Shanghai textile experts on the Mawangdui textiles from Tomb Number 1 (Bib. 3) brought forward even more exhaustive studies on the looped-warp specimens, including fibre analysis, dye analysis, weave structure and many technical diagrams. Much of the material of the 1974 publication (Bib. 1) was once again reproduced, and in spite of new technical analyses and several weave diagrams in coloured plates featured in Bib. 3, 1980, our experts are experiencing some difficulty in grasping with precision the technical interpretations and graphic forms. It is clear from the technical diagram by Chinese experts shown in our Annex V, fig. C, that the same patterning warp has big loops alternating with smaller loops (22). Vial and de Jonghe point out that in their technical analysis of the Noin-Ula sample, where the same types of big and small loops exist formed by warp n° 2, that in order to make the big loops over three wefts ("bouclettes normales") it would have been necessary to insert successively two temporary wefts. This interpretation therefore represents a technical revision of the Japanese diagram in fig. 3, where only one temporary weft is shown at regular intervals to form the big loops. The smaller loops ("bouclettes petites"), warp-floats of over two wefts according to Vial and de Jonghe were not planned as such, but resulted as a technical consequence of the warp-end passing over one temporary weft. On looped-warp fragments from Mawangdui (23) one can distinguish two kinds of décor achieved by the same patterning warp which is either looped at times, or remains flat on the surface as found in the regular warp-faced compound tabby ("effet plat") (cf. figs. 5B and 7). The same warp-end in the Noin-Ula sample has also been used for producing both the looped and the flat effect. It would be interesting to know how many warps were simultaneously used in the Chinese examples of three-series and four-series warps to form the looped-warp effect ; on this we have no indication.

We have already stated that the Chinese specialists mention the simultaneous use of three types of warps on the looped-warp fabrics : a) the "main" warp b) the "pile-loop" warp and c) the "binding" warp. According to our estimate, the "main" warp refers to all the warps except the "pile-loop" and the "binding" warps. The "pile-loop" warp undoubtedly refers to the looped-warps. According to the Chinese analyses of their specimens, as well as our analysis of the

Noin Ula sample, the warp threads forming the loops is thicker (or heavier) than the other warp threads (two or three times heavier in the Noin-Ula sample as observed by Vial-de Jonghe, and about five times heavier in Mawangdui N6-2 as stated by Chinese technicians). The "binding" warp referred to by Chinese authors, as far as we can assess, is the warp which consists of floats of one-over and three-under throughout the fabric ; on the face-side it is invariably visible as one-over and three-under, whereas on the reverse it is always present as floats of three-over and one-under (cf. the black warp in Pl. 11, Bib. 3). This warp is also referred to as the "backed-warp" by the Chinese authors. It is our belief that this "binding" warp in reality was a warp used only for reinforcing the fabric. Such a "binding" warp is not present on the Noin-Ula fabric, and this may be due to the fact that this specimen represents only a two-series warp for which reinforcement was not necessary -whereas in the instances of the Mawangdui looped-warp fabrics where three and four-series warps are mentionned, it is possible that a warp to reinforce the fabric was indispensable. We believe that this may explain the term "binding" warp as used by the Chinese authors. Thus the role played by what is called the "main" and "binding" warp in the looped-warp weave-technique is to be differentiated from the functions of the "main" and the "binding" warps in the velvet weave. The multiple identifications and appellations of a well-known weave, namely the classical warp-faced compound tabby, have led the Chinese experts to believe that the looped-warp fabrics represent the prototype of the velvet weave technique, and further, that the use and manipulation of such diverse kinds of warp effects must have necessitated a much more sophisticated type of loom. Our belief, as already mentioned by us, is that the pattern-rod type of loom which was used for the execution of the classical warp-faced compound tabby was also used for the looped-warp fabrics. The true velvet as known to us has its origins dating from a much later period ; in China itself it did not appear until the middle of the Ming Dynasty, its production having presumably first been inspired by the Persian and the Ottoman velvets. The velvet weave-technique requires at least two distinct systems of warp- the main -warp and the supplementary warp which forms the velvet (24). The pile is obtained by introducing a metal rod (grooved wire), and the pile warp requires to be very closely and frequently attached to the weft to produce a fast-pile. This rod can be either pulled out or cut out, to form in the first case an uncut pile, and in the second, a cut pile. An extra beam must be used to assure a steady supply of warp-yarn and for take-up ; this last factor is also true for the Chinese looped-warp fabrics. Theoretically, these various manufacturing processes for producing velvet may seem to suggest the same type of manufacturing conditions for the looped-warp fabrics as well ; however, the two weave-techniques are to be differentiated from each other, keeping in mind that they require separate types of weave organisation. The Mawangdui looped-warp fabrics consist of long warp- floats forming shallow loops which would have been unsuitable for the forming of true velvet. In the strictest sense of the term the looped-warps cannot be considered as "pile-looped" warp corresponding to a velvet pile (25). Also, the contexture of velvet fabrics are invariably heavier than the Chinese looped-warp fragments which I have seen. I had been struck by the textural finesse of these silks when I saw them in Changsha and in Leningrad ; their aspect, I found, in no way suggested that of velvet. As a final observation, it must be said that one cannot help but marvel at the admirable artisanal skill shown in the making of the looped-warp patterned silks. This weave technique (as of now) seems to have been short-lived ; the fact of their use only for important objects in eminent burials tends to prove that they were also very highly esteemed. Finally, it is interesting to note that in spite of their ornamental complexity and inventiveness, the looped-warp fabrics represent yet another ingenious facet of the well-known classical warp-faced compound tabby ; however, they do not seem to reflect an essential change in the Han Dynasty loom technology (26).

Résumé

Le but de cet article est de présenter l'étude et l'analyse technique d'un type d'armure rare, sur un tissu qui remonte à la Dynastie des Han occidentaux (206 av. J.C. - 8 ap. J.C.). Il s'agit d'une soierie (MR 14029, Collection Musée de l'Hermitage), bicolore à l'origine, dont l'armure est en réalité le classique "taffetas à chaînes multiples, endroit chaîne, mais qui, de plus, montre l'emploi d'astuces qui ont incité des spécialistes chinois à qualifier ces tissus comme étant des premiers essais de "velours" ; mais nous ne sommes pas tout-à-fait d'accord avec leur hypothèse. Ces tissus montrent des motifs en relief qui ont été obtenus par des trames temporaires introduites pour former des "bouclettes chaîne" ; ensuite, après le tissage, ces trames ont été retirées. Le spécimen en question que nous avons pu étudier -en collaboration avec Monsieur E. Loubo-Lesnichenko du Musée de l'Ermitage, Monsieur Vial, Monsieur de Jonghe et moi-même -a été découvert à Noin-Ula, dans des tumuli nomadiques situés sur les flancs des montagnes, en Mongolie du Nord, actuellement en Union Soviétique. Jusqu'à ce jour, c'est le seul spécimen exécuté selon cette technique de "bouclettes chaîne" qui soit connu en Occident et hors de Chine. Loubo-Lesnichenko avait déjà décrit ce décor en relief, dominante chaîne, du MR 14029, dans son livre en russe paru en 1961 (Bib. 9). En 1972, la découverte archéologique, sensationnelle, faite en Chine Populaire, a révélé une tombe intacte dans le site de Mawangdui, près de Changsha, dans la province de Hunan ; elle est connue sous le nom de "Tombe N° 1 à Mawangdui". Cette tombe a été datée par des spécialistes chinois aux alentours de 168 avant notre ère. Parmi plus de mille objets trouvés à l'intérieur de cette tombe, ont été découverts aussi une cinquantaine de vêtements et des parures diverses, tous en excellent état. Parmi les vêtements et les objets en tissu, 15 fragments représentaient l'armure en "bouclettes chaîne" ou des motifs en relief (Annexe 1). En chinois, la nomenclature pour ce type de tissu est "qimaojin, qirongjin ou rongquanjin". Les spécialistes chinois ont traduit ces trois termes (modernes) par le terme anglais "pile-brocade", mais cette définition n'est pas tout-à-fait exacte. Nous les appellerons en français des "bouclettes chaîne" et en anglais "looped-warp". En 1980, l'Institut de Textiles à Shanghai a publié un rapport d'une grande importance technique et scientifique, donnant des analyses, des schémas techniques et d'autres renseignements concernant certains tissus provenant de cette tombe N° 1. Nous avons essayé de grouper tous les spécimens trouvés en Chine et exécutés dans cette technique ; tous les renseignements les concernant qui ont paru dans des publications chinoises figurent dans nos Annexes N° 1 à VI. Ici sont présentés plusieurs éléments comparatifs -archéologiques, historiques, iconographiques et techniques- pour souligner les similitudes qui existent entre MR 14029 et les trouvailles faites en Chine. Notre conclusion est que ce genre de tissus chinois ("taffetas à chaînes multiples, endroit chaîne, avec effet bouclé") est un dérivé de l'armure classique qui a été employée pendant la Dynastie Han ("taffetas à chaînes multiples, endroit chaîne"), et a dû être exécuté sur un type de métier dit "à baguettes" ; ces étoffes ne correspondent pas aux velours tels que nous les connaissons.

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2 - The Han Tomb Number One at Mawangdui in Changsha, 2 Vols. Wenwu, Beijing 1973. According to authors (Vol. 1, p. 149), the character hui on bamboo slips number 246, 251, 253 and 255 would seem to refer to a group of fabrics including the looped-warp specimens.

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8 - "A brief report of the excavations of Han Dynasty tomb at Mozuizi, Wuwei", Provincial Museum of Gansu, Wenwu, n° 12, 1972, pp. 9-21, figs. 12 (technical diagram of looped-warp) and 18 (woshou with borders), fragment length : 14,5 cm x width 2,2 cm. It has a three-series warp, with 50 ends per cm (total 150) and 47 picks per cm. The author concludes that if the original width had been 50 cm, then it would have had a total of 6600 ends. Cf. Hsio-yen Shih, Bib. 11, p. 312 for other details.

9 - E.I. Lubo-Lesnichenko, Ancient Chinese silk textiles and embroideries, 5th century B.C. to 3rd century A.D., in the Collection of the Hermitage Museum (in Russian), Leningrad, 1961. The English translation was made by Mrs. Nora Priverts and edited by H.B. Burnham in Toronto.

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11 - K. Riboud, "A closer view of early Chinese silks", Studies in Textile History, edited by V. Gervers, ROM, Toronto, 1977, p. 256 and notes 36 and 61.

12 - Xia Nai, Jade and Silk of Han China, the Franklin D. Murphy Lectures III, University of Kansas, 1983, p. 72.

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14 - Bib. 12, p. 72.

15 - In october 1983, through the kind auspices of Professor Xia Nai and Vice Director He Jiejun at the Hunan Provincial Museum in Changsha, I was shown among other rare items, eight specimens of looped-warp patterned silks amongst which a perfume bag with the base in looped-warp fabric and a pillow from the innermost tomb with its sides in looped-warp weave. They were of the same concept of weave and ornament as the Noin-Ula specimen. I was not able to examine the reverse sides of these fabrics. The colour of ground was always brown, but I did see décor in at least three colours on certain specimens, and had some discussions with Mme Shao Mingrong who participated in the work mentioned in Bib. 3. The weave and texture of these fabrics were exceptionally fine. In June 1984 I visited the Jingzhou Regional Museum in Hubei, and was shown by Director Teng Rensheng from the Reserve Collection some fabrics found in 1982 in Mashan Tomb N° 1 in Jiangling, dating from the 3rd century B.C. Warring States period. These included an exceptionally fine embroidered silk (N-9) and polychrome patterned silk fragments in the classical warp-faced compound tabby.

16 - In November 1983 I received from Angela Yu-Yun Sheng of Oriental Studies Dept, Univ. of Pennsylvania, a draft for a short term paper entitled "The Qimaojin Textile fragments of Number One Han Tomb at Mawangdui of Changsha : Possible implications for the level of weaving technology". She had written this paper in February 1983 and specified that it should not be cited. I found her paper to be very interesting and noted with interest that she had raised some relevant problems regarding the technology of the looped-warp weaves including the possibility of their production in Changsha.

17 - Bib. 3, cf. Pls. 25 and 26, on mitten and ribbon, characters in zhuanshu style, qian (thousand) and jin, a different character from "brocade" and here meaning "gold". These isolated characters cannot be compared with the full inscriptions on the Noin-Ula silks.

18 - Bib. 9, Text p. 30, Pl. XIII. Cf. Ausstellung Chinesische Kunst, Catalogue of exhibition in Berlin, 1929, n° 1231.

19 - Bib. 9, translation of Mrs Priverts, edited by H.B. Burnham.

20 - Archaeological Treasures Excavated in the Peoples' Republic of China. Catalogue (in Japanese) of exhibition shown at Kyoto and Tokyo National Museums, Tokyo, Asahi Shimbun, 1973, Coll. 28.

21 - G. Vial ; "MR 1330 - Exposé technique", Bulletin of CIETA, n° 45, 1977, p. 64

22 - In annex V, Fig. C, on face side can be seen at n° 7-8 big loops (floats of three) which have been formed with the device of two temporary wefts ; on the same side, n° 3 and 11 show small loops (floats of two) which were formed with one temporary weft (junction of the looped-effect with the ground). On the reverse side, n° 5, 6, 7 and 13, 14, 15 show floats over three wefts ("binding warp").

23 - Bib. 2, Pl. 123 ; Bib. 3, Pl. 21.

24 - H.B. Burnham, Chinese Velvets, The University of Toronto Press, 1959, pp. 17-21.

25 - G. Vial, "Le velours : à la recherche de ses origines", L'Estampille, n° 132, Paris, April 1984, p. 16. A Coptic linen textile at the Musée Historique des Tissus, Lyon (Ref. N° M.H.T. 24400/118) dated to 6th-7th century, according to Mr. Vial, is executed in true velvet technique. Because of a tapestry woven medallion which is woven in at the same time, the fabric has been given this date. This would then represent one of the earliest examples of the true velvet technique. Donald King has indicated to me that there are similar examples at the Victoria and Albert Museum.

26 - Please consult p. 124 (Bib. 3) for explanations of numbers of cocoons, brins and diameter of silk threads given by Chinese Specialists. According to the tests carried out by them, the silk fibers found in the Mawangdui silks are exceptionaly fine, and are thinner in diameter than present-day cultivated silk. I have just received a letter from Professor Junrô Nunome in Kyôto (dated January 28, 1985) giving the following information :

Tab. 1	Mean values of cross-sectional areas of fibers (μ)	Number of materials
A. Chu Silks of Warring States Period	62,8	18
B. Silks at Han tomb n° 1 at Mawangdui in Changsha	80,8	9
C. Silks of the Tang Period	66,0	47

From the enclosed Tab. 1, Prof. Nunome has made the following conclusions :

(1) A≪B

From the regional point of view, A and B are almost the same. Accordingly, this result seems to be grounded upon the difference of the years elapsed.

(2) C≪B

Generally, there is a tendency that the cross-sectional area of silk fibers in middle China is larger than in north China.
In C it seems to be included more materials of north China than those in middle China.
This result (C≪B) seems to be grounded mainly upon the region. In other words, the difference by the region seems to be larger than that by the years elapsed.

(3) A≪C

This result seems to be grounded upon the large difference of the years elapsed, that is, the difference by the years elapsed seems to be larger than that by the region.

Silks of Han tomb n° 1 at Mawangdui in Changsha.
(Original source of data : Bib. 3, tab. 5, 6)

Tab. 2 Original material	Warp or weft	Cross-sectional area of fibers (μ)
Plain silk of dark brown colour		120,00
Silk thread of the robe		94,34
Silk thread of the banner		107,78
Silk string of the lute		77,46
Rongquan jin : looped-warp		
ground decor	warp I	61,66
ground	warp	68,53
decor in looped-warp	warp	59,48
ground decor	warp II	64,60
ground	weft	73,19
Mean		80,8

27 - I would like to express my gratitude to Prof. Nunome for communicating his observations ; to Mr Lai Tung-hung and to Miss Christine Kontler for their assistance and their help in translating some of the Chinese texts.

ANNEX

I. LIST OF LOOPED-WARP FABRICS FOUND IN MAWANGDUI TOMB N°1

(mainly from Bibliography n° 2 , 1973, vol. 1, p.55)

N°	Reference Number of Specimen	Type of object	Total dimensions of object	Disposition of looped-warp on object	Density of warp and weft	Illustrations in Bibliography n° 2 & other publications
1	65-1	Perfume bag	length : 50cm width : 43cm	base	54 warp X 46 weft	Text, p. 71 (vol.1) Pl. 85 (vol.2) left hand bag
2	65-2	Perfume bag	length : 48cm width : ?cm	base	54 warp X 42 weft	Pl. 111, right hand bag Cf. detail in Pl. 137 (vol.2)
3	329-6	Cotton robe	length :128cm width :190cm	border	58 warp X 44 weft	Pl. 88 (vol.2)
4	329-10	Cotton robe	length :150cm width :250cm	border (width of border : 28 cm	54 warp X 48 weft	Pls. 95 to 98, detail Pl. 123 (vol.2)
5	357-3	Silk robe	length :130cm width :232cm	border	58 warp X 44 weft	Pl. 94 (vol.2)
6	357-5	Silk-padded robe of infé-rior quality		border	58 warp X 44 weft (4-series warp)	vol. 1, p.50, fig. 43 (center) diagram of pattern unit on actual scale. Wenwu n°9, 1972, Pl.II, fig.2 Text, p.50, p.63 (total of 232 warps X 44 weft); each pattern unit : 6 X 14,5 cm.
7	437	Wadded robe		border	44 warp X 34 weft	vol.1, p.50, fig.43 (upper right) : diagram of pattern on actual scale.
8	439	Table cover		dark interior border on four sides (width of border : 10,8 cm)	40 warp X 42 weft	Pl. 109 (vol.2) Detail Pl. 138.
9	441-1	Mirror cover		lining		

LIST I contd.

ANNEX

N°	Reference Number of Specimen	Type of object	Total dimensions of object	Disposition of looped-warp on object	Density of warp and weft	Illustrations in Bibliography n° 2 & other Publications
10	442	Perfume bag	length :32.5cm width : ?	base	44 warp X 30 weft	Pl.111 left hand bag (vol.2)
11	444	Pillow cover	length :87.5cm width : 65cm	Interior border on four sides	44 warp X 36 weft	Pl. 86 (vol.2)
12	N3-3	Fragment			38 X 46	
13	N3-6	Fragment			52 X 54	
14	N3-6	Fragment			40 X 36	Cf. Text p.51 (vol.1).

II. DOCUMENTATION ON LOOPED-WARP FABRICS FROM MAWANGDUI TOMB N°1

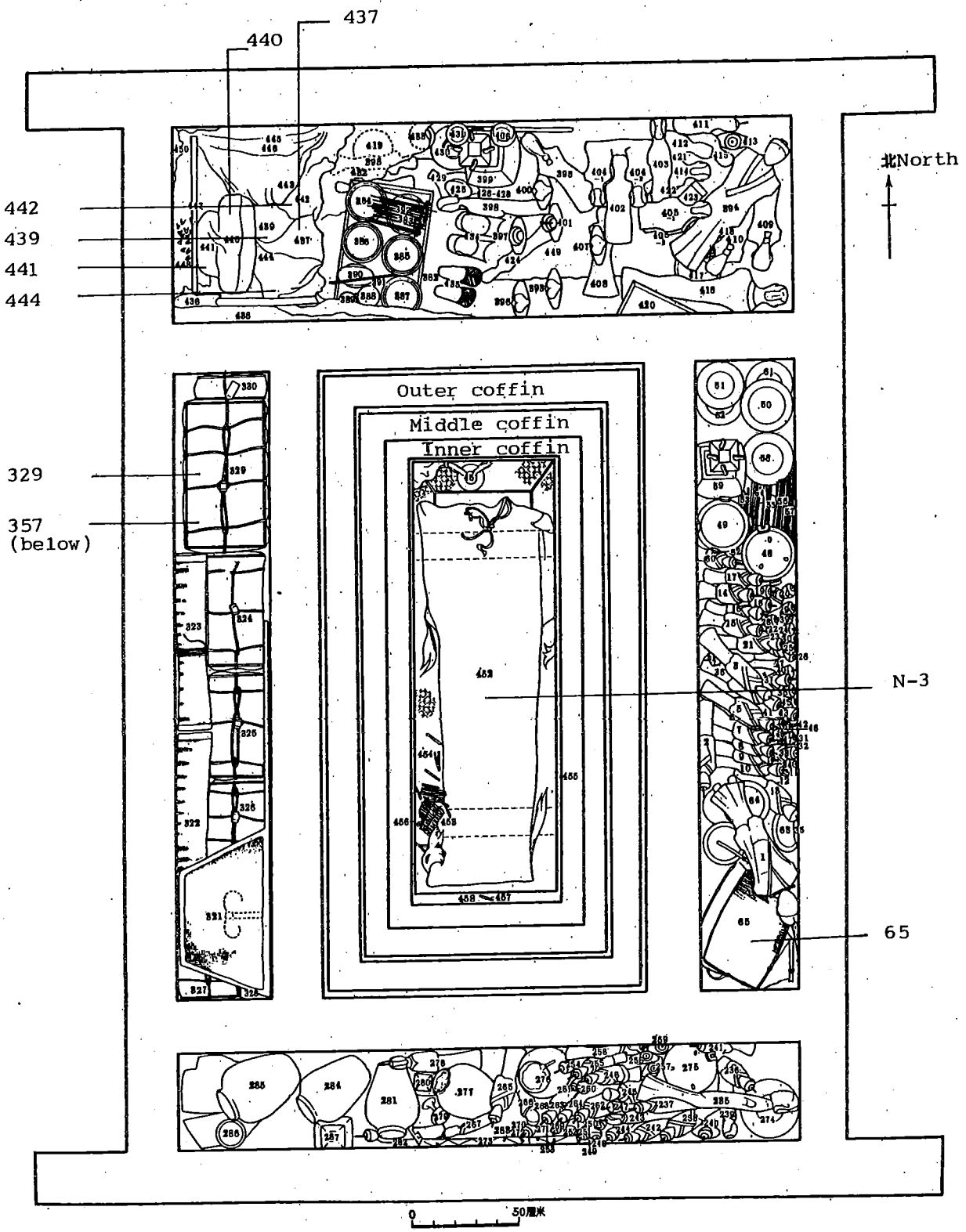
Collated from Bibliography n° 3, (ARG-STRI-SSIC), 1980
(Cf. also Bibliography n° 1 (SGAF-STRI-SSIC), 1974)

Specimen Reference N°	Weave diagrams and illustrations	Illustrations N°	Chart N°	Text	Observations made by authors
N6-1	12, 14, 15, 21	Ornamental motifs : 42 (p.45) image of fiber : 45 (p.47) loom organisation : 48 (p.52) weave diagram : 49 (p.54)		p.53	216-224 warp X 48-52 wefts : 4- series warp
N6-2	11, 13, 20	cross-section : 18 (p.19) ornamental motif : 42 (p.45) mise-en-carte : 43 (p.46) weave diagram : 47 (p.51)	11 (p.47)	p.45-p.47	176-224 warp X 41-50 wefts per cm. maximum pattern repeat width : 13,7cm (cf. Biblio. I, p.187)
N6-3	7, 8, 9, 10, 17	Ornamental motif : 34 (p.36)	10 (p.34)	p.39	140 warps X 58 weft per cm. 5-series warp (cf. Chart)

N.B - N6-1 in my opinion, seems to be the same fabric as in Bib. 2, Pl. 123 (Ref. N° 329.10)
N6-2 has a 4-series warp
For N6-2, texture of ground and décor, cf. Bib. 3, pp. 47-48, Chart 11

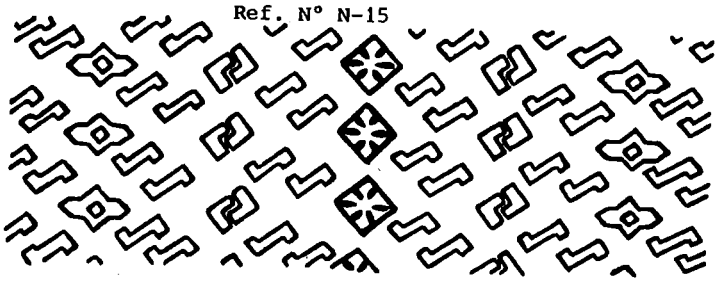
ANNEX

III. WOODEN SEPULCHRAL CHAMBER OF MAWANGDUI TOMB N°1 : Location of looped-warp silk fabrics cited in List I.

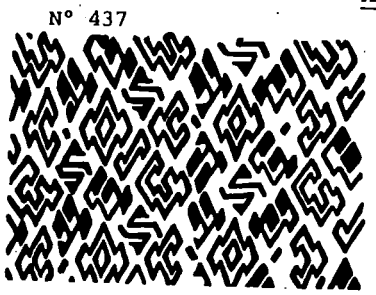


IV. Ornamental motifs on the looped-warp fabrics from Mawangdui Tomb N° 1

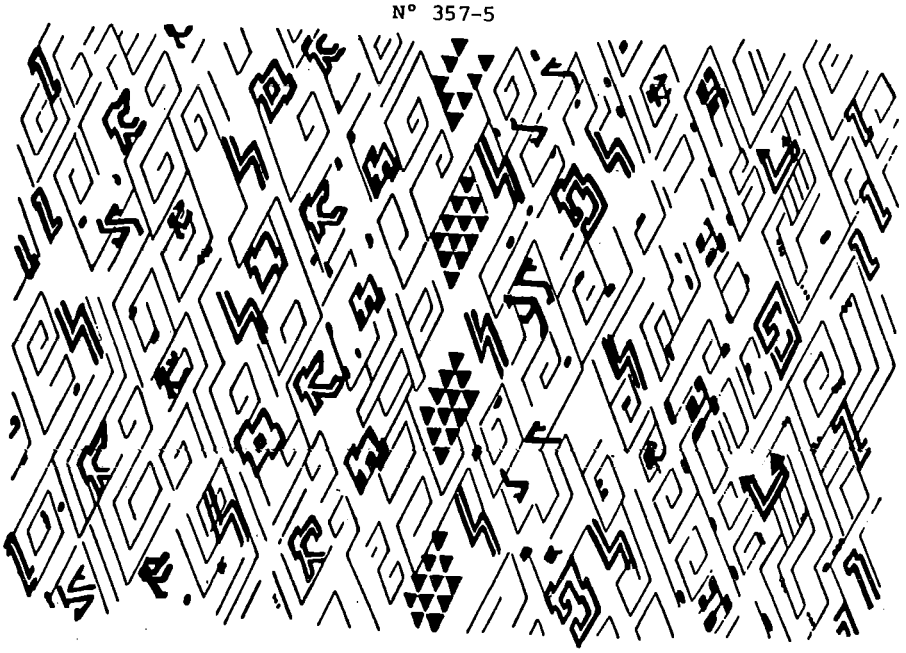
Ref. N° N-15



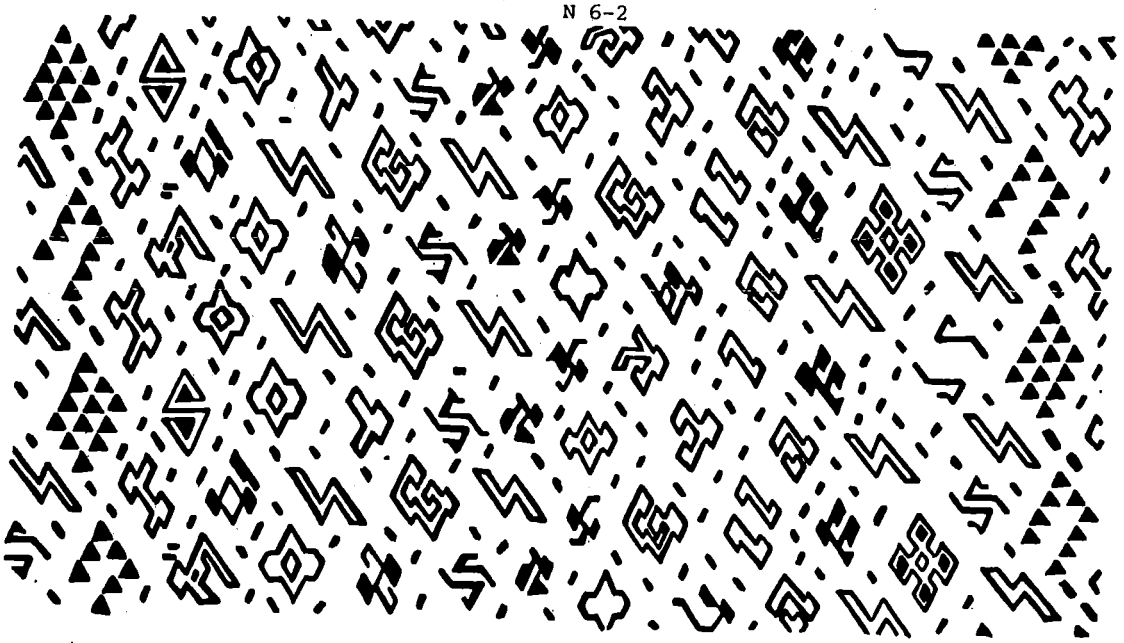
N° 437



N° 357-5



N 6-2



(after Fig. 43, p. 50, Vol. 1, Bib. 2 where the motifs are represented in their actual scale).

V. Fig. A : Diagram of looped-warp fabric, Ref. N° N6-2
(after STRI-SSIC, 1980, Bib. 3)

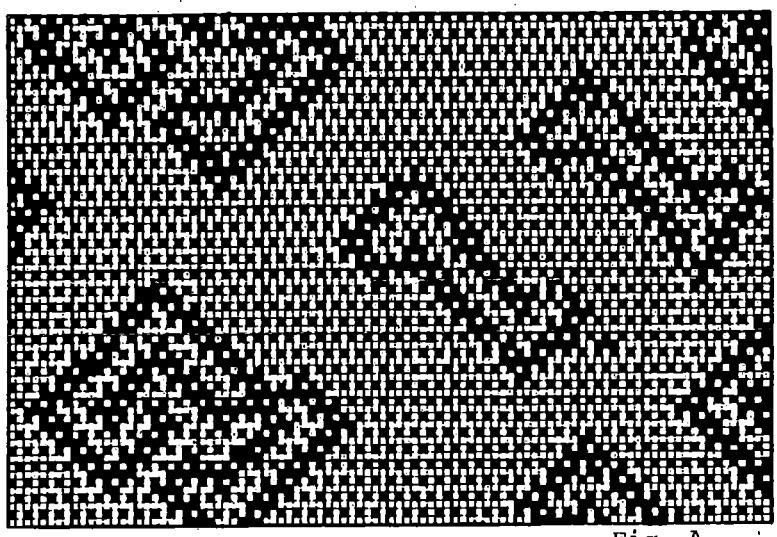


Fig. A

Figs. B & C : Technical diagram of N6-2
(after Fig. 47, p.51)

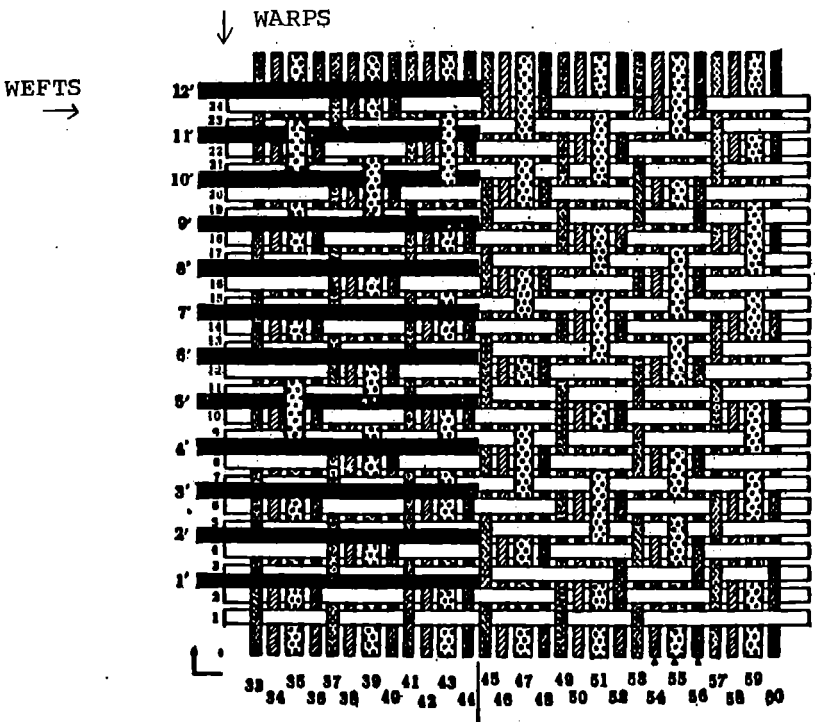


FIG. B

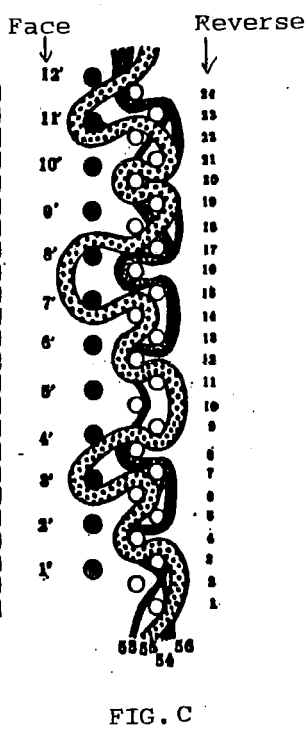


FIG. C

WEFTS N° 1 to 12 (big numerals) represent the temporary weft introduced to form the loops.

N° 1 to 24 (small numerals) represent the regular weft found in all warp-faced compound tabbies.

WARP N° 33 to 36 show four warp ends raised to form 'louisine' on weft n° 2.

N° 37 to 40 show four other warp ends raised to form 'louisine' on weft n° 4.

53 & 56 represent ground warps n° 1+2

55 represents 'looped' warp

56 represents 'binding' warp

Cf. Note 22

VI. The eighteen different geometrical motifs found in Mawangdui Tomb Number 1 looped-warp fabrics (after Bib. 3, p. 44)

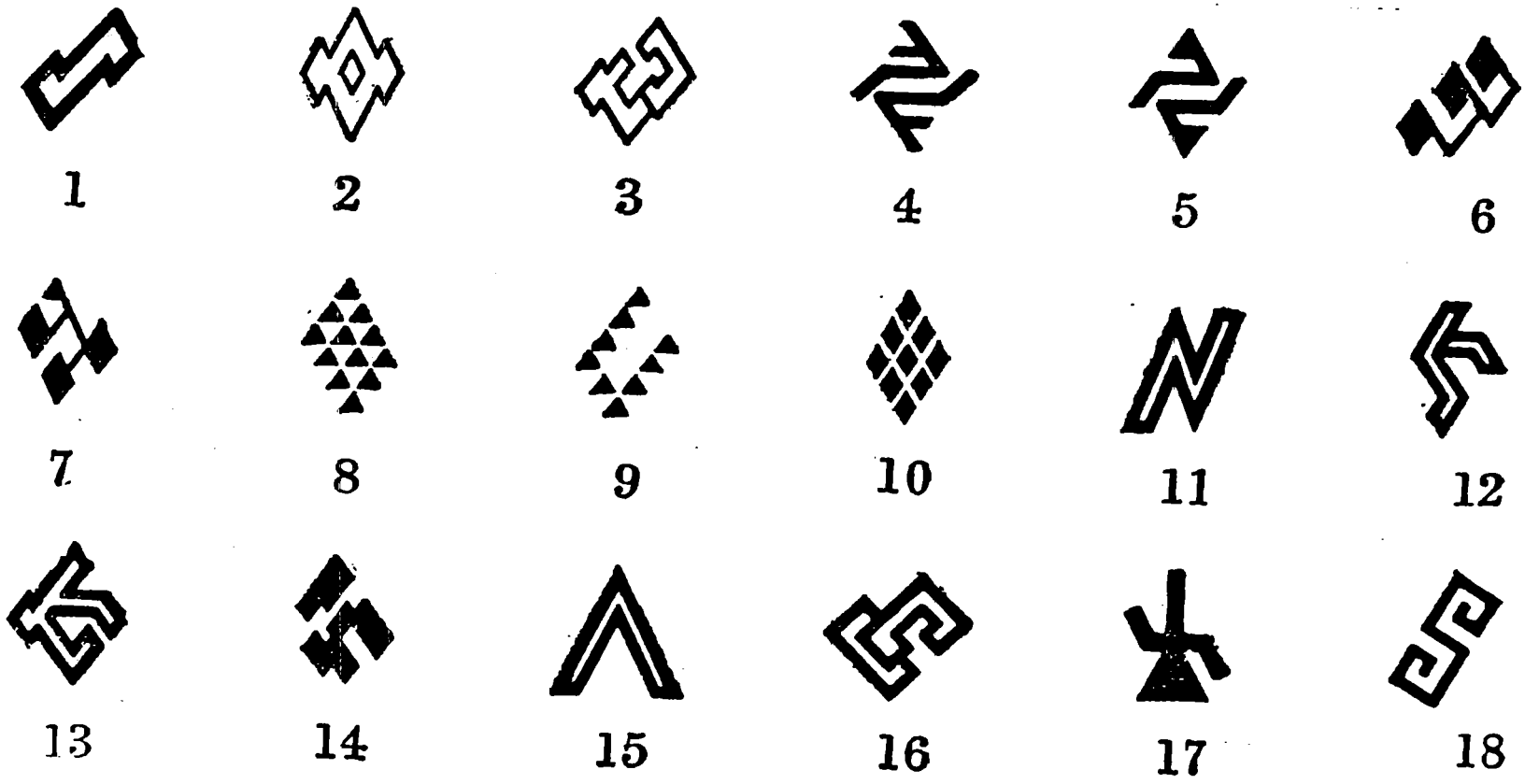


Figure 1 - Full view of looped-warp silk from Noin-Ula (MR 14029).
Collection : The Hermitage Museum, Leningrad
Photo : Kato Sadako
Warp : ↑

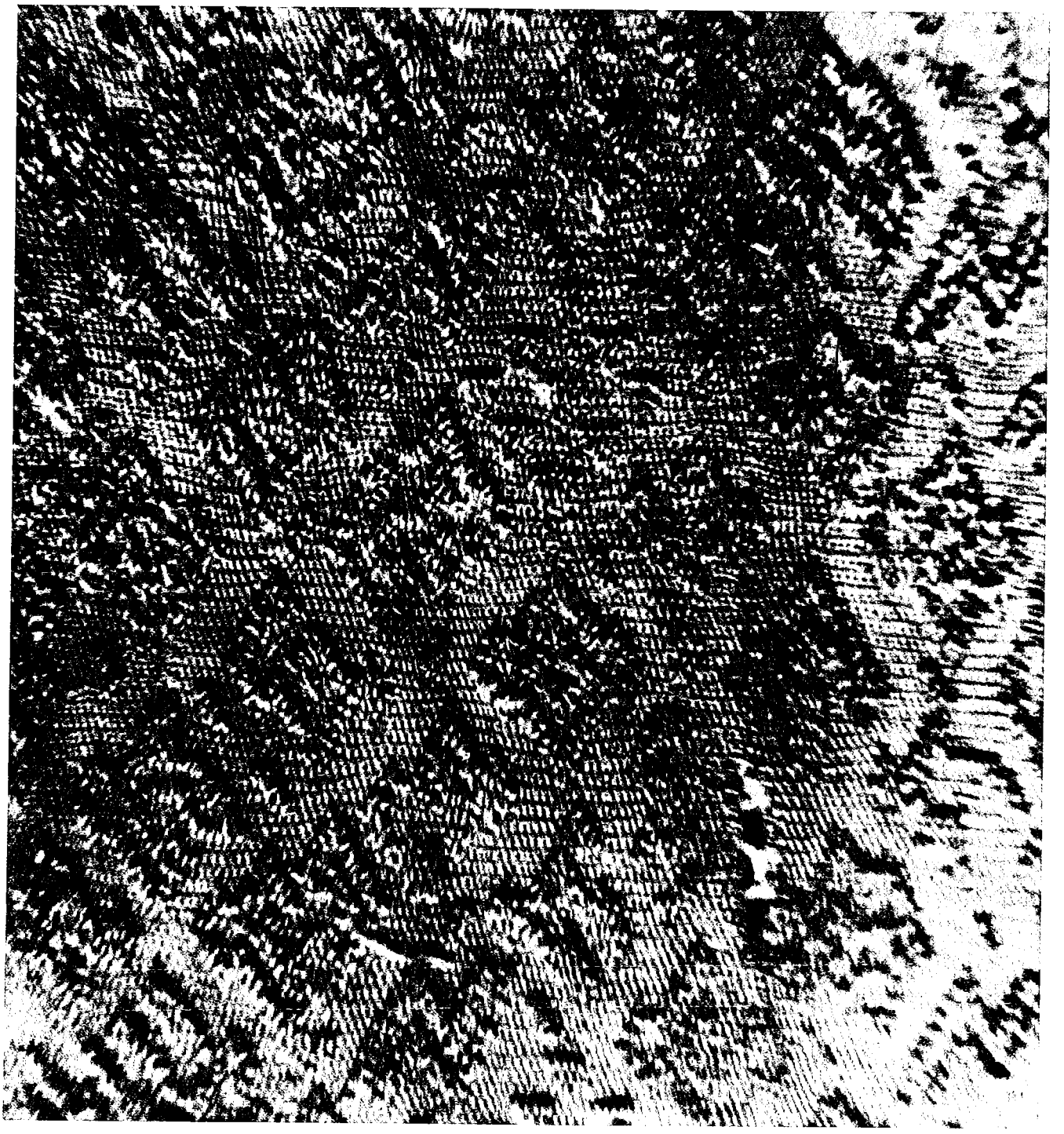
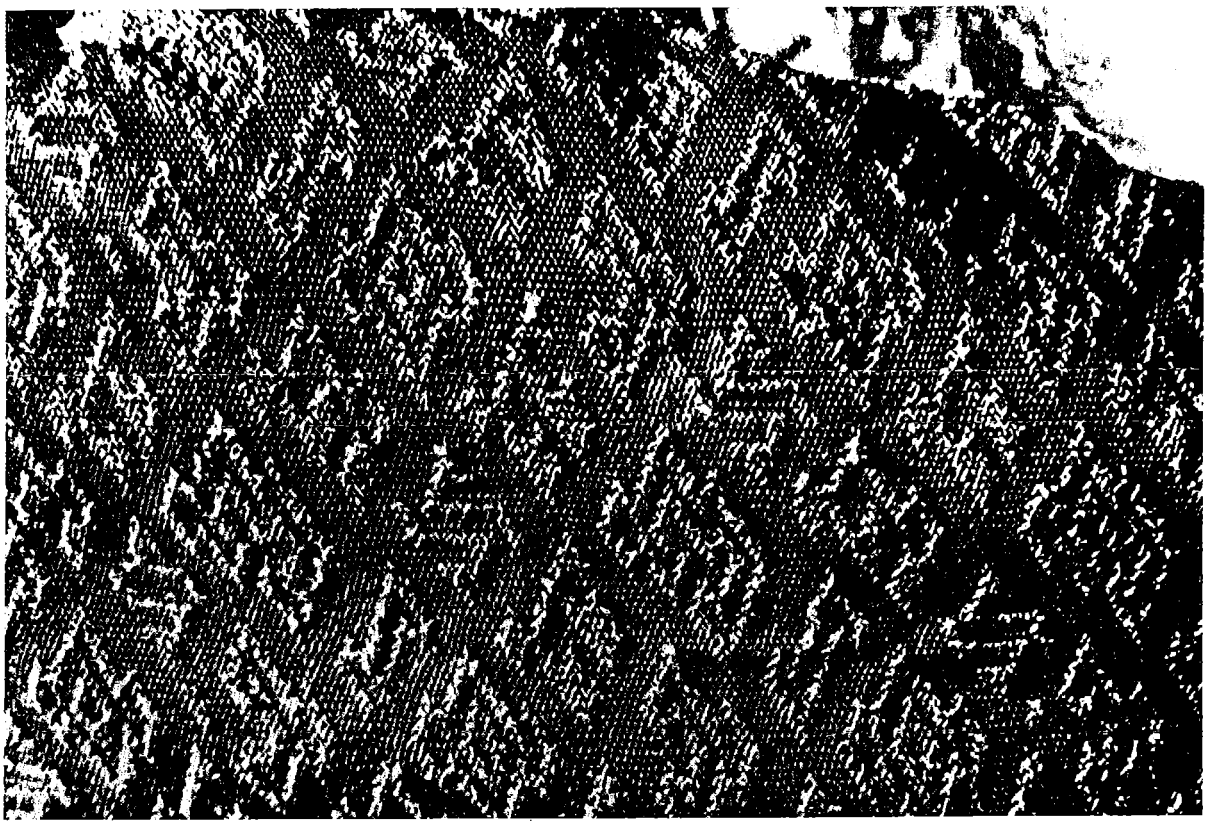


Figure 2 - Enlarged view of fig. 1 showing the motifs executed in looped-warp weave (Noin-Ula, MR 14029).
Photo : Studio Basset, Lyon



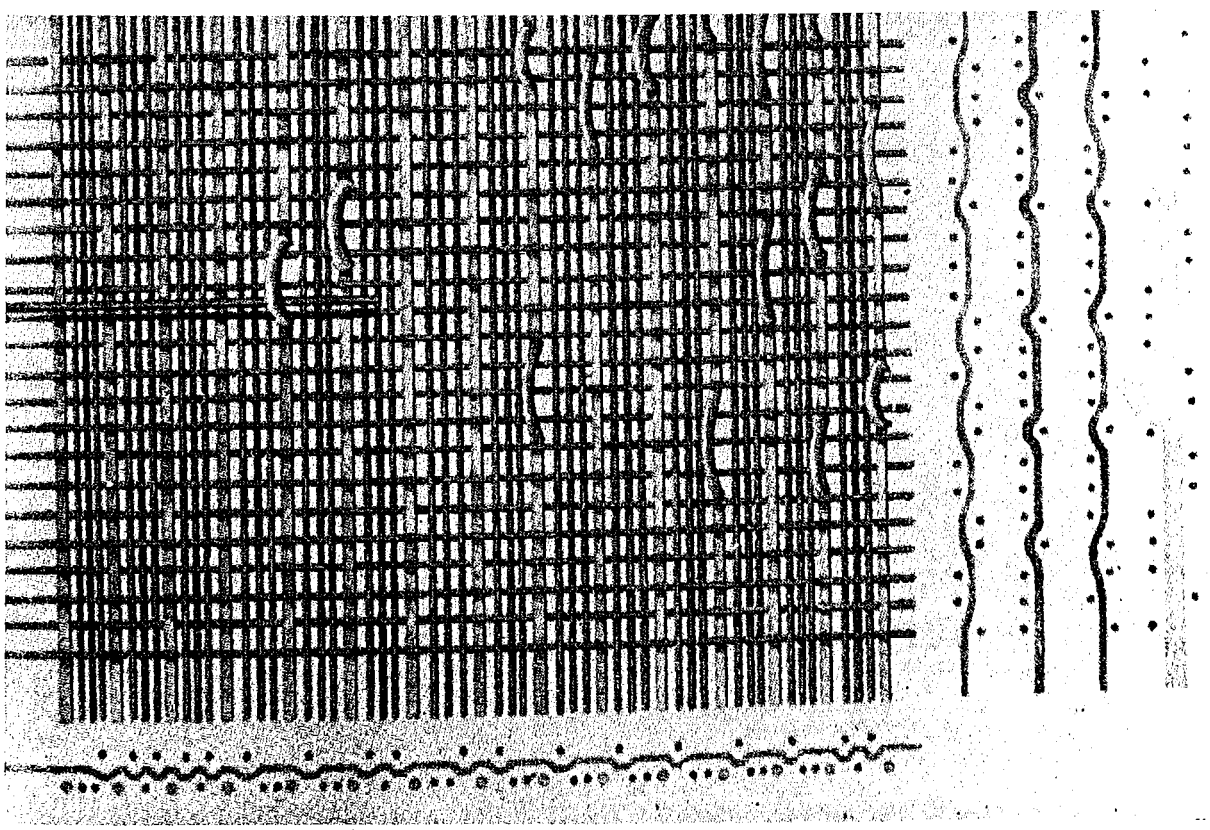


Figure 3 - Close-up of Mawangdui Tomb Number 1 looped-warp weave (65-1) and the first technical diagram in 1973 (after Bib. 20, Coll. 28)

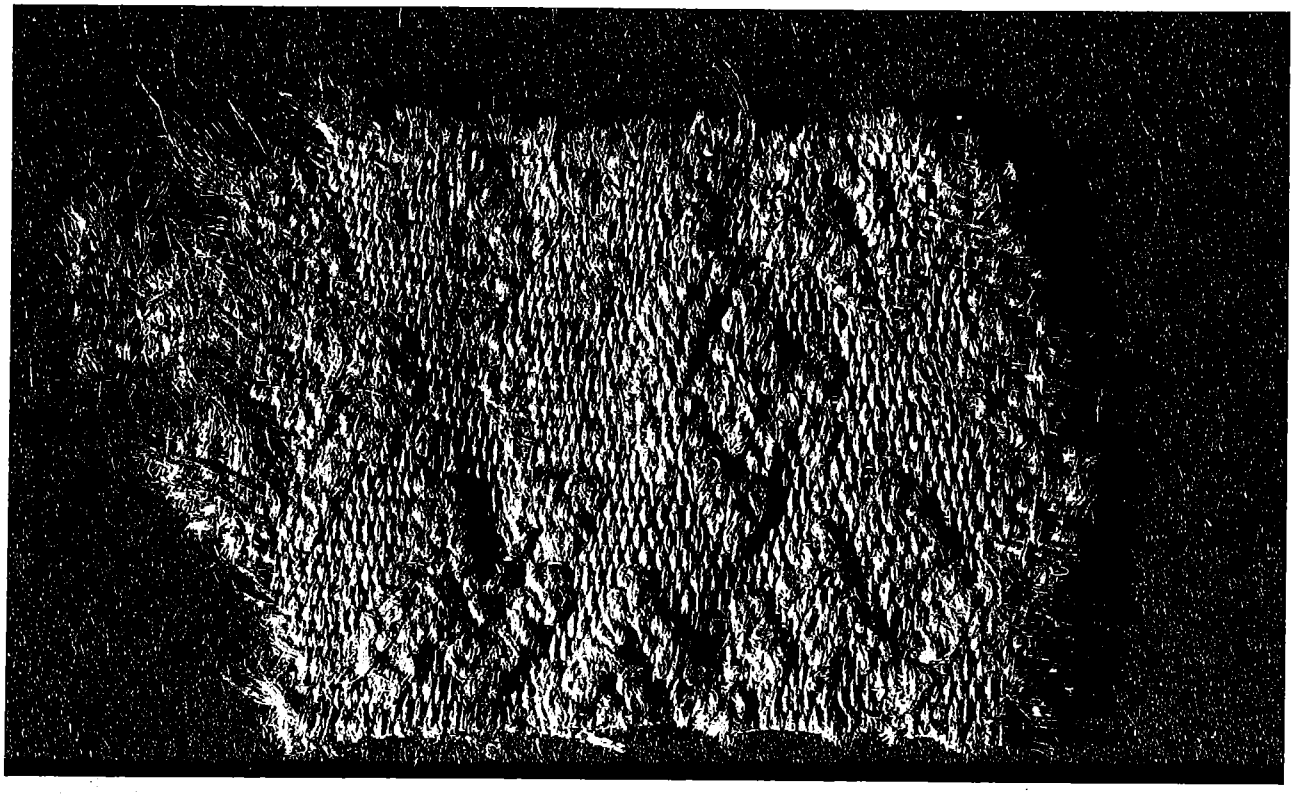


Figure 4A - Macrophoto of sample from Noin-Ula (MR 14029) ;
length : 1,3 cm x 2,3 cm width (scale : 20 bars = 1 cm).
Photo : Studio Basset, Lyon
Warp : ↑

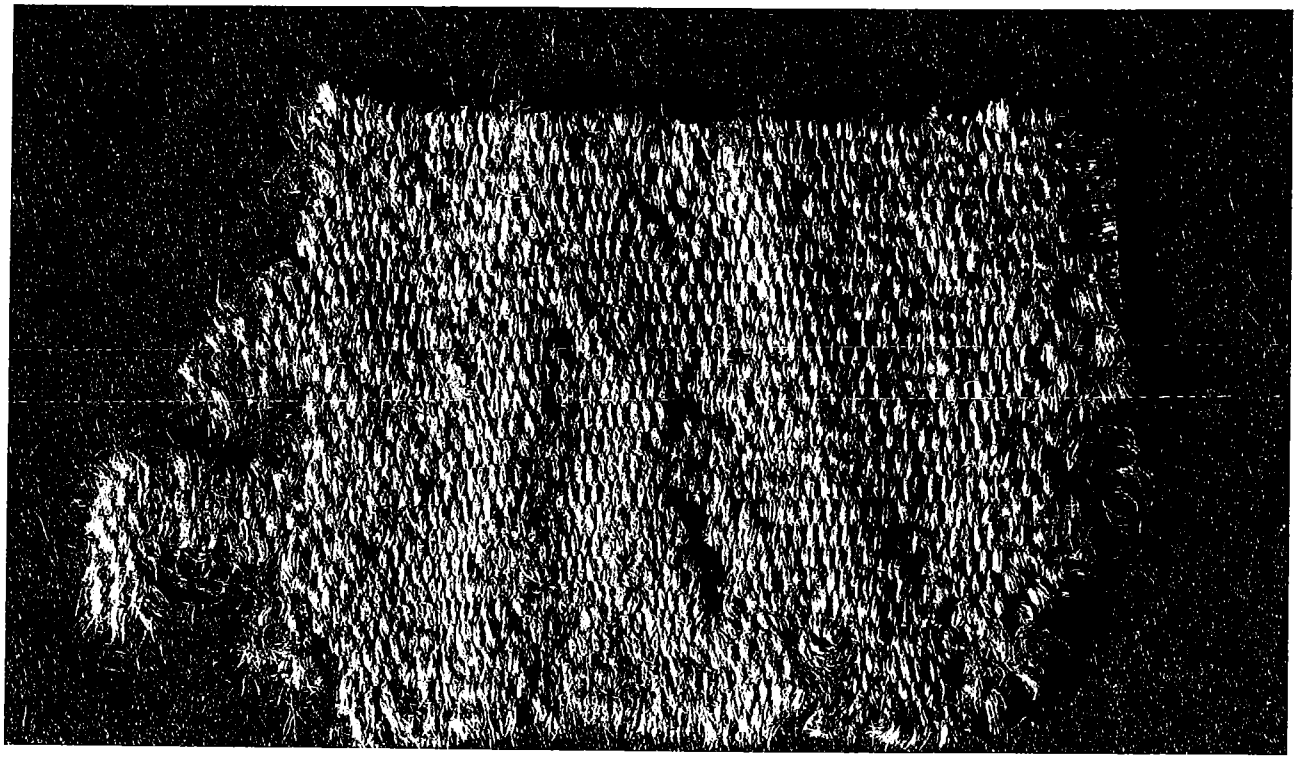


Figure 4B - Reverse side of figure 4A

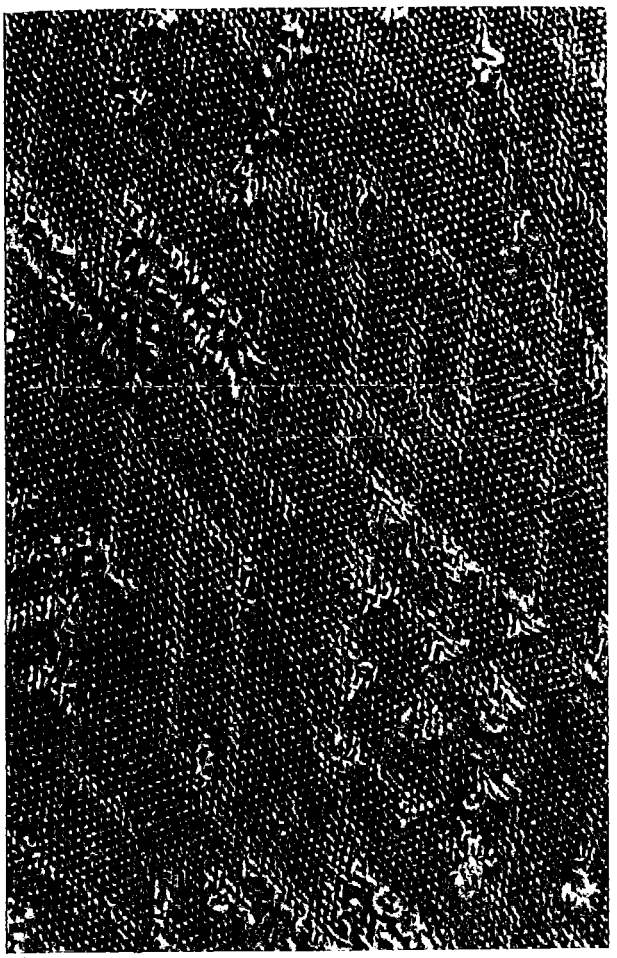


Figure 5B - Fragment (N6-1) in looped-warp from Mawangdui Tomb Number 1 (after Bib. 3, Pl. 21). Warp which is looped also lies flat on ground for décor

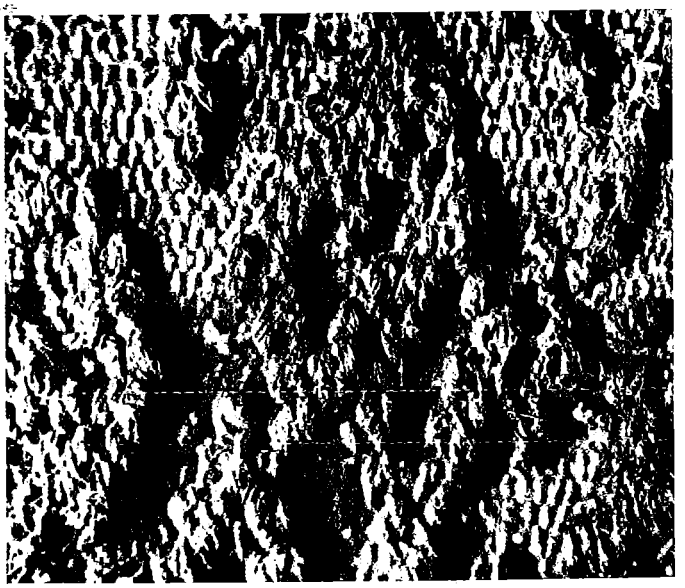


Figure 5A - Close-up of fragment (F-13) in looped-warp from Mancheng, Hebei. Height of lozenge motif : approximately 1,2 cm (Bib. 7, after Pl. 112 : 4) Warp ↑.

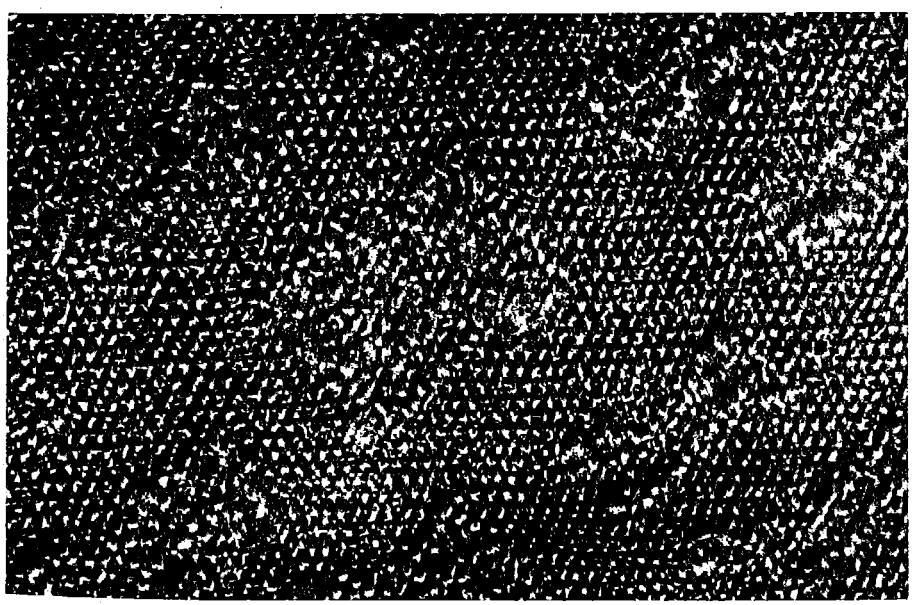


Figure 5D - Close-up of fragment (N6-3) in looped-warp from Mawangdui Tomb Number 1 (after Bib. 3, Pl. 17) Warp ↑

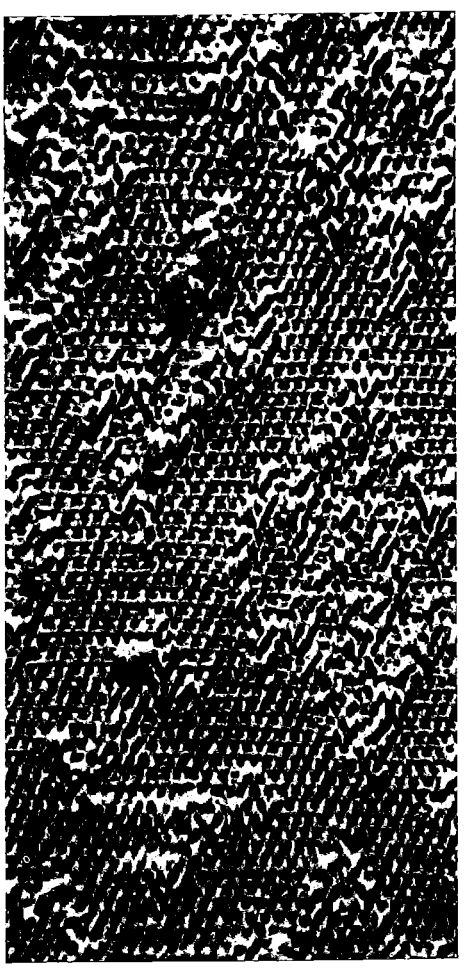


Figure 5C - Close-up of fragment (N6-2) from Mawangdui Tomb Number 1 (after Bib. 3, Pl. 20) Warp : ↑

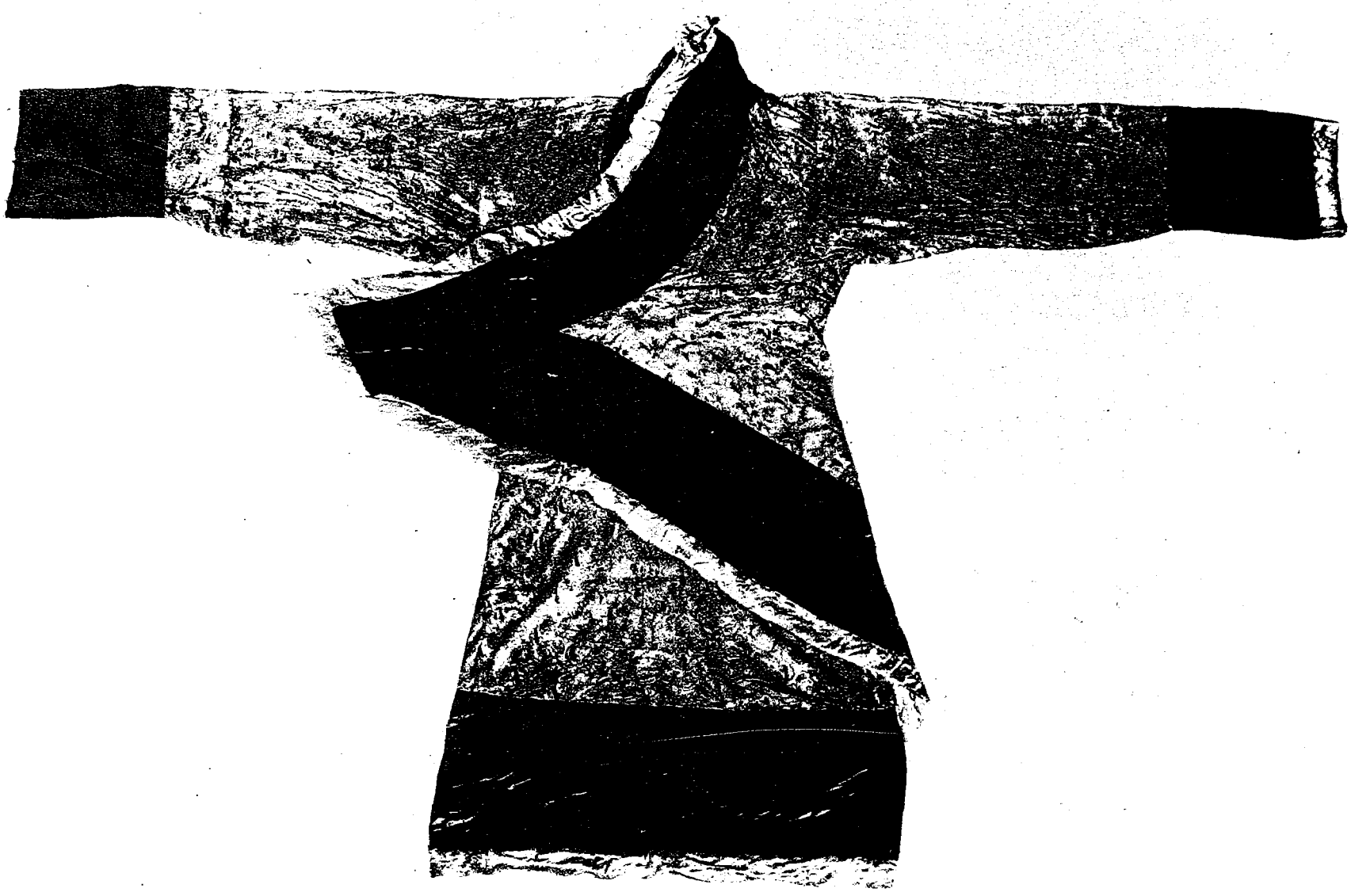


Figure 6 - One of several garments in Lady Dai's Tomb Number 1 in Mawangdui. The dark borders on garment and sleeves are in looped-warp weave (329.10).
Collection : Hunan Provincial Museum, Changsha.

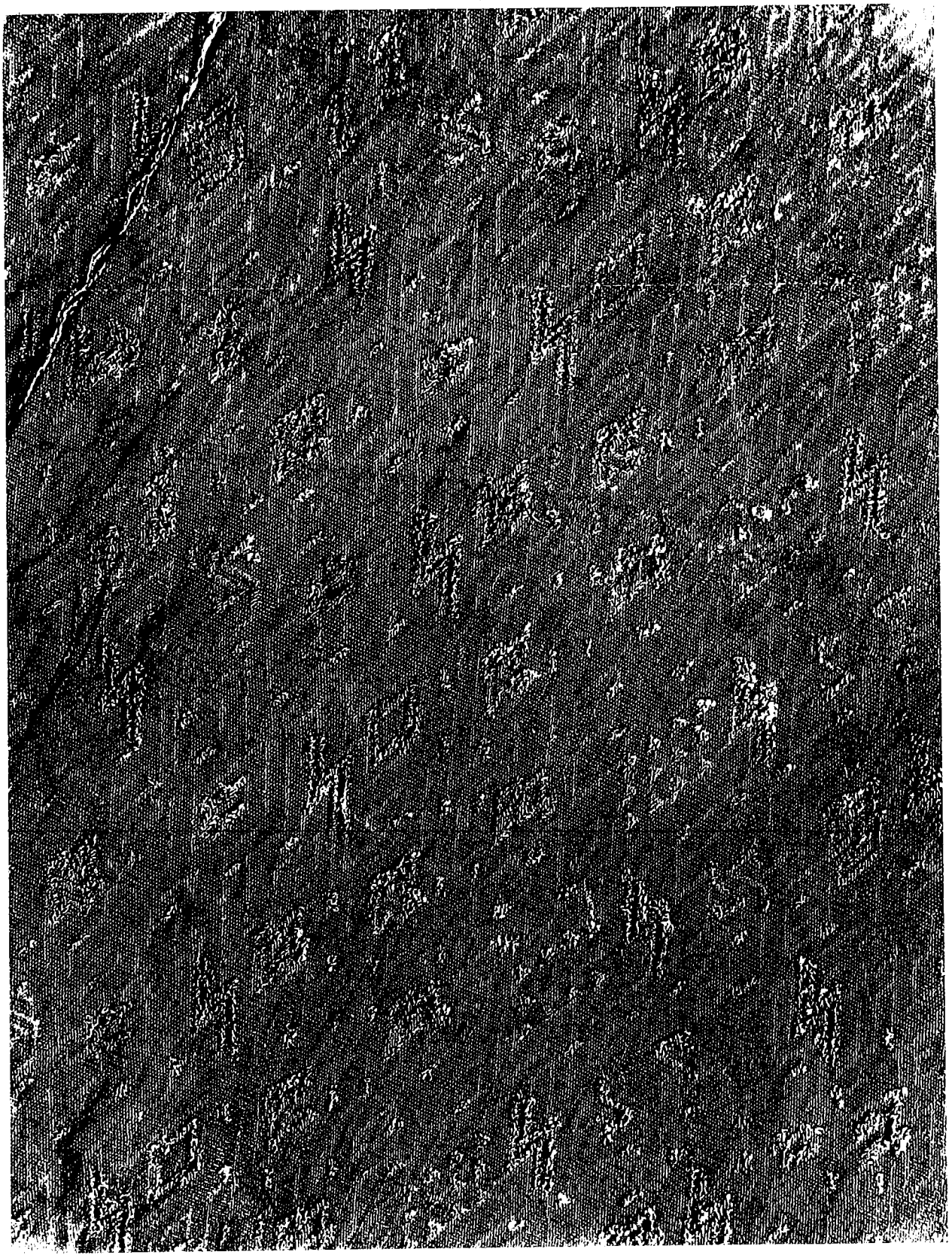


Figure 7 - Detail of border on fig. 6.
(after Bib. 2, Pl. 123)
Collection : Hunan Provincial Museum, Changsha
Warp : ↑

Figure 8 - Perfume bag (65:1 or 65:2) containing aromatic herbs from Mawangdui Tomb Number 1. Base in looped-warp weave.
(After Bib. 2, Pl. 111)
Collection : Hunan Provincial Museum, Changsha.

ANALYSE TECHNIQUE D'UN ECHANTILLON DU DOCUMENT N° MR 14029

par Gabriel VIAL et Daniël DE JONGHE

DOSSIER DE RECENSEMENT

Provenance de l'échantillon :

Extrait du document N° MR 14029, conservé à Léningrad au Musée de l'Ermitage et provenant de Noin-Ula.

Dimensions de l'échantillon :

Largeur : 2,3 cm. environ.
Hauteur : 1,3 cm. environ.

Qualification technique :

Taffetas à chaînes multiples, endroit chaîne, à effet bouclé.

Contexture :

Chaînes : Proportions : 2 fils fins, chaîne n° 1
2 fils gros, chaîne n° 2

Matières : Soie, sans torsion appréciable ; grège (?), coloris beige moyen.
Chaîne n° 1 - assez fins et possédant encore leur grès.
Chaîne n° 2 - fils 2 à 3 fois plus gros que ceux de la chaîne 1, mais entièrement décreusés (c'est-à-dire, dont le grès a totalement disparu suivant micro-analyses effectuées par Madame Meyer.

Découpure : 2 fils de chaque chaîne (suivant conclusions de M. de Jonghe, après examen à la loupe stéréoscopique).

Réduction : 140-142 fils au cm. (228 fils comptés en 1,6 cm.)

Trames : Proportions : Une seule trame, à 2 fonctions.

Matières : Soie, sans torsion appréciable, coloris beige moyen (produite par assemblage de 2 bouts, sans torsion appréciable) ; grès encore très visible.

Découpure : deux coups.

Réduction : 37 coups au cm. (48 coups comptés en 1,3 cm.)
D'autres chercheurs ont trouvé 40 coups cm. (cf. Bib.)

Construction interne du tissu :

Fond : L'ensemble des fils des deux chaînes travaillent en Louisine de 2 fils, soit un fil de chaque chaîne, sur la moitié des coups (ici les coups impairs). Sur l'autre moitié des coups, (les coups pairs) les fils de la chaîne n° 1 sont seuls soulevés, ceux de la chaîne n° 2 demeurant "en fond". L'addition

de ces deux sortes de levée provoque, à l'endroit, la formation de flottés de chaîne sur trois coups, ceci par les fils de la chaîne n° 1, les flottés pairs étant décalés de moitié par rapport aux flottés impairs. A l'envers, les fils de la chaîne n° 2, momentanément inutilisés à l'endroit, forment des flottés du même genre. On reconnait ici, l'armure classique des tissus polychromes façonnés, de l'époque HAN, maintes fois décrite : Taffetas à chaînes multiples, endroit chaîne (Anglais : Warp faced compound tabby).

Décor : Effet bouclé : produit par les fils de la chaîne n° 2. L'armure de base est la même soit une Louisine de deux fils produite sur les coups impairs mais, sur les coups pairs, ce sont les fils de la chaîne n° 2 qui sont soulevés, formant des flottés sur trois coups du même genre que les précédents, avec un décalage de moitié entre flottés pairs et impairs.
La production de la boucle a vraisemblablement été provoquée par l'introduction, sous les flottés, d'une fine tige de bambou ou d'une trame provisoire arrachée par la suite (et que nous appelons "trame perdue").Cette tige étant introduite après le passage des coups pairs du tissu.

Effet plat : Produit par les fils de la chaîne n° 2, de même construction de base que l'effet ci-dessus mais sans intervention des tiges de bambou, c'est-à-dire "plat".
Bien qu'il n'ait pas été confirmé par l'examen de M. de Jonghe qui pense, malgré tout, que l'échantillon est trop petit pour avoir une certitude à ce propos, nous désirons néanmoins le prendre théoriquement en considération pour plusieurs raisons :

Tout d'abord la photographie semble confirmer ce que nous avions cru voir, c'est-à-dire l'existence de parties plates par la chaîne n° 2 et jouxtant les effets de bouclé ; ensuite l'échantillon est très petit et très détérioré par l'usure. Il a été prélevé, naturellement, sur les bords du document, ou sur des débris et, de ce fait, un grand nombre de boucles sont détériorées, rendant l'analyse par extraction des fils très difficile (tracé n° 1).

On rencontre d'ailleurs cet effet plat dans certains tissus publiés par les archéologues et techniciens chinois (Bibliogr. 2) et il n'est pas interdit de penser qu'il existait, peut-être, ici à l'état rudimentaire. Il est donc possible que les tiges de bambou envisagées, n'aient pas été glissées sur toute la surface des effets de la chaîne n° 2, ménageant ainsi quelques emplacements où l'effet de la chaîne n° 2 n'aurait pas été réhaussé pour former des bouclettes et serait demeuré plat.
Dans cette hypothèse, nous avons établi un tracé "théorique" (tracé n° 2) où les trois effets ont été envisagés ; ceci nous permettra de développer ce problème de bouclettes tout à fait particulier.

On voit successivement dans ce tracé :
- Un effet produit par la chaîne n° 1 constituant le fond, sur huit coups
- Un effet, plat, produit par la chaîne n° 2, sur douze coups.
- Un effet, bouclé, produit par la chaîne n° 2, sur douze coups.

A nouveau :

- Un effet produit par la chaîne n° 1 constituant le fond, sur huit coups.

De cette façon, nous obtenons deux types de jonction de l'effet bouclé : avec l'effet par chaîne n° 1 et avec l'effet par chaîne n° 2.

Formation des bouclettes :

D'après le principe de construction de l'effet bouclé, tous les fils de la chaîne n° 2 doivent être soulevés dans les limites du décor, au passage de la tige de bambou, exactement comme ils l'ont été au passage des coups pairs. Ceci amène ainsi chaque fil de la chaîne n° 2 à passer normalement sur deux bambous successifs, puisqu'ils flottent sur trois coups, dont deux coups pairs. C'est vrai si l'on considère l'effet dans son ensemble car, de même que les flottés de base se développent sur trois coups mais que certains se produisent seulement sur deux coups au début et à la fin de l'effet, on assiste ici au même phénomène pour les bouclettes : Au début et à la fin de l'effet bouclé, certains fils qui ne flottent que sur deux coups, passent sur une tige de bambou seulement. Il en résulte donc la formation de bouclettes plus petites.
C'est ce que nous avons tenté de rendre plus compréhensible avec le tracé n° 3. On y voit en A-1 se succéder, en coupe sens chaîne, traduisant le tracé "à plat" qui se trouve à l'extrême gauche :

- Un effet produit par la chaîne n° 1 (effet de fond), sur six coups,
- Un effet produit par la chaîne n° 2 (effet bouclé), sur six coups également.

A nouveau :

- Un effet produit par la chaîne n° 1 (fond) sur quatre coups.

L'effet de bouclé a, volontairement, été tracé sur six coups pour qu'on voie mieux les fils de la chaîne n° 2 produire, chacun, des boucles grandes (que nous avons appelées "normales") et petites, que nous avons référencées sous les lettres "N" et "P".

Le tracé A-1 représente le tissu avant extraction des tiges de bambou et le tracé A-2, le tissu terminé ; dans ce dernier tracé la différence de dimension des bouclettes a été rendue plus sensible. Notons également que les petites bouclettes doivent être assez nombreuses, étant donné la présence de motifs assez petits, comportant beaucoup de petites lignes obliques et de flottés de chaîne sur 2 coups seulement.
Dans les tracés "B", nous avons représenté les trois effets que nous admettons théoriquement, c'est-à-dire :

- Un effet de décor plat, produit par la chaîne n° 2, sur six coups.
- Un effet de décor, bouclé, produit par la chaîne n° 2, sur six coups.
- Un effet de fond, produit par la chaîne n° 1, sur quatre coups.

On peut maintenant envisager TROIS sortes de bouclettes :

- Des bouclettes "Normales" produites par un flotté sur trois coups et le passage sur DEUX tiges de bambou successives.
- Des bouclettes "Petites", produites, aux limites du bouclé et du fond, par un flotté sur deux coups et le passage sur UNE seule tige de bambou.
- Des bouclettes "Moyennes", produites, aux limites du Bouclé et de l'effet "plat" formés tous deux par la chaîne n° 2, résultant d'un flotté sur trois coups et le passage sur une seule tige de bambou.

Nous insistons sur le fait que les bouclettes "petites et moyennes" ne peuvent former un effet "entier" ; elles ne peuvent être rencontrées qu'aux limites des effets comme conséquences inévitables de la technique.

Ici encore, les deux tracés B-1 et B-2 envisagent le tissu avant et après extraction des tiges de bambou et traduisent, en "coupe sens chaîne", le tracé "à plat" qui se trouve à l'extrême gauche.

On comprend mieux maintenant qu'il est extrêmement difficile de délimiter exactement chaque effet sans pratiquer une extraction des fils et que, pour mener à bien cette dernière, il faille avoir à sa disposition un échantillon, sinon intact, du moins en assez bonne condition, c'est-à-dire présentant des bouclettes encore en bon état, ce qui est assez difficile... étant donné l'âge du document.

Conditions d'exécution :

Nous pensons que ce tissu a été exécuté par le même type de métier que le tissu qui lui sert de base ; le taffetas à chaînes multiples, endroit chaîne, c'est-à-dire : le métier dit "aux baguettes". Lors de la levée de la baguette servant à la sélection des fils, au passage des coups pairs, certaines boucles soulevaient les fils de la chaîne n° 1 pour la production des parties "fond" et d'autres soulevaient des fils de la chaîne n° 2 pour la production du "décor". Une seule baguette servait au passage d'un coup pair.

Mais, au passage de la fine tige de bambou, ou de la trame perdue, seuls les fils de la chaîne n° 2 devaient être soulevées ; la même baguette de sélection ne devait pas pouvoir servir, à moins que l'on ait trouvé le moyen de différencier ces boucles sur la baguette unique, peut-être par leur couleur ? Dans ce cas on aurait utilisé deux fois la même baguette : Une fois pour le passage de la trame paire et une second fois pour le passage de la tige de bambou en sélectionnant seulement certaines boucles. C'est l'opinion de Monsieur de Jonghe qui en verrait la confirmation dans l'absence de défauts, qu'aurait provoqué l'emploi de deux baguettes différentes ?

Nous ne sommes pas tout à fait de cet avis et préférerions envisager l'emploi de deux baguettes, au risque d'un doublement du nombre total de baguettes. Tout d'abord, l'échantillon n'est pas de taille suffisante pour permettre un relevé de défauts ; c'est d'ailleurs également l'avis de Monsieur de Jonghe. D'autre part, la seule différence de couleur entre les boucles devant actionner la chaîne n° 1 ou la chaîne n° 2, nous semble être insuffisante pour une sélection correcte, étant donnée la réduction chaîne importante (142 fils au cm. rappelons-le) et la dispersion des motifs.
Il nous semble en effet que, bien que la découpure chaîne soit de 2 fils de chaque chaîne et que chaque effet ne concerne qu'une chaîne à la fois, le travail de préparation de cette sélection doive tenir compte de tous les fils, qu'ils soient ou non à prendre dans la boucle.
La densité des boucles sur les baguettes est évidemment moindre, mais tout de même importante, soit $\frac{142}{2x2} = 35,5$ boucles au cm., ce qui nous parait beaucoup pour y faire une distinction par la couleur de l'attache. Mais nous sommes ici en pleine hypothèse...

Enfin, si l'effet produit par la chaîne n° 2, que nous avons admis par hypothèse, existe bien (et il existe effectivement, dans certains autres tissus publiés) ces boucles de couleur sur les baguettes ne devraient concerner que les effets de bouclé et donc une partie seulement des fils de la chaîne n° 2 : celle des zones à bouclettes ; ceci aurait apporté une difficulté supplémentaire dans la préparation des baguettes.

Nous penchons donc plutôt pour l'utilisation de deux baguettes différentes : l'une étant actionnée au passage des coups de trame pairs, l'autre au passage de la tige de Bambou. Ceci provoquait évidemment un doublement de nombre total de baguettes et une préparation, plus longue peut-être, mais moins complexe.

De toute façon, nous sommes bien d'accord sur la conclusion : Métier dit "aux baguettes". Nous noterons également que l'accord est complet quant à la représentation des effets par les tracés et qu'une réponse définitive sur la question ne pourrait être fournie que par un examen direct du document de base...

En ce qui concerne l'embuvage, il est évident que les fils de la chaîne 2, qui forment les bouclettes, doivent produire un embuvage plus important que ceux de la chaîne n° 1. On ne connait pas exactement la largeur du rapport de dessin, mais si l'on se reporte aux reproductions du document -qui ne semble pas comporter de lisières et sur lequel le rapport de dessin semble incomplet en largeur- on est amené à envisager l'hypothèse que ce rapport égale la largeur classique des étoffes HAN, soit 50 cm. environ.

Si on suppose que la différence d'embuvage ait exigé la mise des fils de la chaîne n° 2 sur une cantre, où chaque fil aurait eu sa bobine, ceci nous amenerait à une cantre d'une capacité irréalisable, cette chaîne comportant alors : 71 x 50 : 2 = 1 775 bobines. Il semble que l'on doive abandonner cette hypothèse.

Un autre procédé consisterait à laisser relativement libre l'extrémité des fils, avec une charge individuelle... Mais ceci supposerait, une faible longueur de chaîne, ce qui était peut-être le cas ?

On peut imaginer, enfin, que les fils de cette chaîne n° 2 aient été simplement placés sur un rouleau spécial, avec une charge différente, car on remarque dans les passages où nous avons, par hypothèse, décelé un effet "plat", que les fils ont néanmoins un léger gonflement qui pourrait résulter d'un relâchement dû à l'absence d'une tension individuelle de ces fils.

Mentionnons que les publications chinoises, sur ce genre d'étoffes, semblent envisager une "programmation" des bouclettes : grandes ou petites, pour équilibrer l'embuvage... alors que nous pensons que cette différence de taille, est une conséquence inéluctable de la technique d'armure. Mais les problèmes de traduction rendent très difficile une compréhension exacte de ces analyses...

Il nous semble, par ailleurs, que ces mêmes publications envisagent une sorte de "métier à la tire" (?) qui nous parait tout à fait hors de question. Nous pensons, comme déjà dit plus haut, qu'il s'agit du même métier aux baguettes que celui ayant produit les tissus polychromes façonnés, dont la technique de bouclé n'est qu'une évolution particulière.

Nous dirons, en terminant, que nous ne croyons pas beaucoup à l'utilisation d'une trame perdue en soie ou en ramie et préférons l'hypothèse des fines tiges de bambou. Celles-ci nous semblent plus faciles à polir et de ce fait plus pratiques à extraire du tissu alors que la trame perdue présenterait une extraction plus difficile et des risques de détérioration des bouclettes...

Contribution de Monsieur de Jonghe

Nous avons signalé à plusieurs reprises dans cette étude, l'importante contribution que Monsieur Daniel de Jonghe y a apportée en examinant l'échantillon au microscope stéréoscopique dans son laboratoire des Musées Royaux de Bruxelles.

Ce ne sera certainement pas une répétition inutile que de publier, in-fine, sous les numéros 4 et 5, les tracés correspondant aux analyses effectuées par Monsieur de Jonghe qui, sous une forme quelque peu différente, traduisent les croisures théoriques de nos tracés n° 1 et n° 3 -A.

Le tracé n° 4 montre sur papier de mise en carte, le relevé du décor examiné avec, en encadré, la partie analysée développée sur le tracé n° 5.

Le tracé n° 5 montre : en 5-A le relevé exact des armures de la partie analysée, et, en 5-B, le système à baguettes à boucles proposé par l'Auteur et comportant :

- Deux baguettes-lisses, pour la production de la Louisine sur les coups impairs.
- Six baguettes à lacs, pour la production du décor sur les coups pairs et les tiges de bambou.

Dans l'hypothèse adoptée par Monsieur de Jonghe, la même baguette à lacs aurait été actionnée deux fois de suite : une première fois sur les coups pairs du tissu, consacrés à la production des flottés et une seconde fois lors de l'introduction de la tige de bambou (ou de la trame perdue) pour la production des bouclettes.

Nous avons, sur ces baguettes repéré en les surchargeant, les boucles actionnant les fils de la chaîne n° 2 qui seraient à soulever, seules, au passage de la tige de bambou ; elles auraient pu être repérées sur les baguettes à boucles par un attachage de couleur différente de celui des boucles soulevant les fils de la chaîne n° 1, puisque les baguettes soulèvent, sur ces coups pairs, des fils de la chaîne n° 1 et de la chaîne n° 2.

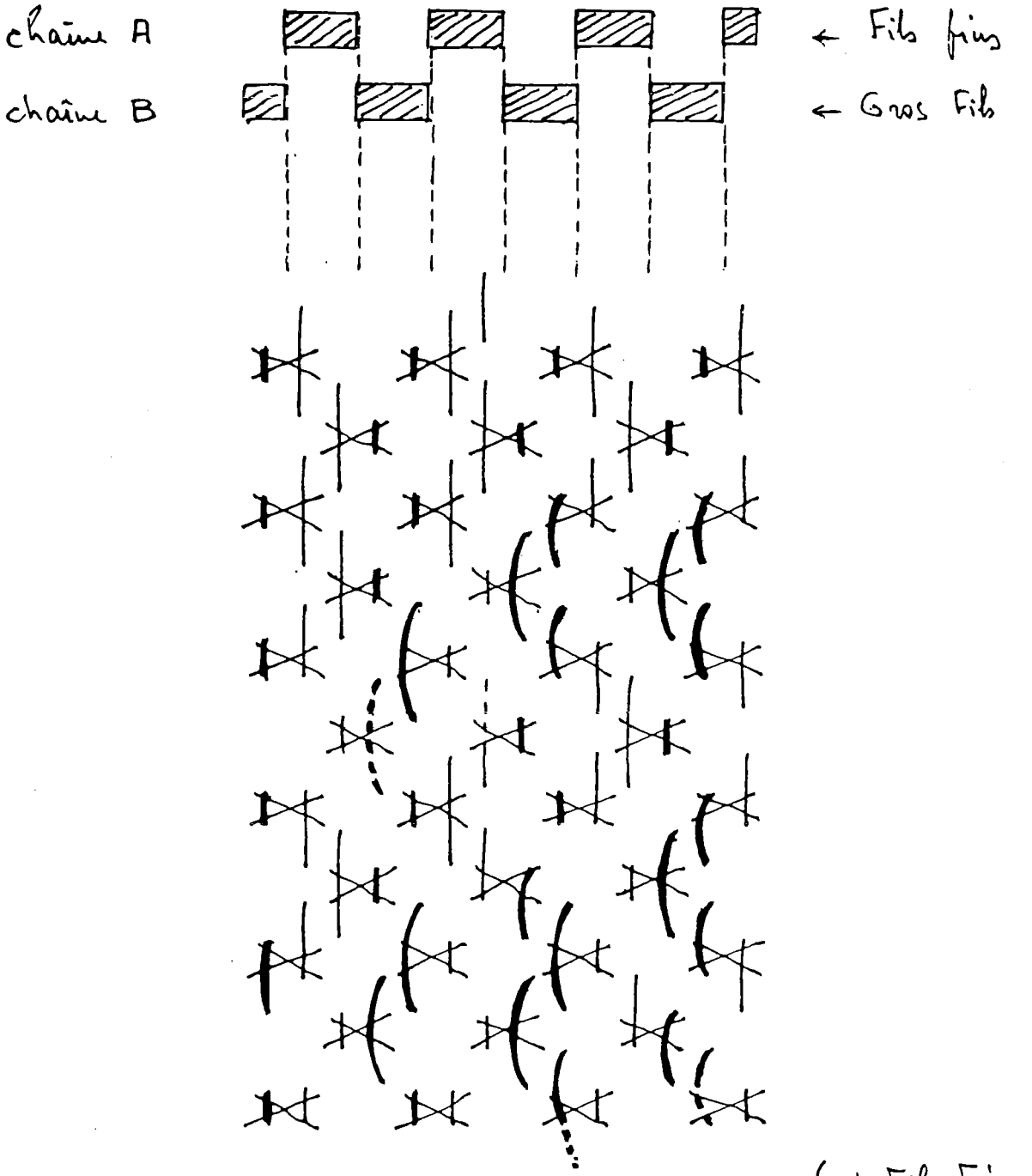
Le relevé du tracé n° 4 montre bien que le décor comporte beaucoup de lignes obliques assez minces, qui devaient conduire à de nombreuses bouclettes formées sur deux coups (petites bouclettes).

Date et signature des rédacteurs : Gabriel Vial et Daniël de Jonghe
Septembre 1984

MR. 14029

Tracé n° 1

Relevé par extraction des fils

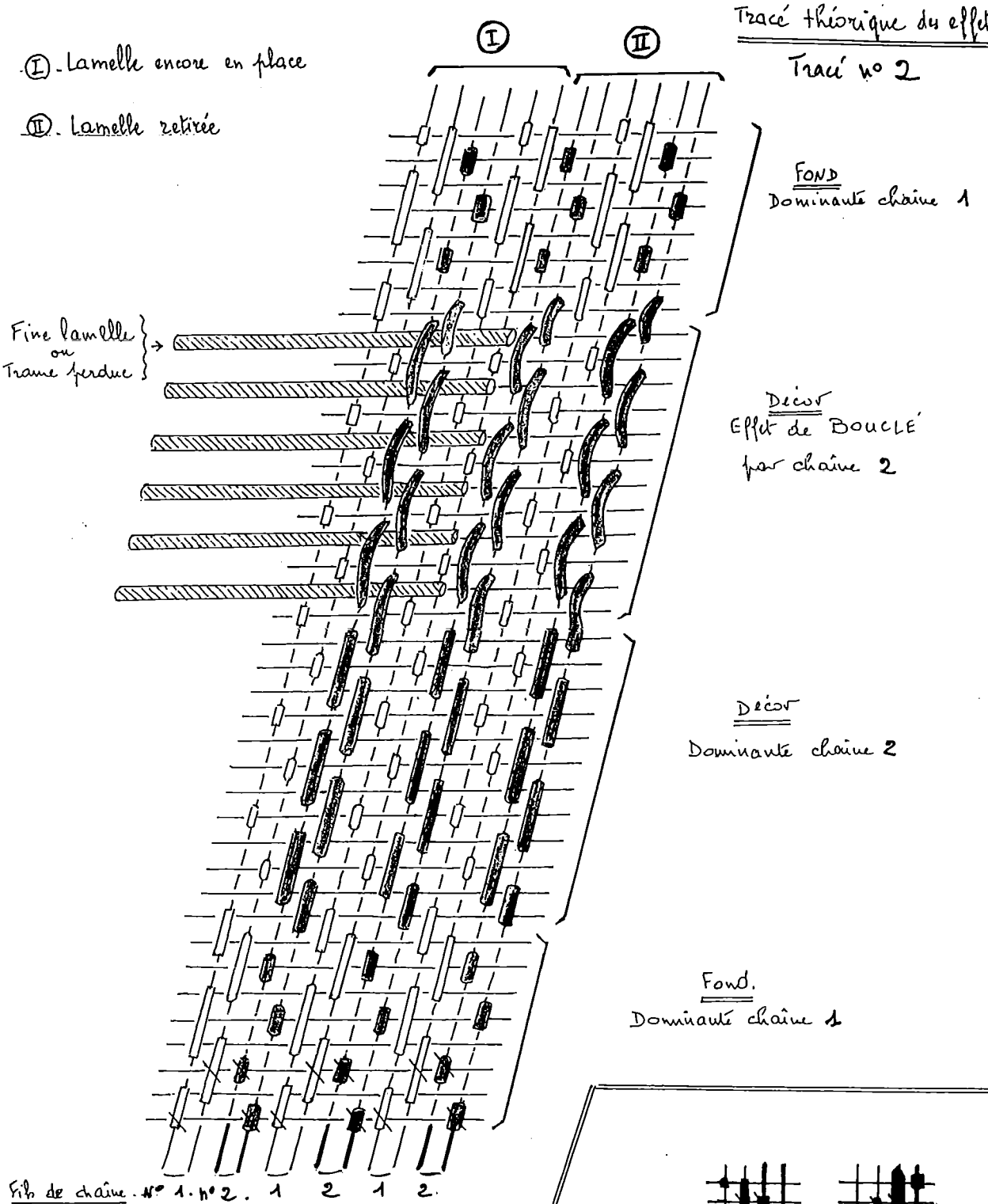


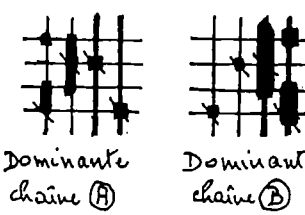
: lonisine de base coups impairs { 1 Fil Fin / 1 Fil Gros

M.R 14.029

Tracé théorique du effets

Tracé n° 2



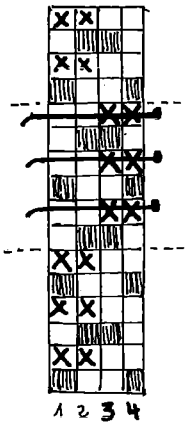


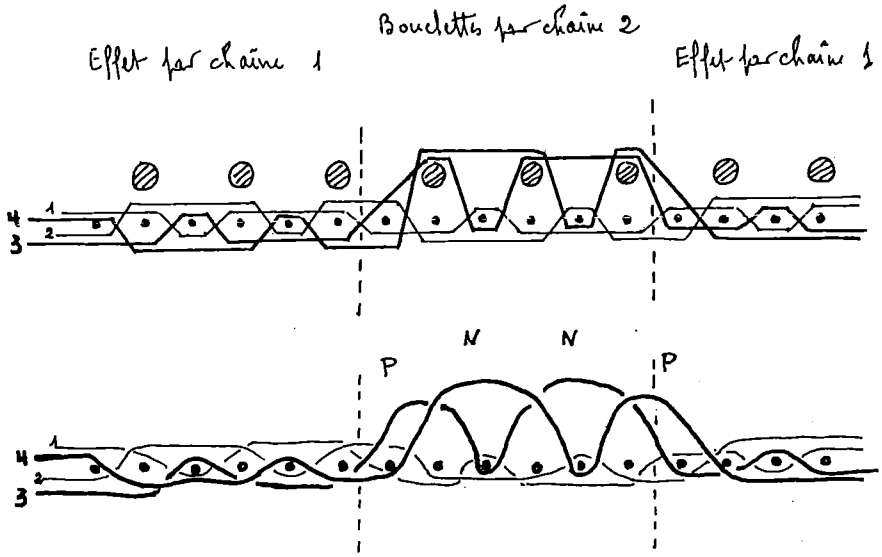
Formation des 2 croisures de base du tissu

M.R. 14.029

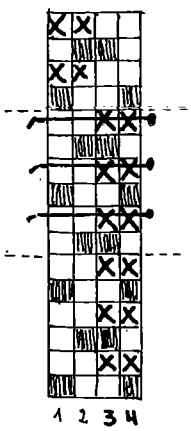
Tracé n° 3

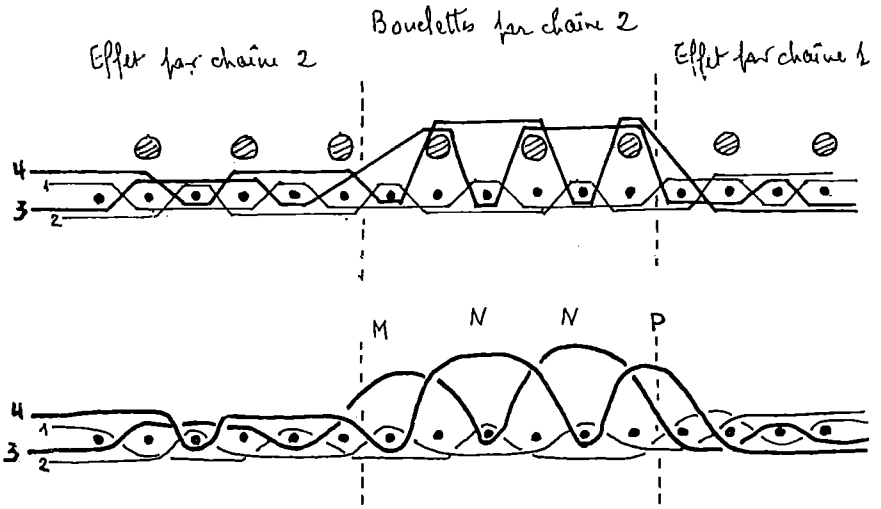
A





B





Légende

1.2. Fils fins; chaîne n° 1

3.4. gros fils; chaîne n° 2

Fine tige de bambou

N - Bouclettes dites "normales"

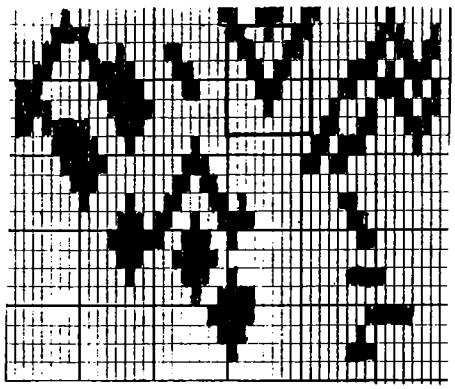
M - Bouclettes dites "Moyennes"

P - Bouclettes dites "Petites"

Limites théoriques des effets

- lamisine (décalée)

- levée par les baguettes



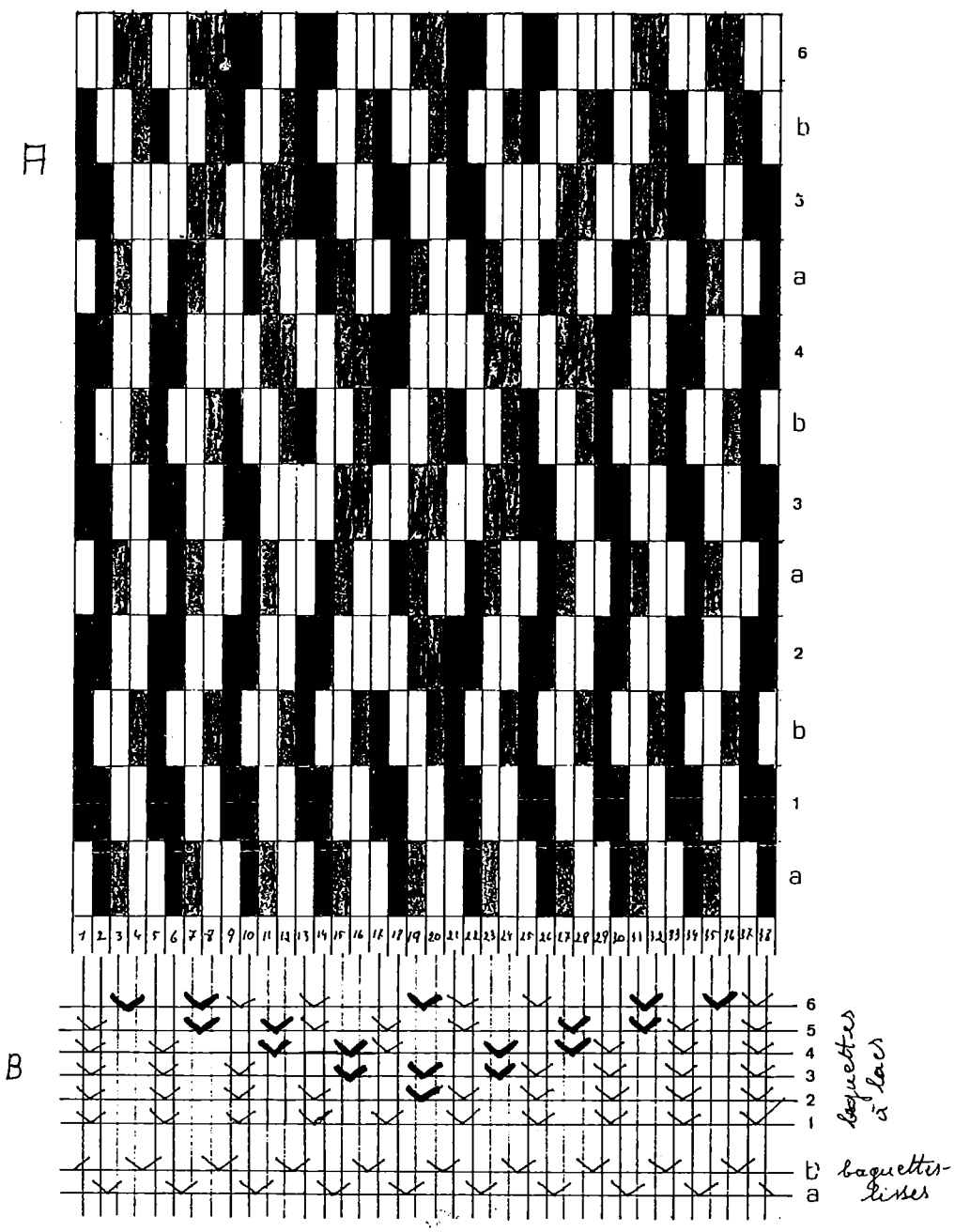
tracé n° 4

Légende des tracés n° 4 et 5.

-Décor relevé sur le fragment MR. 14029, chaque carreau noir représente deux fils de la chaîne n° 2 : bouclettes.

- La partie analysée, limitée par des lignes noires, est développée dans le tracé n° 5.

tracé n° 5



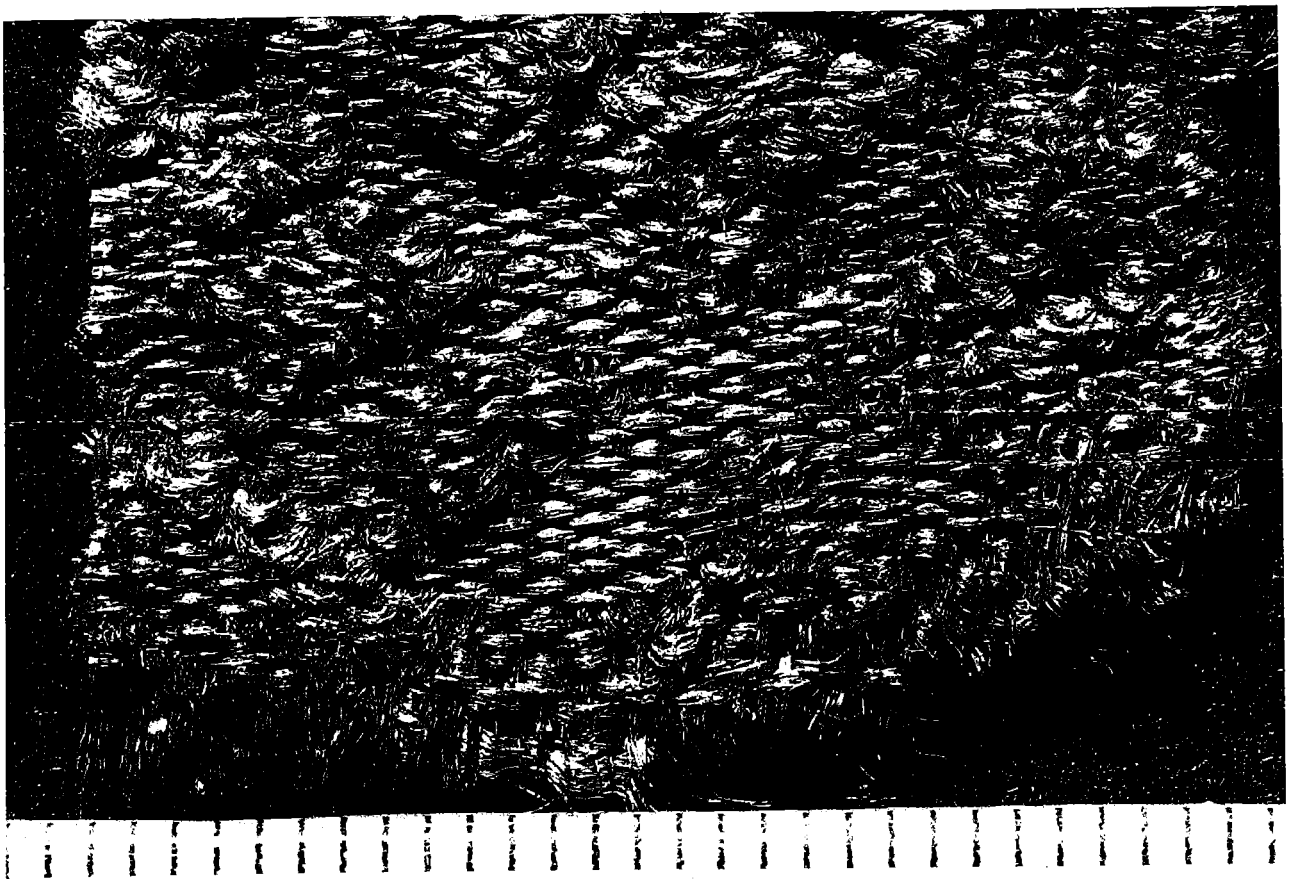


Figure 9A - Macrophoto of sample from Noin-Ula (MR 14029) corresponding to fig. 4 (technical diagram and analysis of Vial- de Jonghe)
Scale : 20 bars = 1 cm
Photo : Studio Basset, Lyon
Warp : ↑

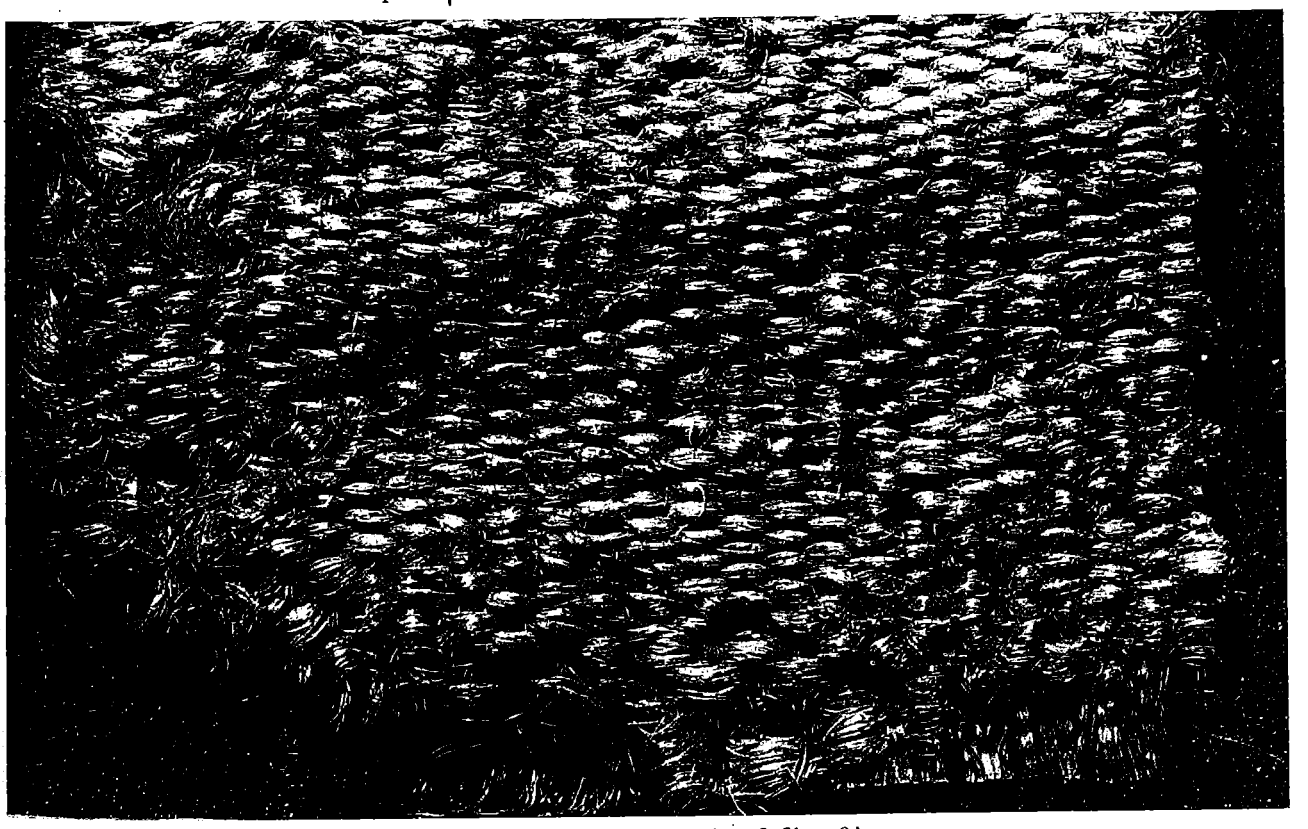


Figure 9B - Reverse side of fig. 9A
Warp : ↑

A PROPOS D'UNE SOIERIE FACONNÉE, dite de "BYSSUS" (fig. 3).

par Gabriel VIAL

Le fragment de soierie façonnée présenté ici appartient au Musée Historique des Tissus de Lyon. C'est une gaze façonnée dont le fond est constitué d'une armure gaze de 3 fils et 1 coup et le décor formé d'un taffetas par 1 et 2 fils c'est-à-dire un mélange de taffetas et de Louisine.

Il provient de la collection Bock et a été prélevé, au XIXème siècle, sur la dalmatique dite "de Saint Lambert", conservée à l'Eglise Notre Dame, de Maastricht.

L'analyse technique avait été faite sur le fragment de Lyon et je m'étais rendu à Maastricht, en 1961, afin de procéder à une analyse de la dalmatique, afin de parfaire le dossier par l'indication du montage et, surtout, pour vérifier que le fragment provenait bien de la dalmatique en question. (cf. dossier de recensement suivant).

Ce document de Lyon est donné comme "Oriental" et daté du VIIIème siècle, mais surtout, on disait que la dalmatique était composée de Byssus (1). C'est la cause principale de sa présentation aujourd'hui. Tous les spécialistes des tissus anciens savent bien quelle imprécision s'attache au mot Byssus et il était intéressant de savoir exactement quelle matière recouvrait ici cette appellation. Le mot a certainement été utilisé autrefois avec la signification d'une matière fine, riche et de qualité supérieure, mais la confusion était totale entre le lin, la soie, le coton et ce que l'on appelle aujourd'hui du mot Byssus.

Les études de Eva Wipszycka :"l'Industrie textile dans l'Egypte romaine" (8) basée sur l'étude de nombreux papyrus et après compilation critique des divers travaux antérieurs, ont abouti à l'opinion que ce nom désignait certainement une variété spéciale de Lin, très fin, (en Grec : Kalleris). Le Chanoine Bock, lui-même, déclare 30 ans plus tard (1895) qu'il s'agit sans doute d'un fin tissu de soie, transparent comme le crêpe et la gaze et ressemblant à s'y méprendre, à du Byssus (2). Ceci laisse supposer que, pour lui, le mot Byssus équivalait à du Lin...

L'échantillon que nous présentons aujourd'hui est en réalité, comme le pensait finalement Bock, composé entièrement de Soie ordinaire, c'est-à-dire celle du Bombyx Mori. La fibre est totalement dépouillée de son grès et nous avons vraisemblablement affaire à une étoffe teinte en pièce. Le problème de la matière première de cette étoffe est donc ainsi réglé.

Le textile que l'on appelle aujourd'hui "Byssus" est un produit de la Pinne Marine et provient des fibres avec lesquelles ces moules géantes s'attachent aux rochers, à quelques mètres de la surface de l'eau.

La cueillette en est relativement difficile si l'on veut conserver aux fibres extraites leur maximum de longueur. Cette longueur varie de 15 à 30 centimètres, ce qui ne peut aboutir qu'à la production d'un fil discontinu du type Schappe, en pur ou en mélange : Ceci est important à noter.

La soie de moule n'a pas donné lieu, évidemment, à autant d'études scientifiques que la soie du Bombyx Mori. C'est une matière assez rare, bien que certains auteurs signalent la "Pinna", présente en un nombre important de points de la Méditerranée, de l'Adriatique, de la Mer Egée... (3)

Elle aurait été connue dans l'Antiquité puisque Aristote en parle déjà, parait-il en l'appelant Byssus... (4), mais on n'a aucune garantie de son utilisation réelle et donc de son abondance ?

Beaucoup plus près de nous, ont figuré aux Expositions Universelles, de l'an X et de 1806, des draps composés d'un mélange, de laine de vigogne et de soie de Pinne-marine. Un velours "tiré à poil" était également exposé qui imitait le poil de castor et avait plus de rapport avec la laine qu'avec la soie (5). Ces étoffes se trouvent peut-être actuellement, dans quelque musée ?

Je n'ai personnellement jamais rencontré de tissu à base de Pinne-Marine : On parle dans la littérature (6) de tissus qui semblent avoir été surtout destinés aux touristes méditerranéens... Chaussettes, gants, tricots... qui durent longtemps et ont la propriété de ne pas provoquer de sueur... J'ai lu, il y a quelques années une publicité pour ce genre d'article, provenant d'Italie du Sud, mais je n'ai jamais reçu de réponse à mes demandes...

Au microscope, en vue longitudinale, la fibre de Pinne-Marine donne l'impression d'un gros cylindre ; par contre, en coupe transversale, elle révèle son aspect très caractéristique en forme d'amande (fig. 5). Sa grosseur n'est pas constante, car la fibre va en s'amincissant et son diamètre est ainsi très variable, (de 27 à 77 microns si l'on considère la grande dimension) (6). Le fil est unique, contrairement au produit du Bombyx Mori qui est composé d'une bave formée de deux brins accolés par le grès. Le brin élémentaire du Bombyx présente, lui, une section vaguement triangulaire à angles arrondis et à côtés convexes (fig. 6).

Pour illustrer plus complètement cette étude, nous avons fait procéder à une microphotographie montrant conjointement deux fibres de sécrétion naturelle, Bombyx et Tussah (fig. 7).

Un auteur (6) a signalé que "la soie de Pinne-Marine" est habituellement filée avec de la vraie soie... en mélangeant un brin de cette dernière avec 2 ou 3 fils de "Soie de mer". Nous le mentionnons pour mémoire, car il nous semble difficile de mélanger du fil continu en soie (un fil) avec de la fibre (2 ou 3 fils) de Pinne-Marine... Il s'agissait plutôt d'un mélange "en bourre" (filature à la quenouille ou au rouet)...

Pour en revenir à notre document, son attribution "Orient, VIIIème siècle" pourrait bien faire penser à une création chinoise, car on sait bien maintenant que la Chine fut la première productrice de tissus de Gaze façonnée, puisque de nombreuses découvertes archéologiques ont amené au jour un grand nombre de ces documents, depuis l'époque des Han (2 siècles avant, 2 siècles après l'ère chrétienne) jusqu'aux T'ang (7ème - 10ème siècles de notre ère)

Il existe pourtant une différence essentielle entre les gazes complexes chinoises et le tissu qui nous occupe aujourd'hui.

Dans les gazes façonnées complexes chinoises, l'empiètement des fils formant l'ajourage de la gaze est continu dans le sens de la largeur et ceci interdit qu'un peigne soit utilisé à sa place habituelle, c'est-à-dire devant les lisses, car cet empiètement continu serait impossible. Par ailleurs, le fond et le décor sont formés de deux armures gazes complexes, qui dérivent d'ailleurs l'une de l'autre. (Une seule armure a été représentée ici - schéma 2)

En revanche, dans notre document, un décor en taffetas de 1 et 2 fils se détache sur une armure gaze dont le rapport d'entrecroisement est limité à 3 fils, ce qui correspond à une dent du peigne ; de cette façon, ce dernier peut-être placé normalement devant les lisses, à la place que tout le monde connaît. (schéma 1)

On peut penser qu'il s'agit là d'une évolution importante et décisive dans l'utilisation de l'armure gaze.

Cette évolution serait peut-être à rapprocher du mode différent de commande des fils puisque nous avons affaire ici à l'utilisation d'un métier à la tire (7), alors que les gazes complexes façonnées étaient vraisemblablement tissées sur des métiers équipés de lisses ou de baguettes...

Dans les gazes complexes, un glissement latéral des fils était, sinon impossible, du moins beaucoup moins redoutable qu'avec le nouveau système de croisement où ce glissement est assez facile.

Mais nous terminons en insistant, surtout, sur ce qui nous a fait présenter cette communication : l'intérêt d'une étude technique approfondie portant également sur la nature des fils qui devrait être pratiquée sur toutes les étoffes anciennes, en particulier celles qui pourraient servir de jalons dans l'étude de l'art textile.

Par ailleurs, des études basées sur les nouveaux critères utilisés par le Professeur Nunome (Japon) semblent de la plus grande importance, car la dénomination "soie" paraît de plus en plus insuffisante. Mais ceci implique qu'un laboratoire spécialisé puisse être consacré à ce genre d'étude. Le CIETA ne pourrait qu'apporter son appui moral à une telle initiative.

DOSSIER DE RECENSEMENT

I - Lieu de conservation

Lyon - Musée Historique des Tissus. Invent. n° 22673.

II - Attribution

Orient (Chine ?) VIIIème siècle.

III - Provenance

Collection Bock. Acquis en 1875.
Provient de la Dalmatique dite "de Saint Lambert" conservée à la sacristie de l'Eglise Notre-Dame à Maastricht (Pays-Bas).
Saint Lambert fut évêque de Maastricht en 708.

IV - Nature du document

Fragment de gaze façonnée.

V - Dimensions générales

Document : Hauteur : 26 cm.
Largeur : 10 cm.

Rapport de dessin : Hauteur : 16 cms. (à Maastricht : 17,5 cm).
Largeur : incomplet (à Maastricht : 17,8 cm).
(Cf. commentaire, paragraphe XII)

VI - Etat de conservation

Assez bon, mais élimé.
Matière assez fusée. Un trou par brûlure.

VII - Description du décor

Feuilles stylisées disposées symétriquement, mais se reproduisant différemment en hauteur : une fois jointives, une fois séparées.
Fond de petits losanges. Coloris beige.

VIII - Contexture

a) Eléments généraux

Qualification technique : Gaze Masse à décor de taffetas

Chaîne : Proportions : Une seule chaîne par 2 fils droits
1 fil de tour

Matière : Soie grège

Découpure : 3 fils

Réduction : 42 fils au cm.

Trames : Proportions : Une seule trame

Matière : Soie grège, assemblée à x bouts

Découpure : 2 coups

Réduction : 25 coups au cm.

b.) Construction interne du tissu (voir Schéma 1)

Fond : Gaze Masse de 3 fils et de 1 coup

Décor : Effet Taffetas par 1 et 2 fils (soit un mélange de taffetas et de louisine).

IX - Teinture

Tissu vraisemblablement teint en pièce.
Aucune recherche de colorant n'a été effectuée.

X - Conditions d'exécutions

Vraisemblement : Métier à la tire.
x chemins à pointe de ? cordes
Fils droits : remis sur 4 lisses travaillant en taffetas
Fils de tour : remis 1°/- à droite des fils droits sur deux lisses de correspondance, puis 2°/- à gauche de ces mêmes fils droits, et par dessous ceux-ci, dans les mailles d'un corps anglais suspendues aux cordes du rame (tracé).

XI - Commentaires relatifs à l'attribution :

Ce fragment a été prélevé sur la Dalmatique "dite de Saint Lambert" mentionnée au paragraphe III. Cette étude a justifié un déplacement à Maastricht où l'analyse de la dalmatique a confirmé les mêmes caractéristiques techniques de construction du tissu de base.

XII - Commentaires relatifs aux conditions d'exécution :

Les mesures effectuées sur la dalmatique ont donné : 250 fils de tour au rapport de dessin, soit 250 "dents de gaze". Le rapport étant symétrique, on peut conclure à un montage de 126 cordes de rame à pointe simple.

D'après les dimensions des panneaux composant la dalmatique, le tissu d'origine mesurait au moins 70 cms. de largeur.

La littérature, consultée sur ce document, mentionnait que ce document était composé de "Byssus". Les observations microscopiques ont montré qu'il s'agit de soie de Bombyx Mori, justifiant la conférence dont on peut lire l'extrait ci-joint.

XIII - Autres exemplaires du même tissu :

- Dalmatique dite "de Saint Lambert" - Eglise Notre Dame à Maastricht (Pays-Bas)
- Fragment existant à l'Osterreichisches Museum für angewandte Kunst, Vienne (Autriche), prélevé également sur la Dalmatique de Maastricht ; Hauteur : 30 cms. Largeur : 18 cms. N° d'inventaire : T. 895. (fig. 4) - Photo aimablement communiquée par Madame Angela Völker-Prohaska).

XIV - Références

Notice sur l'Eglise N.D. de Maastricht. 1912. pp. 13-14.

Fr. Bock - Geschichte der Liturgischen Gewänder. Tome II, p. 276.

XV - Date et signature : Lyon, 1961 - Gabriel Vial.

NOTES

1 - Canonicus Dr. Fr. Bock - Geschichte der liturgischen Gewänder des Mittelalters. Bonn MDCCCLXVI. Zweiter Band, p. 276.

2 - Dr. Franz Bock - Die textilen Byssus-Reliquien des Christlichen Abendlandes. Aachen 1895. p. 20.

3 - Dott. Gav. Guiseppe Basso-Arnoux - Sulla pesca ed utilizzazione della "Pinna Nobilis" et del relativo bisso. Roma 1916.

4 - M. Bezon. Dictionnaire général des tissus anciens et modernes. Tome I, p. XLIX, Lyon 1856. Aristote nomme "Byssus" la soie des Pinnes-Marines dont on fait des bas, des gants et autres ouvrages, qui auraient pu être recherchés si la soie eut été plus rare.

5 - M. Bezon, op. cit., tome 3, p. 316.

6 - Alessandro Solaro, Studio Microscopico E. Chimico : Fibre vegetali, Lane, Peli, Pellicie, Seta Naturali, Seta Articiciali. Milano, 1914. p. 339.

7 - Le rapport en largeur de 17.8 x 42 fils au cm. = 750 fils environ comporterait 250 découpures, exigeant 126 cordes de rame à pointe simple, pour les fils de tour, seuls.
Le rapport en hauteur de 16 cm. x 25 coups au cm. = 400 coups soit 200 découpures trame, exigerait 200 lacs, actionnés sur les coups pairs seulement.
Ces nombres mériteraient naturellement d'être vérifés par un décompte effectué directement sur la dalmatique. Cet examen permettrait, en outre, de vérifier la largeur exacte de la laize d'origine.

8 - Eva Wipszycka - L'industrie textile dans l'Egypte romaine -Komitet Nauk o Kulturze Antycznej- Polskiej Akademii Nauk. Varsovie, Cracovie, 1965.

Summary

A textile in the Musée des Tissus, Lyon, part of the dalmatic of St Lambert at Maastricht, has been assigned to the 8th century and said to be of "Byssus". Analysis shows however, that it is actually silk of the Bombyx Mori variety.

It may be recalled that there has long been a confusion between the Byssus of the ancient texts -probably a fine variety of linen- and the modern use of the term for the fibre of the giant Mediterranean mussel, Pinna Marina, which produces a discontinuous fines resembling Schappe.

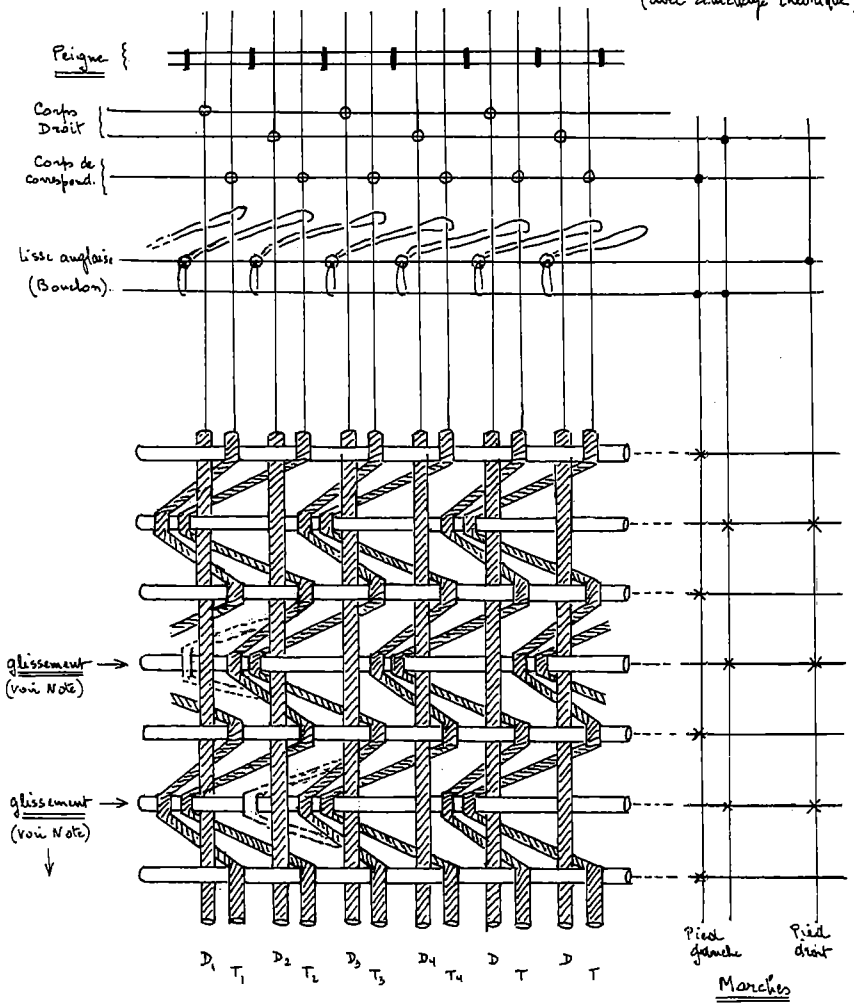
Under the microscope this fibre presents a characteristic almond-shaped section, which is compared in the article with Bombyx silk, Tussah silk, and Spider silk - the last is very rarely met with.

The patterned gauze of the textile may be compared to the complex patterned gauzes of Han China, from which it may well derive, though there is an essential difference of construction, requiring a different placing of the reed in the loom.

Finally, the author refers to the work of Professor Numone (Japan), who has introduced new criteria for the study of silk.

Gaze Complète dite "Râ"

(avec remettage théorique)



Légende

D	: Fils Droits
T	: Fils de Tour

Note Les lignes en traits pointillés indiquent la levée réelle des fils de tour T_2 et T_3, annulée par la levée des fils droits D_1 et D_2, qui en permettent le glissement, ce qui produit le groupement par deux des fils de tour sur les corps faits (cf. BL N°16)

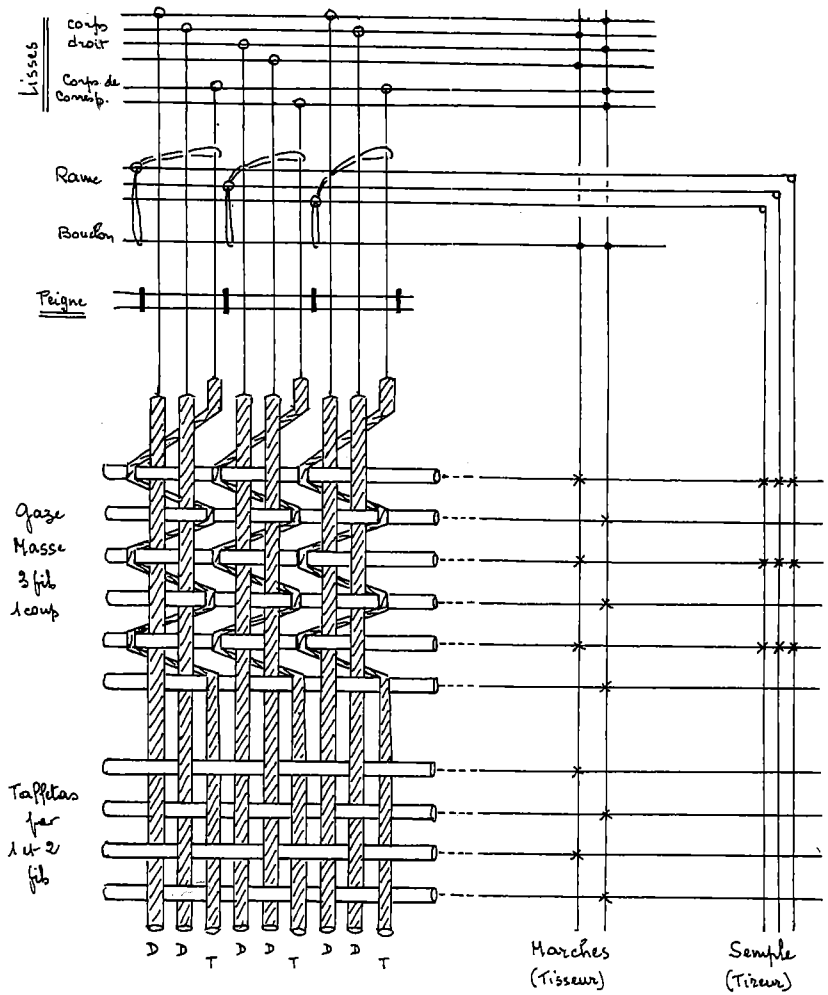
Schéma 2

Gaze Façonnée

Exécution au métier à la tire (montage théorique)

Lyon. M.H.T. 22.673

Maastricht. Dalmatique de St. Lambert. (Eglise Notre-Dame)



Légende :

D	: Fils Droits
F	: Fils de Tour

Schéma 1

Figure 3 - Fragment de gaze façonnée
Musée Historique des Tissus - Lyon (Inv. 22 673).

Figure 4 - Fragment existant à l'Osterreichisches Museum für angewandte Kunst - Vienne, Autriche (Inv. T.895).
Avec l'aimable autorisation de l'Osterreichisches Museum für angewandte Kunst.

Figure 5 - Pinne-Marine

Figure 6 - Bombyx Mori

Figure 7 - Bombyx et Tussah

ELABORATION ET FABRICATION DES TISSUS CHINÉS A LA BRANCHE

par Pierre FAYARD

Les chinés à la branche sont des tissus de soie fabriqués à Lyon principalement au XVIIIème siècle dont le décor résulte, pour la reproduction d'un dessin, de la teinture partielle de petits groupes de fils de chaîne faite avant le tissage (teinture à réserve).

Les opérations de chinage étaient réalisées par des spécialistes = les "Maîtres-Chineurs" qui faisaient partie de la corporation des "Maîtres-Teinturiers". Un document d'archives de la Ville de Lyon montre que "...la profession de chiner les soyes est une main d'oeuvre qui existe depuis le XVIème siècle...". Toutefois c'est au XVIIIème siècle que les chinés à la branche connurent une prospérité qui nécessita une production importante.

L'impression sur chaîne réalisée par Revillod et Depoully en 1816, devait se substituer au chinage et permettre d'autres possibilités de décor : souplesse et finesse des lignes et des contours notamment, en même temps qu'une plus grande régularité dans la répétition des motifs de dessin. Néanmoins on relève sur "l'Indicateur Annuaire de la Fabrique des Etoffes à Lyon - 1849-1850" l'énumération de quinze chineurs ; sur l'Indicateur de la Fabrique de Soierie par Jules Benoit, Lyon, 1866-1867, l'existence de huit chineurs ; par contre sur l'Indicateur des Soies et Soieries en général par Mat. Brano, Lyon, 1873, cette profession n'est pas mentionnée.

L'objet de notre étude est, spécialement, de reconstituer le processus d'obtention de ces étoffes tel qu'il est décrit et illustré dans divers documents du Musée Historique des Tissus de Lyon dont les principaux sont désignés ci-dessous. La plupart sont datés ce qui permet de situer la période de référence en considérant les dates extrêmes, soit : depuis 1753 (Encyclopédie de Diderot-Tome Troisième), à 1867 (Dictionnaire Général des Tissus Anciens et Modernes de M. Bezon ; Atlas).

PAULET - L'Art du Fabriquant d'Etoffes de Soie. Première et Seconde sections Tome 1, 1773 = pour l'Ourdissage et le Pliage des chaînes de soie. Texte, ainsi que les planches n° VIII et X.

M. DIDEROT et M. d'ALEMBERT - Encyclopédie ou Dictionnaire Raisonné des Sciences, des Arts et des Métiers - Tome 3, 1753, Description des Opérations de Chinage (Chiner : pages 339 à 341).
Recueil de Planches - onzième et dernier volume - 1772 Soieries 5ème section - Planches CXVI et CXVII.

J.B. R. MARTIN - Cours de Fabrique de J.B. R. Martin à Lyon 1813, Cours de tissage manuscrit dans lequel est également décrit de façon très détaillée et assez claire, le procédé. Nous avons constaté que le texte de ce cours, concernant le chinage, est repris dans plusieurs documents qui lui sont postérieurs, entre autres dans le Dictionnaire Général des Tissus Anciens et Modernes de BEZON - Tome 1, Lyon 1856 - Chinés pages 39 à 52.

Nous avons en outre emprunté des dessins aux ouvrages suivants :

M. BÉZON, Atlas, 1867 - Planche n° 94

Encyclopédie Méthodique, Manufactures et Arts - à Paris chez Panckouke, Libraire. Tome 6 - recueil de planches - planches n° 23, 25, 29 et 114.

Musée Historique des Tissus de Lyon

A323 - Dessins industriels XVIIIème siècle - Tome 2
Robes Louis XVI - Chinés
Dessins pour tissus chinés à la branche.

A558 - Dessins industriels - XVIIIème siècle - Louis XVI
Mises en carte
Contient des mises en carte de dessins pour chinés.

Les explications données par les textes sont souvent très détaillées, mais quelquefois incomplètes et d'une interprétation peu facile. Néanmoins les lacunes qui en résultent dans certains cas ont pu être comblées par recoupement avec d'autres documents.

C'est un résumé de notre étude que nous présentons. A l'aide de reproductions de dessins extraits de divers documents nous avons fait quelques "montages" qui permettent, en complément du texte, de suivre visuellement les principales opérations nécessaires pour réaliser les tissus chinés à la branche.

Nous pensons que cette analyse montrera, en plus de la technique, les exigences rigoureuses imposées à tous les niveaux dans le but d'obtenir la perfection de l'étoffe. Tout d'abord en imposant une contexture minimale pour la chaine, et surtout en faisant appel à la compétence et aux soins attentifs des différents exécutants, ce que l'on peut apprécier en suivant la description des travaux et des règles qui doivent être observées.

REALISATION DES TISSUS CHINÉS A LA BRANCHE

Définition de la Branche, relevée sur l'Encyclopédie de Diderot et d'Alembert - Tome Second - 1751 :

"terme de Manufactures d'étoffes de laine, de soie, de gaze etc... c'est une des portions dans laquelle une chaîne est divisée. La chaîne est distribuée en portées, la portée en Branches et la Branche en fils. La Branche est une demi-portée. La quantité de fils dont elle est composée varie suivant la qualité de l'étoffe".
(En terme d'ourdissage, la Branche, ou demi-portée est aussi appelée Musette).

Dans les tissus chinés à la branche, la préparation des fils de chaîne pour la teinture se faisait suivant un processus qui conduit à les diviser en petits groupes réguliers (les branches) dont chacun constitue un élément du décor. Tous les fils d'une même branche sont teints de la même couleur et aux mêmes emplacements. Dans le tissu le dessin apparaît composé de touches de couleurs plus ou moins allongées et juxtaposées dans le sens de la chaîne. Les extrémités de ces touches ne sont pas arrêtées nettement du fait des déplacements individuels des fils pendant les opérations de préparation et de tissage, ainsi que, dans certains cas d'une interpénétration des couleurs à la teinture. Cette particularité est appelée "Fouettage". Elle peut être un défaut si elle est trop accentuée.

TAFFETAS, SATINS, CHINÉS A LA BRANCHE
(le velours est traité séparément)

Les Lettres patentes du Roy pour l'exécution des règlements concernant les Manufactures des Etoffes de soye, or et argent de la ville de Lyon... Données à Fontainebleau le premier octobre 1737, précisent au chapitre LXXVI page 30, que : "les taffetas rayés, chinés ou unis... d'une largeur de demi aune, auront au moins soixante portées et pèseront en chaîne au moins 18 deniers par aune..."
ce qui correspond à : largeur 59,4 centimètres
nombre fils total 60 x 80 = 4 800 fils (80,8 au centimètre)
poids au mètre linéaire 19,3 grammes

Le fil de chaîne était de l'organsin dont on peut évaluer le titre global à l'état écru à 45 deniers environ. La matière trame n'est pas spécifiée comme pour la plupart des articles mentionnés dans les règlements. Cette contexture est celle que nous avons relevée le plus fréquemment dans les taffetas des collections du Musée.

Satin chinés : au chapitre XC page 34, il est spécifié que la chaîne dans la largeur d'une demi-aune ne pourra avoir moins de 75 portées (6000 fils) soit 101 fils au centimètre.

Chinés par la trame : Nous avons relevé au chapitre LXVII, p. 30 de ces règlements des spécifications concernant les taffetas "chinés par la trame". Les règlements de ce chapitre s'appliquent seulement à la trame qui doit être "de bonne et pure soye" dans différentes compositions de fils.

Observations sur les contextures : compte tenu de divers documents, on observe que le peigne de tissage cité le plus fréquemment correspond à 20,2 dents au centimètre, et qu'il était piqué :
à 4 fils par dent, dans le taffetas (80,8 fils au centimètre)
à 6 fils ou à 8 fils dans les satins (121,2 ou 161,6 fils au centimètre)

Dessins pour chinés

Planche I - petites fleurs et guirlandes disposées en bandes. Ce dessin est la photographie en grandeur réelle, d'un document en couleurs extrait du recueil de "Dessins Industriels XVIIIème siècle"- Tome 2. On voit, dans les parties chinées, qu'il est fait de petites touches rectilignes de diverses nuances qui représentent les Branches ce qui illustre assez exactement ce qu'on doit obtenir au tissu.
On observe dans ce dessin que certaines bandes marquées "1" sont chinées et que d'autres, marquées "2" ne le sont pas. Ces dernières étaient appelées "Accompagnage".
Les dessins de chiné pour robe comportent le plus fréquemment de une à cinq (rarement six) couleurs pour une même branche. Par contre, sur la mise en carte d'un gros grain chiné pour ameublement (dessus de siège) nous avons dénombré dix sept nuances à teindre sur une même branche ; la hauteur du dessin sur la carte est de 186 centimètres. Cette mise en carte et le tissu appartiennent à la Maison Tassinari et Châtel de Lyon.

Report du dessin sur papier réglé

Planche II - Le dessin est reporté dans ses couleurs et dans ses dimensions réelles sur un papier mise en carte. Chaque corde de carte (un interligne vertical) représentant une branche dont les couleurs occuperont ainsi des emplacements bien délimités dans les deux sens. Noter que les interlignes horizontaux ne concernent pas la trame : ils servent à assurer le bon "arrêtage" des couleurs et à respecter pour celles-ci une longueur minimale de 0,5 centimètre pour qu'on puisse les obtenir à la teinture. Une touche de couleur doit donc être peinte sur un minimum de quatre coups de carte (quatre interlignes horizontaux).
Le papier des différentes cartes que nous avons examinées est, à une exception près, du papier 10 en 10 n° 3 dont la dimension d'une "dizaine" est de 1,35 centimètre soit 0,135 centimètre pour une corde.

Le nombre de fils d'une branche, pour un taffetas de 80,8 fils au centimètre serait de : 80,8 x 0,135 = 10,9 pour 10 fils (nombre pair le plus proche). Pour un satin à 6 fils en dent, soit 121,2 fils au centimètre, il serait de 121,2 x 0,135 = 16,3 pour 16 fils. On observe le plus fréquemment dans les taffetas des branches de 20 fils, certainement pour une raison de moindre coût, en réduisant de moitié le nombre de branches. Dans ce cas le dessin sur le papier de mise en carte ci-dessus se fait en utilisant deux interlignes verticaux pour représenter une branche. On rencontre aussi des chinés de 8,12,14... fils à la branche, ainsi que des tissus dont les chaînes sont à fils doubles (deux fils pour un).

Calcul du nombre de Branches : Pour un taffetas chiné de 4 800 fils en une demi-aune avec des branches de 10 fils, dont le dessin se répèterait quatre fois dans la largeur, le nombre de branches total serait de 4 800 : 10 = 480. Il y aurait 120 branches dans un rapport du dessin, chacune d'elles étant à teindre en quatre exemplaires.

PREPARATION de la CHAINE à CHINER (Préparation des BRANCHES)

Dévidage de la soie - La chaîne est en organsin soie le plus souvent teint en blanc, parfois dans une couleur claire. Ce fil, qui est en écheveaux, doit être dévidé sur des bobines de bois, les "rochets". faut veiller à ce que ceux-ci soient tous très réguliers tant pour le poids du fil, que pour la tension ; on préconise, dans ce but, de les faire tous avec la même broche de dévidoir. S'il y avait des inégalités de tension, celles-ci se répercuteraient au tissu par une accentuation anormale du "Fouettage".

Ourdissage - Il se fait sur un ourdissoir ou Long ou Droit (Pl. III, fig. 1) ou sur un ourdissoir Rond (Pl. IV, fig. 1). La cantre est garnie avec un nombre de rochets, ou bobines, égal au nombre de fils d'une branche. L'ourdissage s'effectue en prenant, par exemple, les fils venant de dix bobines et en les disposant, dans un premier temps, sur l'ourdissoir, dans une phase "aller" jusqu'à ce qu'on ait obtenu la longueur de chaîne désirée. En terme d'ourdissage les fils ourdis lors de cette première phase forment une musette (une branche pour les Chinés). Cette phase "aller" est suivie d'une phase "retour" qui fait le même parcours, mais en sens inverse, et forme ainsi une seconde "musette". Ces deux musettes constituent une portée.
On remarquera sur la figure 4 de la planche IV que les fils sont séparés un par un sur les chevilles qui sont en haut de l'ourdissoir (envergeure fil à fil ou envergeure "d'en haut"), et qu'ils sont envergés par musette (ou branche) à

l'envergeure du bas. Cette dernière partie qui forme une boucle s'appelle le "talon" de la chaîne et c'est cette extrémité qui permettra ultérieurement de sélectionner les branches. A la fin de la phase "retour" les fils de la seconde musette sont à nouveau envergés un par un sur les chevilles du haut. Pour obtenir les 480 branches de 10 fils de notre exemple, il faudra ourdir 240 portées. Quand l'ourdissage est terminé on passe des cordons pour conserver les envergeures.

Planche III - Figure 3 - Levée de la chaîne. On commence à lever la chaîne de l'ourdissoir par la partie qui doit en faire la fin lorsqu'elle sera placée sur le métier à tisser, c'est-à-dire par le talon. Cette levée se fait sur une cheville ou en chainette (Planche V - Figure 2). La chaîne est ensuite confiée au Chineur.

EXECUTION DU CHINAGE

Mise de la chaîne sur tambour

Planche V - La chaîne est enroulée sur un tambour, toutes les branches restant réunies en un faisceau. A la fin de l'opération c'est la partie du "talon" qui se trouve à l'extérieur : celle de l'envergeure par Branche.

Formation des Branches pour la teinture. Ce travail consiste à former autant d'écheveaux qu'il y a de branches dans le dessin mis en carte. Pour notre exemple, il faut faire 120 écheveaux, chacun étant constitué de quatre branches de 10 fils, puisqu'il y a quatre rapports de dessin dans la largeur du tissu.

Planche VI - Les écheveaux se forment sur un Aspe ou Dévidoir, dont on peut allonger ou raccourcir les rayons pour régler le périmètre de l'enroulement. Celui-ci est calculé d'après la hauteur du dessin sur la mise en carte dont il doit être égal ou multiple.

Dans les dents du Rateau (peigne) placé devant le dévidoir sont répartis, en les séparant bien, les 120 groupes de quatre branches. On prélève successivement ceux-ci sur la chaîne venant du tambour en ayant soin de maintenir leur envergeure, et on les accroche à l'axe de l'Aspe. Toute la chaîne, ainsi divisée est enroulée sur l'Aspe sur lequel elle demeure pour le marquage des emplacements des couleurs.

Préparation et Teinture des Branches

Report du dessin sur les Branches. D'après la mise en carte on relève sur autant de bandelettes de papier qu'il y a de branches l'emplacement des couleurs de chacune. Ces bandelettes, d'une largeur de 7 à 8 millimètres sont découpées dans du papier conforme à celui de la carte. Leur longueur doit être égale à celle du périmètre des écheveaux. On relèvera sur chacune une ou plusieurs fois la longueur du dessin. Les couleurs sont séparées par des traits horizontaux. Chaque bande est numérotée en correspondance avec la mise en carte. On prend ensuite la bandelette n° 1 et on la place au dévidoir sur le premier écheveau, puis on reporte au pinceau sur celui-ci les traits de séparation et les couleurs qui doivent être teintes. On procède de même pour tous les écheveaux en veillant à ce qu'il n'y ait pas de décalage du dessin entre chacun d'eux. A leur extrémité on fixe un papier portant leur numéro.

Ligature des Branches

Planche VII - La ligature a pour but de cacher les parties des branches qui ne doivent pas être teintes, en ne laissant à découvert que celle qui doit recevoir la couleur et qu'on nomme le bouton. Ce travail se fait sur le banc à lier représenté sur la planche. L'écheveau est enlevé de l'aspe et placé horizontalement sur les deux poulies dont l'une est coulissante, ce qui permet de le tenir fortement tendu et de le faire tourner pour présenter les parties à lier. La ligature se fait en enroulant tout d'abord sur les parties à réserver, une bande de papier dont le rôle est de protéger la soie. On enroule ensuite une bande de parchemin, puis par dessus celle-ci une ficelle qui est fortement serrée pour que la couleur ne pénètre pas en dessous et ne prenne que sur le bouton. On a soin également de bien protéger le numérotage des écheveaux. On procède de même pour tous les écheveaux qui doivent recevoir la même couleur.

Teinture - Quand toutes les branches sont liées, on procède à la teinture. Lorsque celle-ci est faite on délie et on enlève le parchemin quand il est encore mouillé car il durcit en séchant et il se déroulerait difficilement. On laisse ensuite sécher les écheveaux, puis on enlève le papier, sauf celui qui porte le numéro. Quand la branche doit recevoir plusieurs couleurs les opérations précédentes se répètent autant de fois qu'il est nécessaire.

Formation de la chaîne chinée. Les opérations de teinture étant terminées, les écheveaux sont replacés sur l'aspe dans leur ordre de numérotage, en accrochant à nouveau leurs talons sur l'axe et en plaçant l'autre extrémité dans le rateau, exactement comme ils étaient avant la ligature. On a soin de bien les aligner les uns par rapport aux autres pour éviter des décalages qui nuiraient au dessin. On réenroule ensuite la chaîne sur le tambour. Pendant ce travail, et toujours pour maintenir les branches en bonne position on les lie ensemble, toutes les trois aunes (3,60 mètres environ). Quand cet enroulement est achevé le talon des branches se trouve à l'extérieur, ce qui permettra de les sélectionner facilement.

Mise en place des Branches

Planches VIII et IX - On remplace le rateau précédent par un autre ayant un nombre de dents au moins égal au nombre total des branches du tissu, soit 480 dents pour notre exemple, et réparties dans une largeur supérieure de deux centimètres à celle de l'étoffe. Le tissu doit comporter quatre rapports de dessin ayant chacun 120 branches de 10 fils. La teinture a été faite sur des écheveaux qui contiennent chacun quatre branches. Pour mettre ces branches en place dans chacun des rapports l'ouvrier dispose de quatre compasteurs (ou verges) dont on peut voir la représentation sur la planche IX. Sur chacun de ceux-ci il envergera dans l'ordre de leurs numéros les 120 branches d'un rapport, et celles-ci sont réparties de la même manière dans les dents du rateau.

La réunion en une seule nappe des branches des quatre rapports se fera en les retirant successivement des compasteurs et en les accrochant à nouveau sur l'axe de l'apse, conformément à leur position dans le rateau. On passe ensuite un cordon pour les enverger dans cet emplacement définitif, puis on enroule la chaîne sur toute la largeur sur l'aspe. Au cours de ce travail on veille à ce que les branches s'intercalent bien les unes entre les autres sans déformer le dessin. Lorsque la chaîne est toute enroulée, son extrémité extérieure est celle où les fils des branches sont envergés un par un. Ces envergeures sont, à leur tour remplacées par une seule sur toute la largeur.

Remise de la chaîne sur le tambour - La chaîne est retirée de l'aspe en l'enroulant à nouveau sur le tambour. On ramène ainsi à l'extérieur l'envergeure par branche. C'est cette extrémité qui doit être le début de l'enroulement sur l'ensouple.

Formation de l'ensouple de tissage

Planche X - L'ensouple est mise en place sur un chevalet en avant du rateau. Les branches sont réenvergées sur un compasteur, puis celui-ci est logé dans la profonde rainure longitudinale de l'ensouple et bloqué par une baguette. La chaîne est ensuite enroulée. L'envergeure fil à fil qui est revenue à l'extérieur servira pour les opérations de remettage, puis de tissage.

CHINÉS à la BRANCHE avec ACCOMPAGNAGE

Planche I - On désigne ainsi les tissus qui présentent des bandes chinées qui alternent avec des bandes non chinées, qu'on nomme accompagnage. Ces dernières peuvent être unies ou rayées et de même contexture que le chiné ; ou formées de satin, de reps, de façonné... Il faut évidemment qu'on ourdisse séparément le chiné et l'accompagnage. La chaîne chinée est exécutée avec la méthode décrite précédemment. Toutefois au moment où les branches terminées sont mises en ordre dans le rateau, on laissera aux emplacements prévus dans la mise en carte des dents vides qui seront occupées ensuite par les bandes d'accompagnage. La chaîne d'accompagnage sera ourdie selon la disposition prévue et on repérera au moyen d'un cordon, les groupes de fils qui doivent s'intercaler entre les bandes chinées. Le plieur pourra ainsi les placer correctement dans le rateau. Quand ce travail est achevé tous les talons sont envergés sur un seul compasteur en les prenant dans l'ordre où il se présentent dans le rateau. La chaîne est alors prête à être enroulée sur l'ensouple. Lorsque l'armure ou la matière des bandes d'accompagnage ont un embuvage différent du chiné, il faut alors placer la chaîne sur une deuxième ensouple. Dans ce cas l'enroulement se fait en bandes séparées sur chacune d'elles.

TISSAGE des CHINÉS

Afin d'éviter autant que possible, les déformations du dessin, il est recommandé :

- de ne pas tenir la chaîne trop tendue ;
- d'utiliser un métier aussi "court" que possible afin de restreindre la longueur de chaîne libre entre l'ensouple et le remisse ;
- de placer sur cette partie de la chaîne des "liages" distants les uns des autres d'une demi-aune (0,60 m environ) et qu'on enlève et remet en place suivant l'avancement du tissage. Ces liages serrent fortement la chaîne sur toute la largeur et empêchent ainsi le déplacement des fils.
- Il faut que l'ouverture du pas pour le passage de la navette soit le plus faible possible.

VELOURS CHINÉS à la BRANCHE

Le chinage des fils de chaîne des tissus à fort embuvage nécessite une transposition appropriée du dessin à partir de sa mise en carte en dimensions réelles. Dans les velours ce sont les fils de poil qui sont chinés et on doit considérer que, pour tisser un mètre de velours il faut six mètres de la chaîne poil. En conséquence il faut que sur la mise en carte remise au chineur, les couleurs à teindre sur les branches soient peintes sur une longueur six fois plus grande que celle du dessin original.

Description d'un velours coupé chiné :

"Les velours chinés se font ordinairement avec un peigne de vingt-deux portées (pour les peignes une portée désigne 40 dents) - soit 880 dents - dans la largeur de $\frac{11}{24e}$ d'aune" ce qui, transposé en mesures actuelles, donne :

largeur 54,45 centimètres
nombre de dents "utiles" du peigne : 880 dents
nombre de dents au centimètre : 16,16 dents
largeur d'une dent en millimètre : 0,618 millimètre.

Le tissu comporte deux chaînes :

Une chaîne pièce : les fils de cette chaîne constituent avec la trame, le tissu ou fond, sur lequel sont liés les fils de poil. Ils sont en organsin soie qui parfois est teint en "cru", c'est-à-dire teint ou blanchi sans décreusage préalable. Le fil est moins souple et moins brillant que s'il était décreusé, mais il se comporte mieux au tissage.

Une chaîne poil - dont les fils sont soit en organsin deux bouts "cuit" (décreusé) et ourdis à fils doubles ou triples ; soit en organsin à quatre bouts à fils simples. Cette dernière formule facilite le tissage mais la "couverture" du poil est moins bonne que celle avec fils doubles ou triples.
La proportion des chaînes est de deux fils pièce pour un fil poil.
Le peigne est piqué à 6 fils en dent par 2 fils pièce-1 fil poil répété deux fois
Une dent du peigne contient donc deux fils de poil.
L'armure du fond est un sergé de 3 lie 1 avec liages redoublés de part et d'autre du coup de fer (insertion du fer).
L'armure du poil est par trois coups au fer, liage masse sur un coup.

Report du dessin dans ses dimensions réelles sur "papier réglé".

Planche XI - Figure a - Cette mise en carte est celle d'un dessin à petits motifs, pour vêtement. Le papier, qui est probablement fait pour cette utilisation, est désigné 10 en 10 "petit" (parfois n° 1 ou n° 6 sur certains documents). La largeur d'un interligne qui représentera une branche est de 0,62 millimètre. Cette largeur est celle d'une dent du peigne de tissage (voir plus haut), et on sait que celle-ci contient 4 fils pièce et deux fils poil. Une branche, dans ce tissu, est donc constituée de deux fils de poil.

Exécution de la mise en carte pour le chinage.

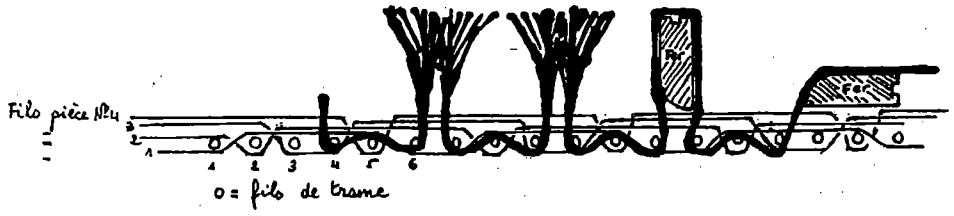
Planche XI - Figure b - Sachant qu'il faut six mètres de fils poil pour tisser un mètre de velours, on doit, pour le chinage, agrandir six fois dans le sens de la hauteur la mise en carte ci-dessus. Dans le procédé décrit on utilise pour faire cet agrandissement le papier 10 en 10 "grand" (ou n° 3), le même que celui employé pour le taffetas ou le satin chinés, dont les interlignes sont environ deux fois plus larges (1,35 millimètres) que ceux du 10 en 10 "petit". Pour obtenir l'agrandissement de six fois il faudra reporter la couleur qui est peinte sur un interligne horizontal de la carte initiale, sur trois interlignes du papier n° 3. Il en résulte évidemment une déformation du dessin qui peut être compensée en représentant une branche par trois cordes sur la carte de chinage.

Velours chiné à quatre fils à la branche. Il s'agit principalement des velours pour ameublement. Un branche de quatre fils correspond à deux dents du peigne. La mise en carte en dimensions réelles se fait directement sur le papier 10 en 10 "grand" (N° 3). Celle du chinage sur le même papier en peignant trois interlignes horizontaux pour un de la première carte.

Préparation des branches et opérations de chinage.

Ces opérations ne sont pas commentées. On peut vraisemblablement les assimiler à celles des autres tissus, en estimant toutefois qu'il fallait disposer d'un matériel approprié (aspe, banc à lier), pour former et lier des écheveaux de grandes dimensions par exemple, pour un velours chiné d'ameublement ayant une hauteur de dessin de 1,50 mètres, il faut faire des écheveaux de neuf mètres de périmètre.

Chaîne de fond ou chaîne pièce - La préparation de cette chaîne est la même que celle des chaînes pour tissus unis ou façonnés.



Coupe sens chaîne du velours

Summary

Production techniques of the textiles known as chinés à la branche.

The textiles called chinés à la branche are silk textiles -taffeta, satin, velvet- for dress and furnishing, manufactured at Lyon chiefly in the 18th century. They have patterns produced by partial dyeing (reserve-dyeing) of small groups of warp threads. Each of these groups of threads is called a branche.

With the help of documents in the Musée Historique des Tissus, Lyon, I have reconstructed the manufacturing process. Illustrations from these sources enable us to follows the different stages. Velvet, which is exceptional since it requires about six metres of pile warp to produce one metre of textile is discussed in the last section.

Regulations define the minimum warp densities required.

The designs (Pl. I) are drawn in a particular fashion, indicating the effect of the finished textile. They are transferred to point paper (Pl. II), on which each vertical column between the lines represents a branche. In this way one fixes for each branche the location of the colours to be dyed. The branches are formed on the warping frame (Pl. III, IV, V) from a number of threads (8, 10, 12, 14 and up to 20 threads) which is determined by the texture of the cloth.

The skeins to be dyed are formed on a reel whose circumference can be adjusted (Pl. VI). All identical branches are assembled and regrouped in a skein, on which the locations of the colours are marked, following the point paper plan. The skein is then placed on the binding bench and the bindings are applied - successive wrappings of paper, of parchment and of string which protect the parts which are not to be dyed.

Those which are to be dyed and which remain exposed are called boutons (Pl. VII). After dyeing the first colour, the process is repeated as many times as there are colours to be obtained, untying and retying the bindings.

The branches are next reassembled in the proper order to form the pattern and then wound on a warp beam, to form the warp which will be placed on the loom (Pl. VIII, IX, X).

Some textiles include bands without dyed patterns. These, called accompagnage (Pl. I), are warped separately and then introduced between the pattern-dyed bands. They may be wound on a second warp beam if they have a binding with a different take-up of warp.

In velvets, it is the pile warp which is pattern-dyed and the point paper plan has to be multiplied by six in the length to allow for the take-up of warp. A branche generally consists of 2 pile warp ends for dress velvets and 4 pile warp ends for furnishing velvets (Pl. XI).

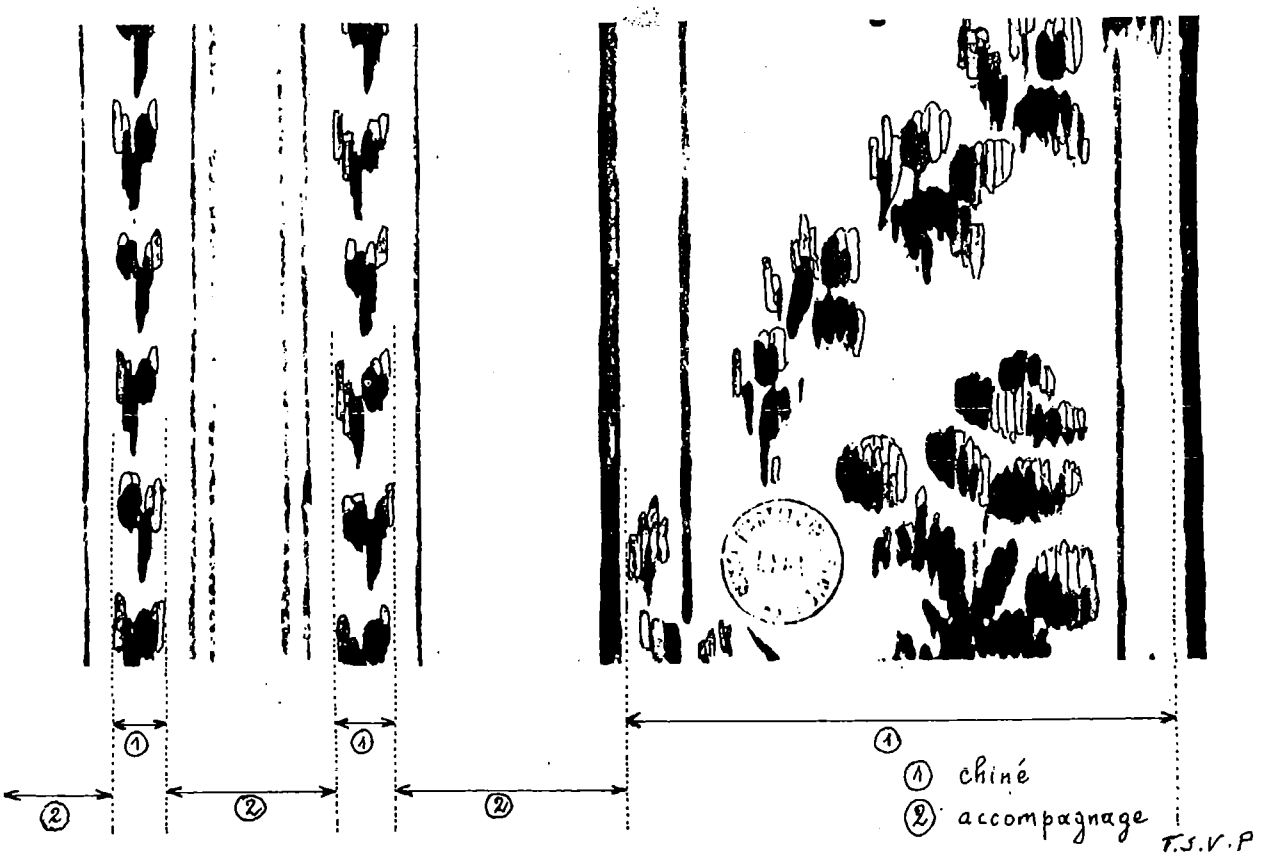


Planche I - Dessin pour un tissu Chiné à la Branche avec "accompagnage" (bandes non chinées).

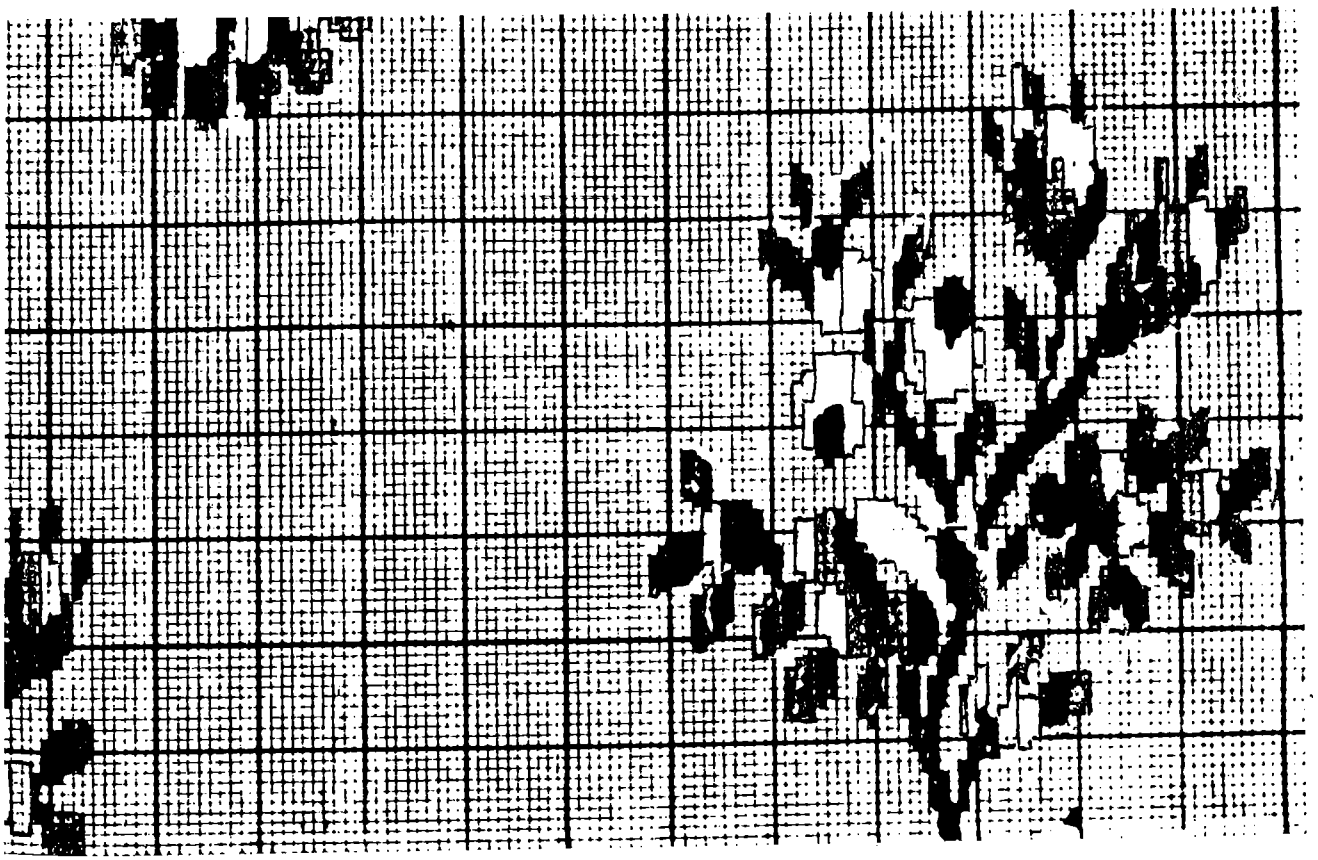
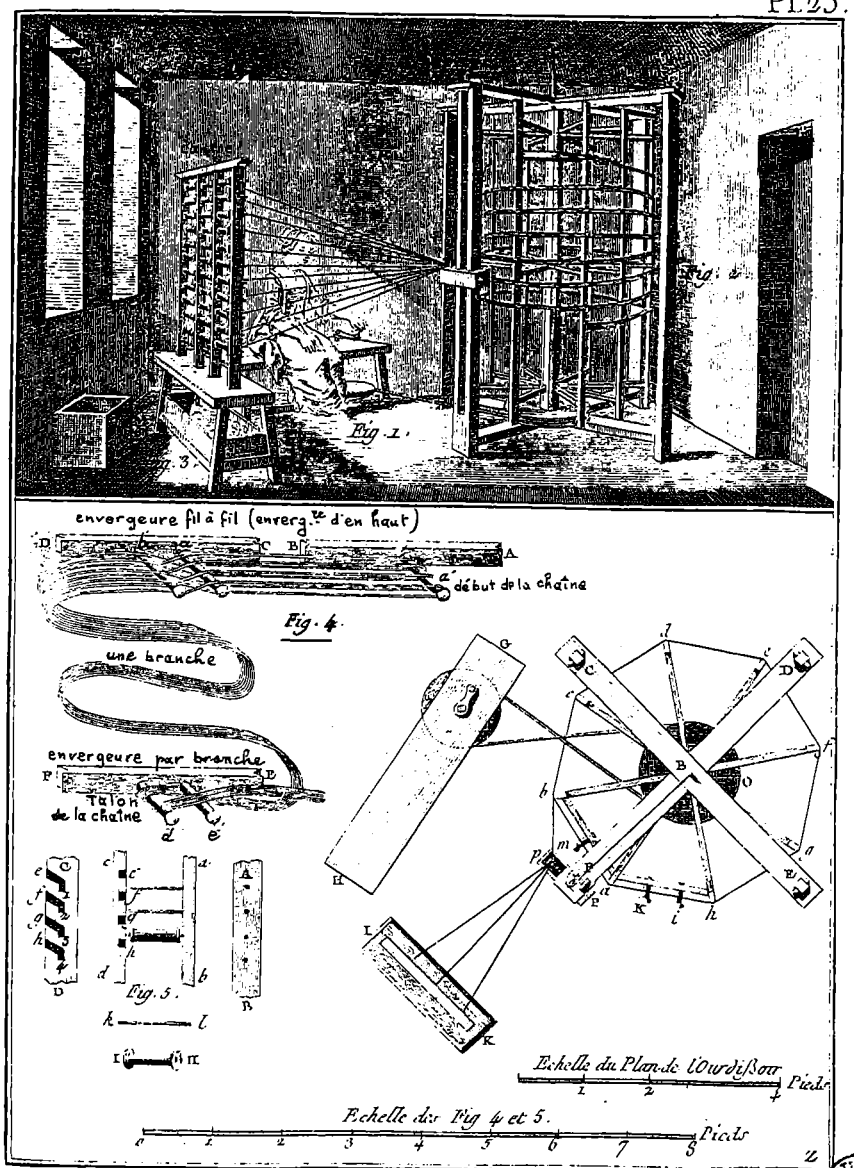


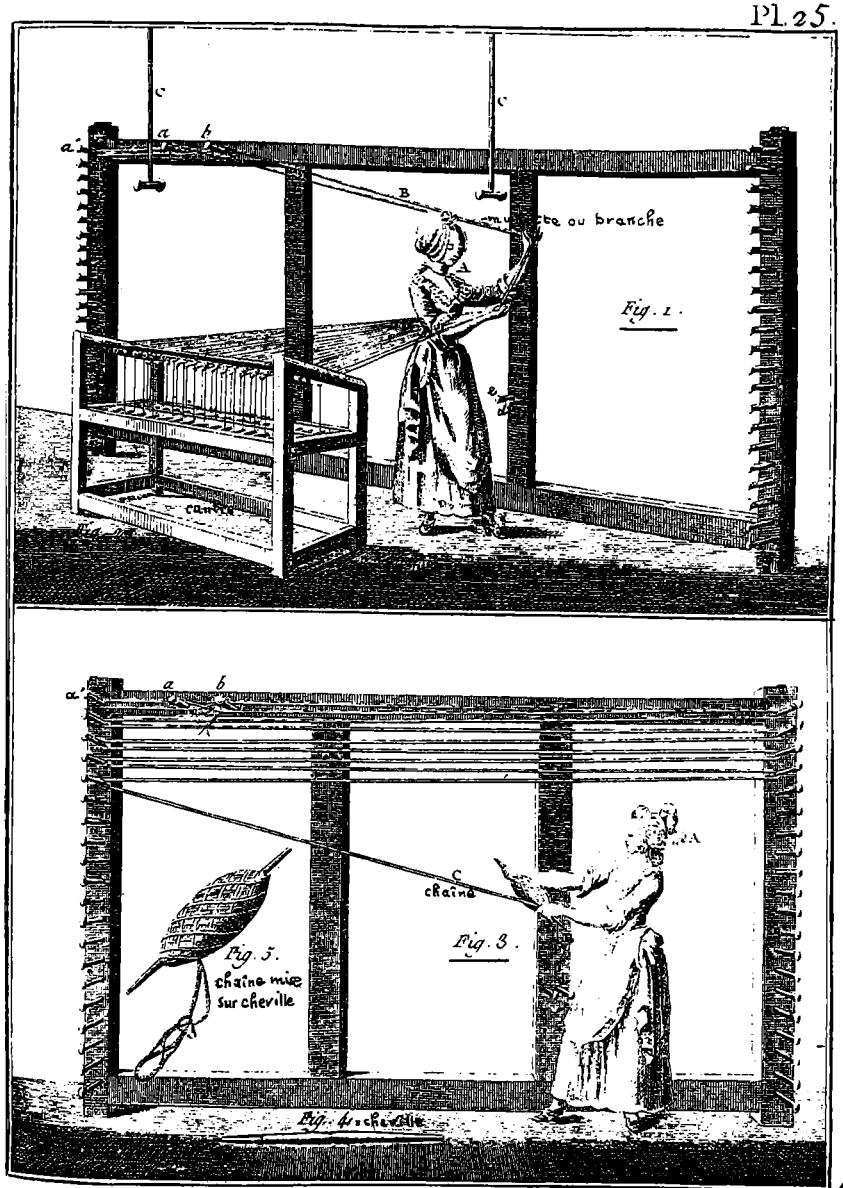
Planche II - Mise en carte d'un dessin pour Chinage à la Branche sur papier 10 en 10 N° 3.

Pl. 23.



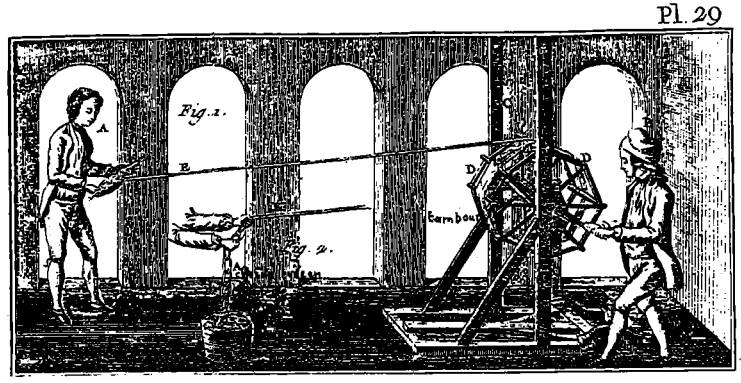
Soierie, l'Opération d'Ourdir la chaîne des Etoffes avec l'ourdissoir "Rond"

Pl. 25.

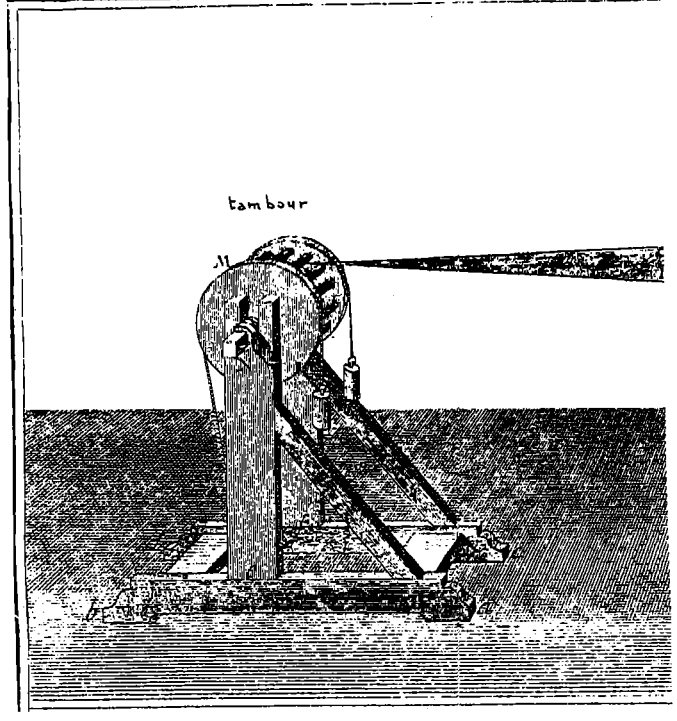


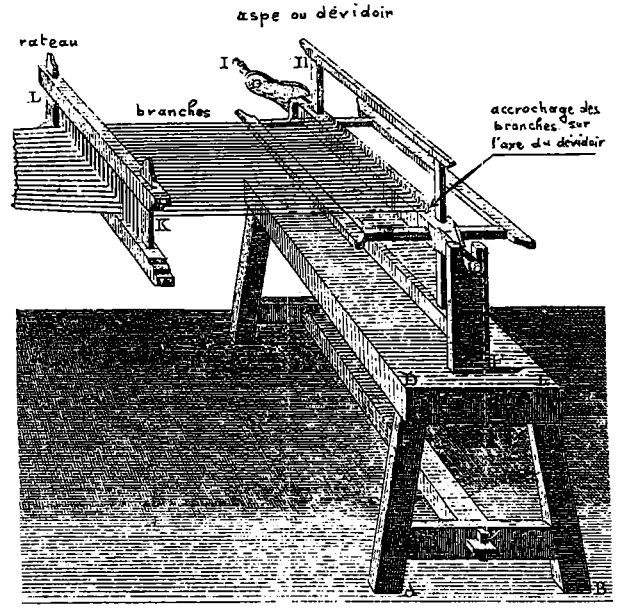
Soierie, Ourdissage et Relevage sur l'Ourdissoir long.

Mise de la chaîne sur tambour

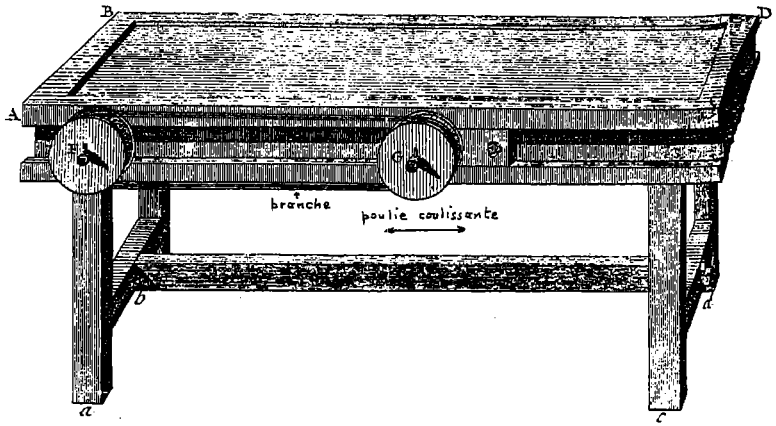


Chinage : formation des branches

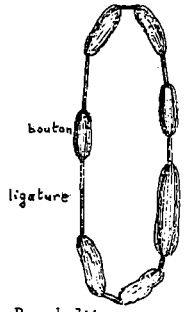




Chinage : ligature des branches



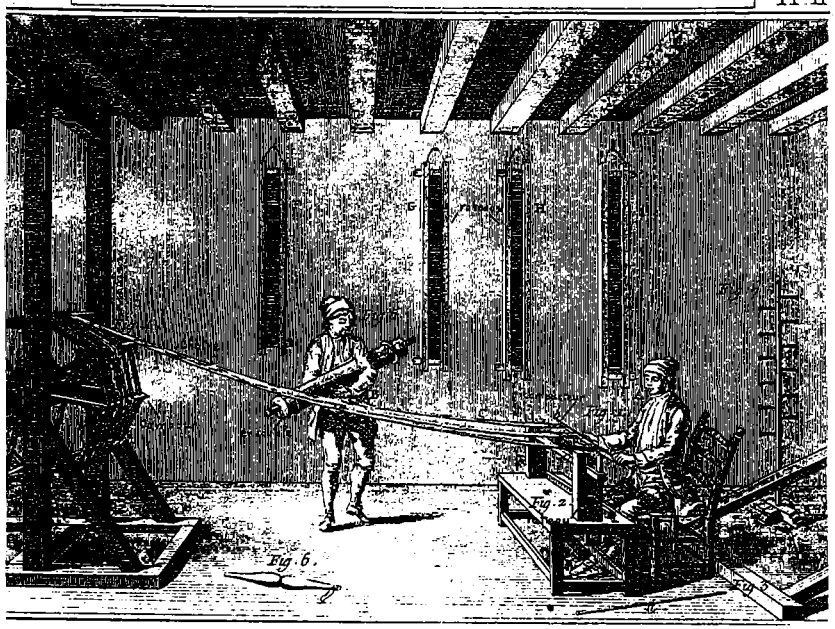
BANC à LIER



Branche liée pour recevoir la teinture

PAULET TOME 1

L'ART DE PLIER LES CHAINES POUR LES ETOFFES DE SOIE. Pl. II



Mise en place des branches

Répartition des Branches, dans les dents du rateau et leur envergeage sur un compasteur. Il faut autant de compasteurs qu'il y a de rapports de dessin dans la largeur.

Planche X

Encyclopédie de Diderot

Planche IX

PAULET TOME 1

L'ART DE PLIER LES CHAINES POUR LES ETOFFES DE SOIE. Pl. 12

Pliage de la chaine sur l'ensouple

Ensouples

Fig. 9.

rainure dans laquelle on place le compasteur

Fig. 10.

chaînes après pliage
(deux genres d'ensouples)

Fig. 11.

rateau

Fig. 1.

Fig. 3

une branche

cordon

compasteur

baguette

rateau

compasteur

une branche

Formation de l'ensouple de tissage

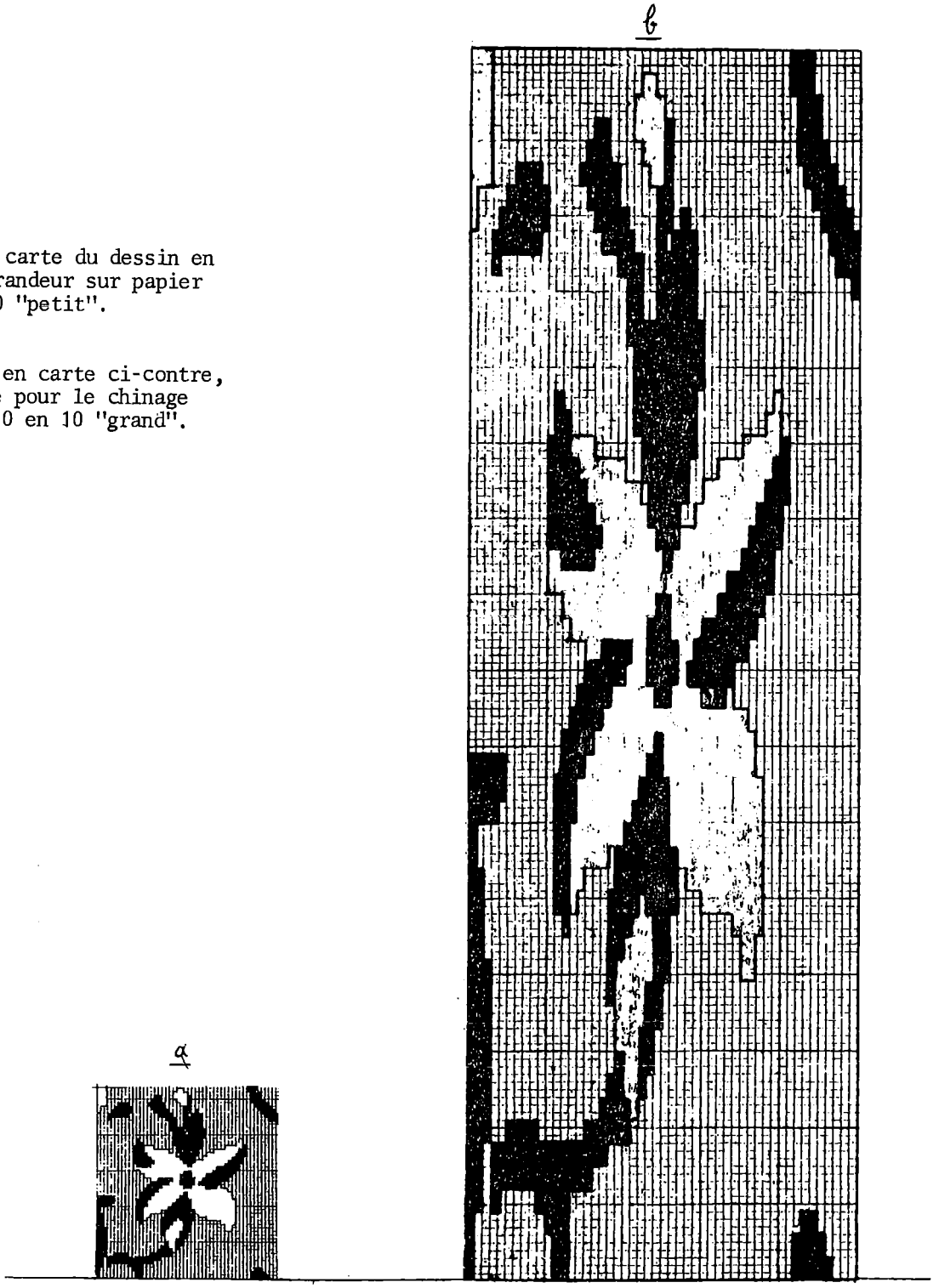
Planche XI

Velours Chiné à la Branche

Report du dessin sur papier de mise en carte

a. Mise en carte du dessin en vraie grandeur sur papier 10 en 10 "petit".

b. La mise en carte ci-contre, agrandie pour le chinage papier 10 en 10 "grand".



- Un corde de carte (sens de la chaîne) de la carte a est reportée sur une corde de la carte b.
- Un coup (sens de la trame) de la carte a est reporté sur trois coups de la carte b.

LE TISSAGE EN CARNIA ET EN FRIOUL AU XVIIIEME SIECLE
UN MANUSCRIT DE TISSERAND CARNIQUE AU XIXEME SIECLE

par Attiliana ARGENTIERI ZANETTI et Gilberto GANZER

Jacopo Valvason-Maniago s'exprimait ainsi, au XVIème siècle, à propos des tisserands de la Carnia : *"I popoli della Cargna sono gente industriosa, si partono dal loro paese in gran numero et vanno, a procacciarsi il viver in lochi lontanissimi di maniera ch'ormai se ne trovano per tutta Europa et la sua propria arte è texer panni di lana, ma piu di lino, nel che sono eccellenti e pari..."* (1) De son côté Morelli rappelle dans l'Istoria della Contea di Gorizia que les habitants du Comté de Gorice avaient appris au XVIème siècle l'art du tissage par des montagnards des Alpes Carniques. Zanon au XVIIIème siècle ajoute : *"la nazione Cargnella che dobbiamo considerare come nostra compatriota ci porta li maggiori profitti del nostro commercio attivo..."* Il s'agissait d'un commerce très actif. La Manufacture de Linussio put même être considérée parmi les plus importantes d'Europe

Jacopo Linussio naquit en 1691 à Paularo. Après avoir appris à lire et à écrire, il partit comme apprenti à Villach en Autriche, où il étudia les nouvelles techniques textiles. Ceci lui permit d'installer dans la "Casa Marchi" une filature de lin. En 1717 à Maggio Jacopo commença : *"far pettinare lini per una fabbrica di rigadini et altre telerie da biancheggiarsi che venivano manipolate da tesseri nelle provincia della Carnia..."* Grâce au travail à domicile en 1725 cette production s'était tellement accrue que la République de Venise lui accordait des réductions d'impôt. En effet le Gouverneur de Moggio informait le lieutenant vénitien à Udine que : *"La fabbrica iniziata colà con modesti principi, presentemente produce 3000 pezze impiegando più di 2600 fillere e duecento tesseri..."* L'Intendant de Tolmezzo assurait dans son rapport que plus de 150 familles travaillaient pour Linussio dans les villages des alentours *"tutte famiglie che prima erano costrette di viaggiare con sommo disagio ad esteri paesi per trovare lavoro e ora godono in casa propria con doppio vantaggio l'emolumento dell'arte"*. Quelques mois après ces rapports les *"cinque savi à la Mercanzia"* accordaient les réductions demandées et décrétaient qu'une marque de fabrique serait imprimée sur la lisière des tissus : *"in una faccia l'impronta del protetor S. Marco et in circonferenze scritto Magistrato dei cinque savi alla mercanzia con privileggi e nell'altra la marca di lui et in circonferenza Fabbrica di Jacopo Linussio in Tolmezzo..."* La même marque aux lettres entrelacées figure aussi sur les peintures que Jacopo commissionna pour la cathédrale de Tolmezzo. La république de Venise informa les ville de l'état vénitien des dispositions prises en faveur des tisserands carniques. Ceci donna lieu aux jalousies les plus violentes. En particulier on reprocha à Linussio d'avoir demandé un examen des aptitudes professionnelles des tisserands.

En 1726 le Gouvernement de Venise chargea Banderin de rédiger un rapport sur la manufacture de Tolmezzo. De ce rapport, il ressort que déjà à Udine : *"molte persone riferirono dell' incredible spaccio di roba che si fa a segno che appena levata dal telaio essa è venduta..."* Les ouvriers recevaient sur leurs gages un acompte de 33 "stare" de sel et 3000 livres d'huile. Les privilèges accordés

(1) La Carnia est la zone montagneuse au nord du Frioul et confine à l'Autriche et à la Vénétie.

eurent pour conséquence qu'on dut faire appel non seulement à la main d'oeuvre du Frioul, mais aussi de la Slovénie. En 1727, Jacopo demandait à la confraternité du Suffrage à Udine, 4000 ducats pour construire une nouvelle fabrique à Tolmezzo, cependant que Banderin demandait que la fabrique tant désirée soit construite dans le village voisin de Caneva : *"per l'espurgo delle lane, per la tentoria e per altri edifici attinenti al lavoro dei panni e mezzelane..."* En cette période Linussio perfectionna de nouveaux genres de métiers et présenta aux *"cinque savi"* 315 nouveaux genres de tissus, appelés *"Renzetto"*. Banderin lui-même rappelle que cette manufacture produisait *"Renzetti spinati di varie sorti e quadreti sul metodo di Sangallo e tele all'uso di Cremona con seta e terlizi in opera per mantilli e travaglioli..."*

En 1728 Jacopo employait 4500 tisserands en Frioul et exportait ses produits jusqu'aux Amériques. Il se tenait au courant des modes européennes par le truchement de ses agents, qui avaient mission de lui envoyer des échantillons et des Mises en carte. Lui-même avouait : *"Non cessai dallo studio e dalla applicazione indefessa di spiare nelle vicina Germania quelle altre manifatture che incontrano tanto esito nello stato Serenissimo e nell'Italia per poterle introdurre ; al quale effetto spedii delle mii agenti per tutte quelle provincie a scoprirne la diversita delle fabbriche e negozi di tellerie e a raccogliere esattamente la qualita di fili, la maniera e l'arte di manipolarle..."* En 1735 il acheta une propriété à San Vito pour le cardage du lin qu'il faisait ensuite envoyer à Tolmezzo. Le gouvernement de Venise communiqua à tous les consuls et agents du pays *"di prestare al prenominato Linussio quella protezione che più fosse per convenire alle occorrenze della fabbrica sua..."*

Linussio était ce que l'on appelle "Homo novus", bien en avance sur son temps. Cependant les autorités vénitiennes n'hésitèrent pas à l'encourager dans son activité, bien qu'il fut de leur ressort de prendre garde que : *"l'introduzione di nuove fabbriche non resti pregiudicata quella di Venezia considerata come primogenita dalla publica clemenza"*. Ce "Mercator magni nominis", ainsi qu'il fut appelé à sa mort, exportait dans le monde entier tout aussi bien aux Amériques qu'en Asie et d'Istamboul à Cadix. En 1745 il produisait 21 468 pièces et, dix ans après, 40 000!!! Avec Jacopo, sa Carnia natale traversa une période de grande prospérité. Lui-même devint un des hommes les plus riches de la République, mais il gardait une tenue simple et il refusa toujours de porter des dentelles ainsi que nous prouvent ses portraits. Il recommanda aussi à ses filles de ne pas se marier dans la noblesse. Bien qu'il fut aisé à l'époque d'acheter des lettres de noblesse, il n'en fit rien. A sa mort le lieutenant Contarini écrivit dans son compte-rendu du 4 Avril 1764 : *"Le manifatture di lino, e canepe sono ancora mantenute in vigore in quelle provincie per le benemerite cure della ditta Linussio...(e) ; quarantamila pezze di tela almeno escono ogni anno dalle fabbriche stesse..."*

Les spoliations de Napoléon entrainèrent la faillite des manufactures fondées par Jacopo Linussio ; cependant des tisserands travaillant à domicile perpétuèrent pendant tout le XIXème siècle les traditions techniques du siècle précédent. Un document fort intéressant attestant la survie de ces connaissances techniques a été découvert récemment en Frioul. Il s'agit d'un manuscrit intitulé : "Libro di tacamenti eccetera, di Antonio Michieli Filosa, 1869 Cavazzo Carnico" qui contient des tracés graphiques, des échantillons de tissus et des notes concernant la technique du tissu uni. Il constitue un précieux document historique technique du tissage populaire, même si les indications données sont personnelles et pas parfaitement scientifiques. Le manuscrit est propriété privée, mais probablement,

après sa publication intégrale, il sera donné au prestigieux Musée des Traditions Populaires de Tolmezzo-Udine, dirigé par Maria Chiussi. La partie historique de cette publication sera présentée par Gilberto Ganzer, la partie technique par Attiliana Argentieri Zanetti. Le Musée Carnique, dans la section dédiée aux textiles, a une riche collection de produits manufacturés, exécutés au métier, ou brodés, des échantillons, des cahiers de tracés graphiques et de Mises en carte. De plus il est doté d'un métier à lisses et de nombreux outils pour le tissage. Tout ce matériel date du premier quart du XIXème siècle jusqu'au premier quart du XXème.

Michieli a construit son livre en utilisant des fascicules de papier reliés avec une couverture cartonnée et dos en peau. Sur l'étiquette blanche imprimée, on trouve écrit en cursive le titre Libro di tacamenti eccetera, di Antonio, Michieli Filosa, 1869 Cavazzo. A la deuxième page il y a une autre étiquette imprimée qui porte la même inscription. Le manuscrit mesure 22 cm. de base, 32,5 cm. de hauteur, 3 cm. d'épaisseur et se compose de 236 pages. Il est écrit en cursive, le contenu est en dialecte, la terminologie technique n'est pas toujours correcte ni pertinente.

On peut diviser l'ouvrage de Michieli en trois parties :

La première est relative à la représentation d'une série de tracés graphiques qui vont de rapports d'armure de quatre fils de chaîne et quatre trames, jusqu'à des rapports d'armures de vingt-quatre sur vingt-quatre. Quarante et une pages sont consacrées à ces graphiques. Elles partent de la page 7 (les 6 précédentes sont coupées) jusqu'à la page 70. Quelques pages sont laissées blanches. Le premier tracé graphique porte le numéro 13 ; au total il y en a 195. En général chacun a en bas, une légende relative à l'usage qu'on faisait du tissu : *"braghe"* pantalons, *"copertori"* couvertures, nappes etc... ; à la technique employée : *"tela"*, taffetas ; *"spinadon"*, chevron ; *"lentima"*, sergé ; *"diamantina, occhio, mandola"* losange, satin, damas ; au procédé qu'on devait utiliser pour le remettage, *"incorso, corsare, manighe"* ; au marchage *"camminare"*. L'attachage correspond en général au rapport d'armure.

La deuxième partie (31 pages) concerne la *"Memoria dei tessuti"*, c'est-à-dire les notes du tissage et on y trouve l'année, le mois, le jour de livraison de chaque tissu exécuté et le nom de l'acheteur. L'auteur spécifie la technique d'exécution et l'usage qu'on faisait de l'étoffe : *"Tela"* taffetas pour chemises ; *"rigadin"* tissu à petites raies pour *"braghe"* pantalons, etc... La hauteur et la longueur de la pièce sont exprimées en *"bracci"*. La préparation de la chaîne est notée en détail. On spécifie aussi le nombre des fils, au peigne, au centimètre et on décrit le matériel employé en chaîne et en trame. Les poids sont exprimés en livres, le titre des fils et les couleurs sont aussi détaillés. Le pourcentage du rétrécissement et le rendement par rapport aux différents matériels et aux différentes techniques de tissage ne sont pas oubliés. Le prix du tissu et le coût des matériaux employés sont annotés en *"centesimi"*, centièmes ; *"soldi"*, sous ; *"veneta lira"*, lire vénitienne.

Les recettes pour teindre les fils sont aussi données. Dans les recettes pour la couleur "café" on cite tous les ingrédients employés : *"terra cattù"*, terre catù, ou cachou de laval (la plus ancienne couleur au soufre) ; *"vitriolo di Cipro"* vitriol de Chypre ; *"cromato di potassa"*, chromate de potassium ; *"potassa"*, potasse ; les quantités sont exprimées en kilos et en onces. Les proportions pour faire ces couleurs, sont spécifiées selon la quantité du matériel à teindre. Michieli parle des *"caldieri"*, c'est-à-dire des chaudrons aptes à la

teinture, de la quantité et de la qualité d'eau employée, *"netta"*, *"dibole"*, *"fresca"*, nette, faible, fraîche ; du procédé de lavage des fils ; des différentes immersions dans la teinture ; de la dimension du bâton que l'on emploie pour enfiler les écheveaux, qui doit être situé sur *"i caldieri"*, les chaudrons ; des bains relatifs, des ébullitions, des pressages ; de l'aération que les fils doivent subir pour ne pas sécher complètement entre un procédé et l'autre ; des temps nécessaires pour chaque opération.

Dans la *"memoria"*, la recette, concernant la teinture noire pour coton, Michieli mentionne aussi le liquide de fond pour obtenir la couleur bleu-céleste et la règle pour teindre la laine avec la teinture noire préparée pour le coton. Il spécifie aussi les ingrédients, terre catù, vitriol de Chypre, chromate de potassium, soude ou potasse, vitriol noir, bain de campêche. A la page 108, on trouve la recette pour faire la couleur bleue. Elle est assez *"intricata"* embrouillée, parce qu'elle exigeait une grande expérience et coûteuse à produire, surtout si l'on pense au nombre d'ingrédients qu'il faut employer et au nombre de fois où les opérations doivent alterner avec des temps de repos. Pour la réussite de cette teinture Michieli souligne l'importance du récipient qui doit être une cuve à forme *"di pigna"*, de pigne. Haut. 1,80 m., diamètre de bouche 0, 65 m., fond 0,85m. D'autres recettes concernent le bleu turquin avec indigo, la couleur orange rouille, la couleur café foncé et le rouge. Les fils teints et les fils non teints peuvent être utilisés ensemble.

Les matériaux utilisés par Michieli, en chaîne et en trame, sont en général : le coton *"ugniolo"*, *"doppio"*, *"ritorto"* simple, double, retors (au cas contraire Michieli spécifie numériquement le titrage par les numéros 3. 4. 6. 8 double, 10. 10 double, 12. 12 double, 16. 16 double) ; le chanvre filé fin ou le chanvre filé à la maison et pour cela irrégulier ; l'étoupe ; le lin ; la bourrette et la bourrette de maison ; la laine filée à différentes torsions.

La troisième partie du livre comprend 18 pages et 186 échantillons (collés, malheureuseument). Les 45 premiers sont numérotés au moyen d'une petite étiquette placée dans le coin. Deux bandes larges de 6 cm. et longues respectivement de 27 cm. et 31,5 cm. sont aussi collées dans une page. Elles comprennent 15 échantillons numérotés, tissés avec une chaîne de coton blanc à 1 bout, torsion "Z". Le remettage est à pointe, mais attachage et marchage sont différents. Les trames sont de coton (1 bout, torsion "Z"), de chanvre (1 bout, torsion "Z"), et de laine (1 bout, s.t.a.). Tous les échantillons sont des tissus unis, de vêtements pour hommes et pour dames, exécutés avec de la laine, du lin, du chanvre, du coton et de la bourrette. (de 20 à 70 fils au cm. en moyenne et de 11 à 47 coups au cm. en moyenne). Il y a aussi des tissus pour l'usage de la maison, en chanvre, coton, lin, étoupe et bourrette, teints en fils dans les couleurs déjà mentionnées (de 13 à 22 fils au cm. en moyenne et de 11 à 18 coups au cm. en moyenne). Le coton teint en fils de couleur vert foncé est employé en chaîne seulement pour 3 échantillons (20 fils au cm., torsion "Z"). Le même matériel est employé en trame pour 3 échantillons (18 coups au cm. environ, torsion "Z").

Pour une analyse méticuleuse et détaillée du tissu, les experts en textiles reconnaissent qu'il faut examiner l'échantillon à l'endroit et à l'envers. Malheureusement, en ce qui concerne les 186 échantillons collés, quelques uns seulement ont été analysés à l'endroit et à l'envers. On n'a pas pu faire l'analyse technique des fils de la chaîne et de la trame sur tous les échantillons, en raison du collage.

Remettage, attachage, marchage, armure, réunissent tous les éléments dont le tisseur peut avoir besoin. Michieli représente ces opérations en dessinant un graphique composé d'une série de lignes horizontales parallèles, où les espaces déterminent le nombre des lisses. Le remettage, défini par le nom de *"incorso"*, *"corsare"*, *"manighe"*, est dessiné, sur la série de lignes horizontales, par des traits verticaux ou par des lignes inclinées qui ont la direction "S." ou "Z." et convergentes... C'est une méthode qui simplifie la représentation graphique, puisque chaque intervalle coupé par un simple tiret indique une maille et, en termes techniques, se trouve à la place d'un quadrillé noir. Lorsque Michieli dans un remettage devrait dessiner une série plutôt nombreuse de fils, qui doit être passée dans les mailles des lisses, employant la même énumération, il ne la dessine pas entièrement mais il met un chiffre arabe sur la petite séquence indicative pour montrer combien de fois elle doit être répétée. D'autres représentations de remettage sont données par des chiffres arabes placés dans les espaces qui indiquent l'ordre de passage des fils dans les mailles ; il y en a d'autres où les chiffres alternent avec des tirets. On fait la lecture du remettage, en allant de droite à gauche, de bas en haut et l'indication de la direction est donnée par un cercle placé généralement en bas à droite, sur la première ligne. Dans d'autres remettages, des cercles, placés en haut ou en bas sur les traits déterminant la séquence du remettage, servent pour indiquer la direction.

Presque toujours à gauche de ce tracé, Michieli dessine une série de lignes parallèles, perpendiculaires aux premières. Dans le réseau de lignes qui se forme, il dessine le rapport d'armure correspondant à l'attachage des marches qu'il appelle *"tacamento"*. Le marchage n'est jamais dessiné. Plusieurs fois dans l'annotation placée sous tous les graphiques, on trouve écrit *"corsare e camminare come sopra"*, remettage et marchage comme indiqué. Quand il n'y a pas d'indication précise du marchage, où si cette indication manque, on suppose que le marchage respecte l'ordre du remettage. Dans l'étude que j'ai faite sur tous les graphiques et sur tous les échantillons, j'ai exécuté des analyses systématiques et méthodiques et j'ai examiné les graphiques les plus représentatifs, en partant de ceux qui sont composés d'un rapport de quatre fils et quatre trames, jusqu'à ceux dont le rapport chaîne et trame est beaucoup plus important. J'ai suivi particulièrement la technique d'exécution en relation avec l'usage qu'on faisait du tissu. Après avoir dessiné le graphique de l'armure conformément à l'usage actuel, j'ai tissé une série d'échantillons. Ceux que j'ai exécutés sont une reproduction technique qui n'est pas nécessairement parfaitement fidèle, mais qui respecte les indications de Michieli quant aux types de fils employés en chaîne, en trame, au titrage, aux torsions, aux couleurs, au nombre de fils dans le peigne par centimètre et à leur usage. J'ai exécuté un certain nombre d'expériences de tissage dans mon atelier, les autres ont été faites avec la collaboration de quelques élèves qui fréquentent l'atelier de tissage annexe à l'Ecole d'Etat des Arts où j'enseigne technique et projet.

L'analyse scientifique suivie de la phase de recherche opérative, m'ont amenée à poursuivre une série d'expériences consistant à employer, avec des matériaux et des couleurs appropriés, les armures de Michieli si parfaites et équilibrées dans leur harmonie, pour exécuter des tentures, même de grandes dimensions. La rustique "toile à sac" peut, à l'aide de modifications habiles, se transformer en tissage à trois dimensions jouant avec l'espace.

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ANALYSE TECHNIQUE DES ECHANTILLONS

Pour la classification technique de chaque échantillon de tissu, j'ai utilisé un dossier de recensement simplifié sur le modèle du CIETA

Dans le texte j'ai employé les abréviations suivantes :

L.T. : Livre de "Tacamenti"

A.M.F. : Antonio Michieli Filosa

I.S.A. : échantillons exécutés par les élèves de "Istituto Statale d'Arte" - Udine

F.B.F. : échantillons exécutés dans mon atelier par Fiorella Bues Fasciati

A titre d'exemple, nous donnons les précisions suivantes sur le tissu n° 1 (Sergé 5 lie 3).

Dans ce tissu : le "Tacamento" (remettage) possède deux types de remettage, exécutés tous deux sur huit lisses.

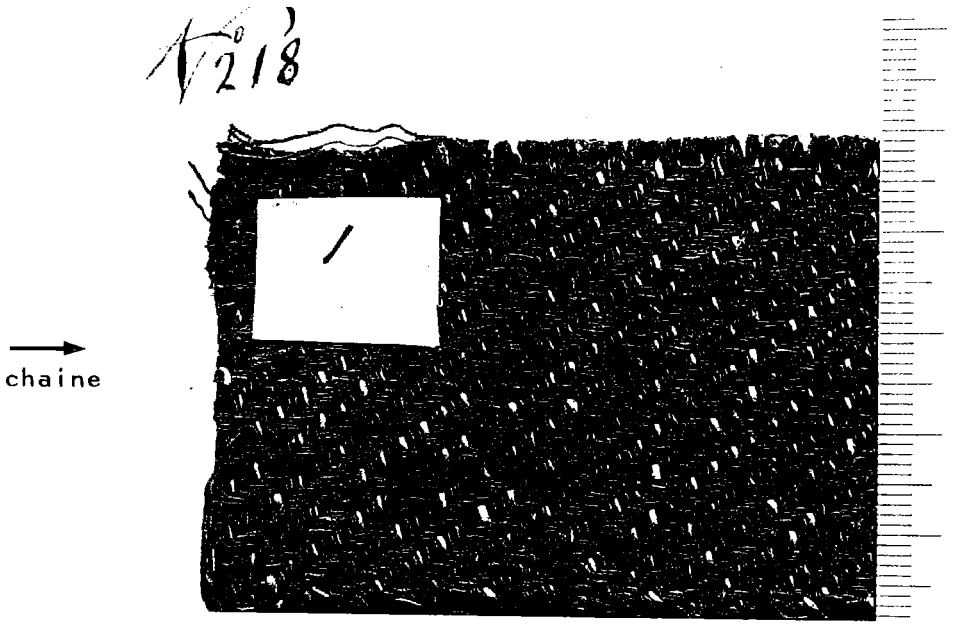
Le premier remettage est suivi :

- Le 1er fil, celui de droite, est passé dans la 1ère maille de la 1ère lisse (maille de droite de la lisse de devant).
- Le 2ème fil est passé dans la 1ère maille de la 2ème lisse, et ainsi de suite jusqu'a la 8ème.

Le deuxième remettage est en deux corps, et les fils sont répartis à raison de 8 fils sur chaque corps :

- Le 1er fil, celui de droite, est passé dans la 1ère maille de la 5ème lisse.
- Le 2ème fil est passé dans la 1ère maille de la 6ème lisse, et ainsi de suite jusqu'à la 8ème, par deux fois.
- Le 9ème fil est passé dans la 1ère maille de la 1ère lisse de devant.
- Le 10ème fil est passé dans la 1ère maille de la 2ème lisse et ainsi jusqu'au 4ème par 2 fois.

ECHANTILLON N°1



L.T. de A.M.F., page N° 218. Graphique n° 3. p. 61.

Tissu Sergé pour habillement. Possède une lisière.

Dimensions du document : Hauteur : 8 cm. - Largeur 4,7 cm.

Qualification technique : Sergé 5 lie 3 - (direction "S" sur la face trame)

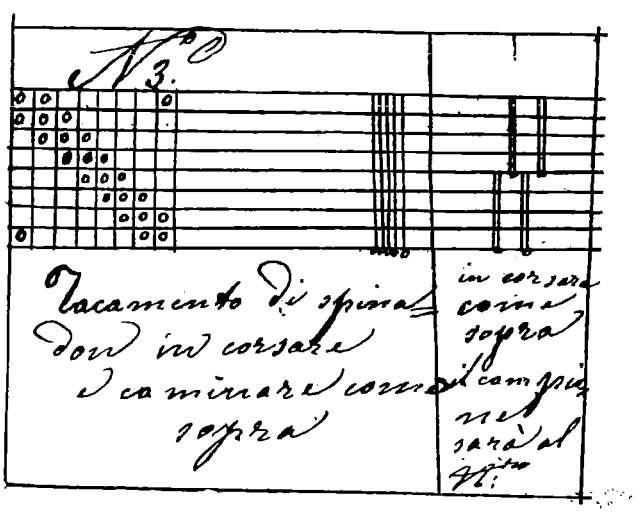
Chaîne : Matière : Coton, 1 bout, torsion "S", coloris café
Réduction : 10 fils doubles, au cm.

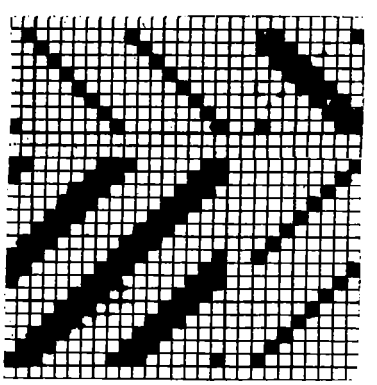
Trame : Matière : Coton.
1er coup : 1 bout, "S" coloris café
1 bout, "S" cororis bleu - assemblés à faible torsion "Z".

2ème coup : 1 bout, "S", coloris café
1 bout, "S", coloris jaune - assemblés à faible torsion "Z".

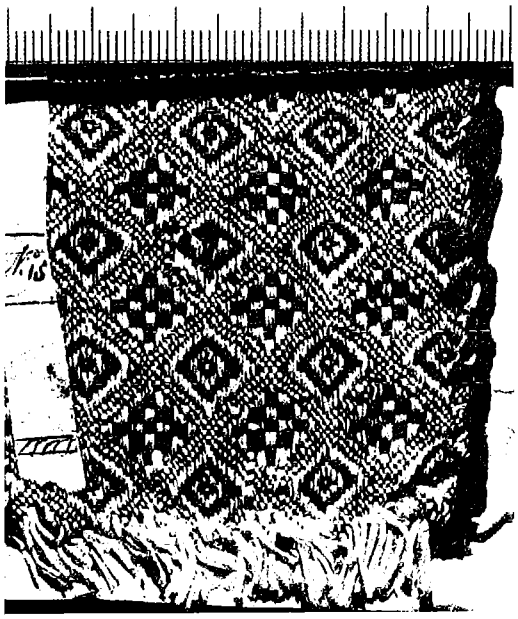
Réduction : 14/15 coups au cm.

Commentaires : L'aspect du tissu, comme on pourra le remarquer sur la photographie est mélangé. Cela est dû à l'assemblage des coloris qui constituent la trame. Teinture en fils.





ECHANTILLON N° 2



L.T. de A.M.F., page 225. Echantillon N° 15.

Tissu à décor de losanges

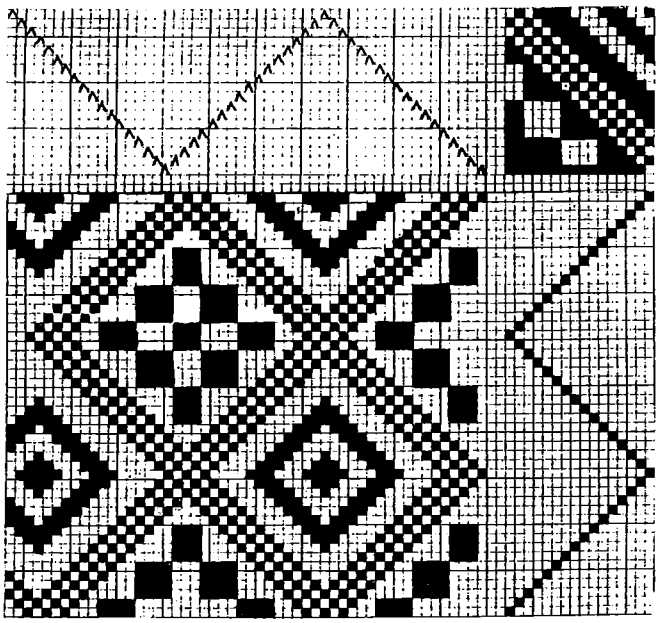
Dimensions du document : Hauteur : 5 cm. - Largeur 6 cm.

Qualification technique : Taffetas à décor de losange (pointes simples, remettage à retour).

Chaîne : Matière : Coton, 1 bout, torsion irrégulière "Z", coloris blanc.
Réduction : 22 fils au cm.

Trame : Matière : Coton, 1 bout, torsion irrégulière "Z", coloris café.
Réduction : 18 coups au cm en moyenne.

Commentaires : La torsion faible et irrégulière des fils et des coups, produit, au tissu, des losanges irréguliers.



ECHANTILLON N° 3

L.T. de A.M.F. graphique N° 6, page 49, F.B.F.

Echantillon de tissu pour treillis. Possède deux lisières.

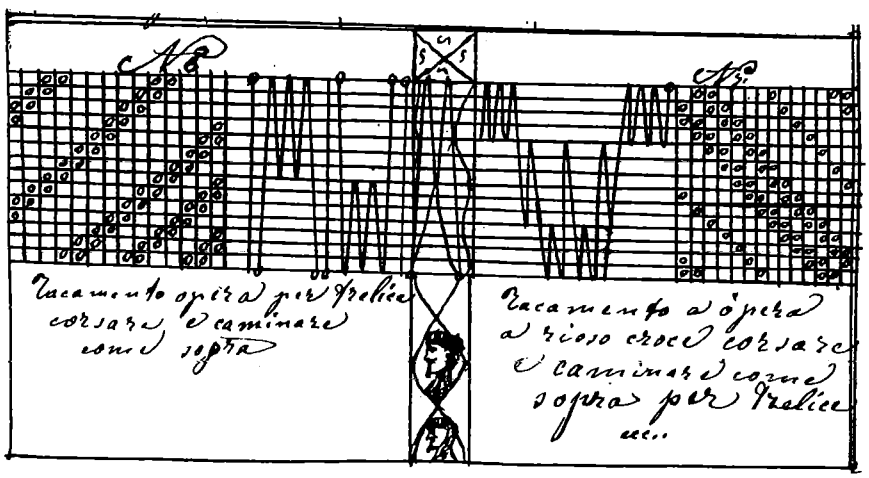
Dimensions du document : Hauteur : 11,5 cm. Largeur 20 cm.

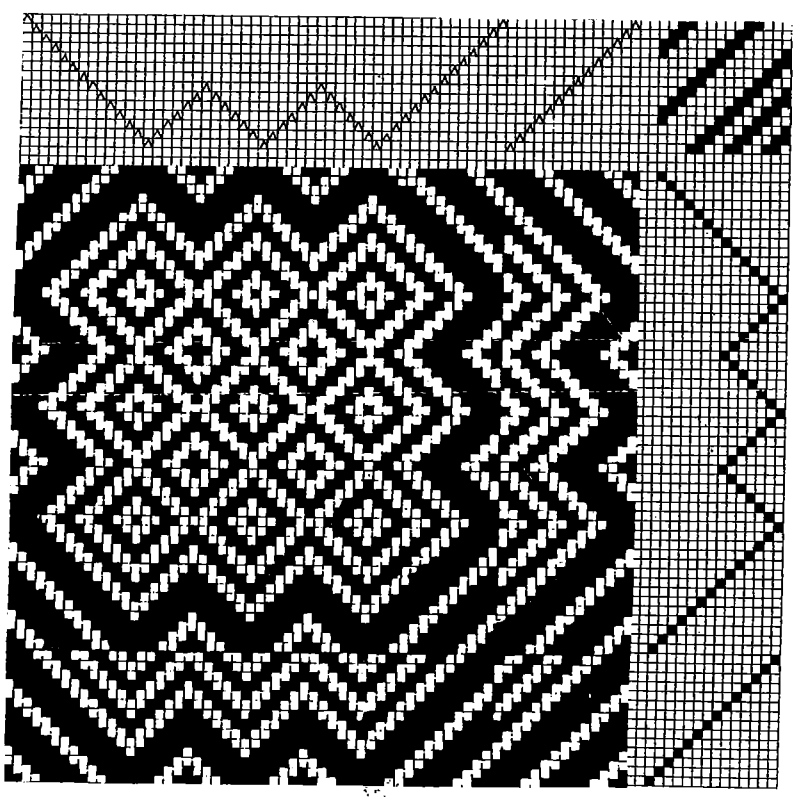
Qualification technique : Losanges fantaisie à encadrement de chevrons.

Chaîne : Matière : Coton, 3 bouts, forte torsion "S", coloris blanc.
Réduction : 15 fils au cm.

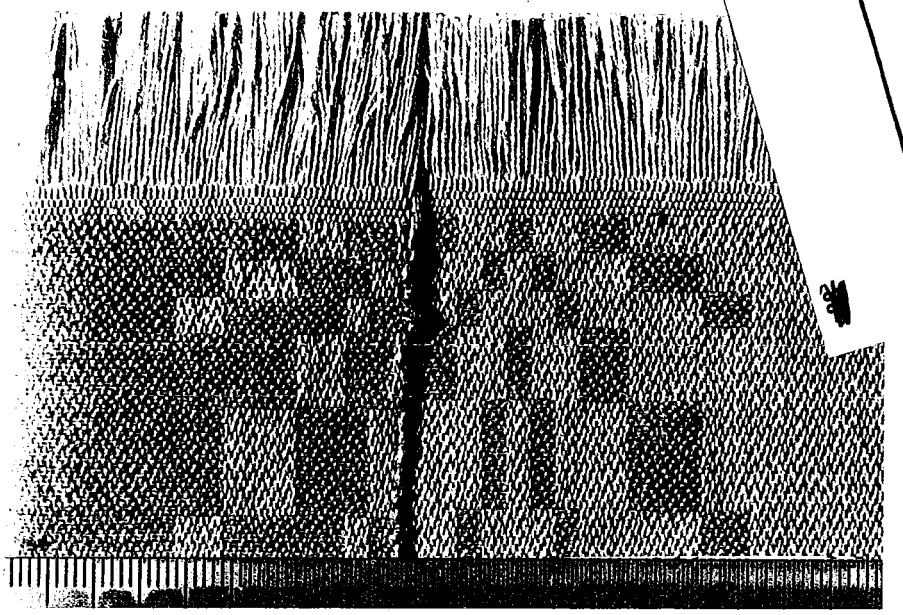
Trame : Matière : Coton, 1 bout, sans torsion appréciable, coloris bleu.
Réduction : 11/12 coups au cm.

Lisière : 2 fils doubles.





ECHANTILLON N° 4



L.T. de A.M.F. graphiques, page 25 ; page 13. N° 32. page 20 N° 59.

Tissu pour serviette. Possède deux lisières.

Dimensions du document : Hauteur 6 cm. Largeur 18 cm.

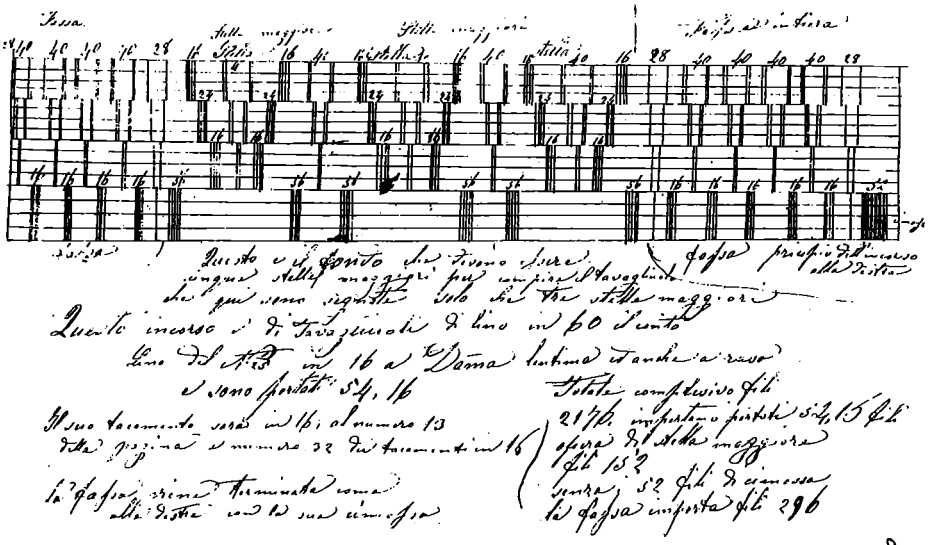
Qualification technique : Damassé, base satin de 4.

Chaîne : Matière : Lin, retors 2 bouts, torsion "Z", coloris beige foncé.
Réduction : 30 fils au cm.

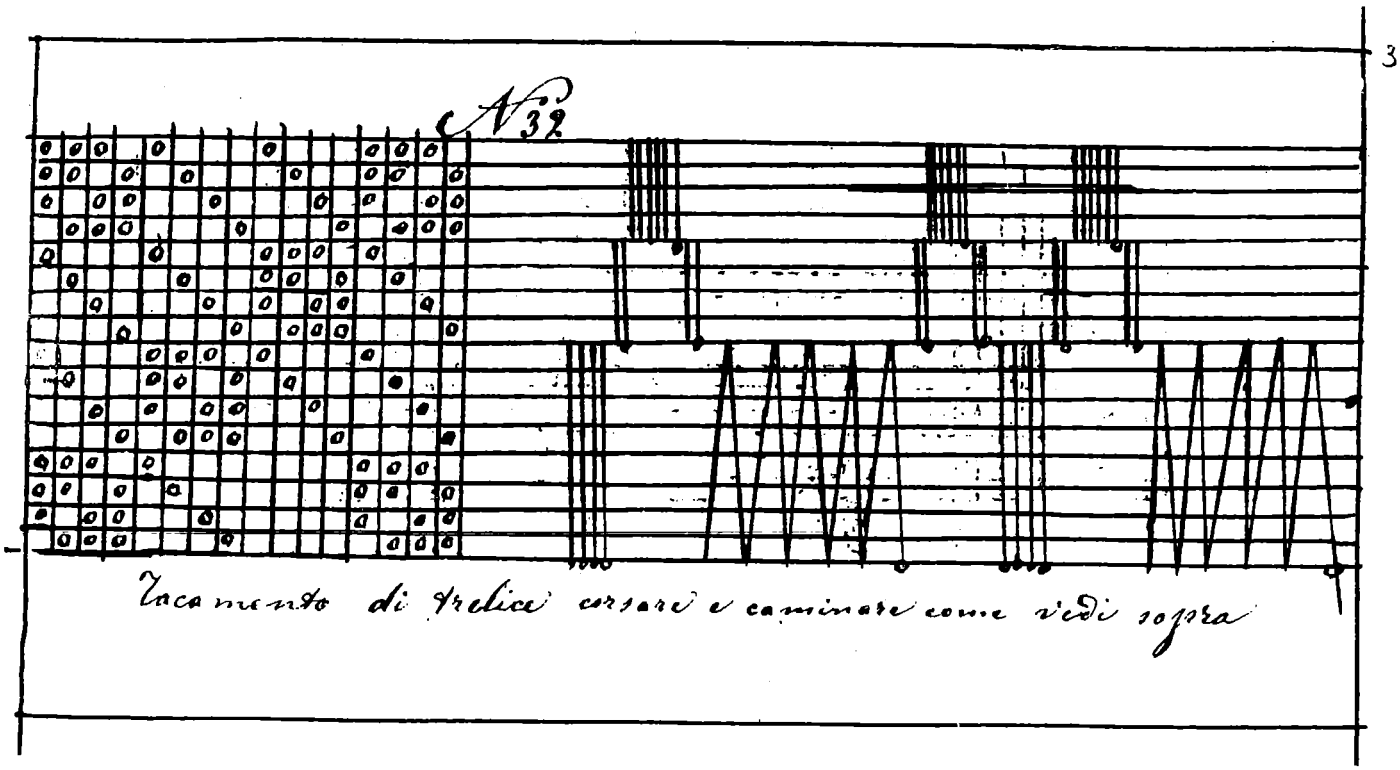
Trame : Matière : Lin, retors 2 bouts, faible torsion "Z", coloris beige foncé.
Réduction : 20 coups au cm.

Lisière : 2 fils doubles

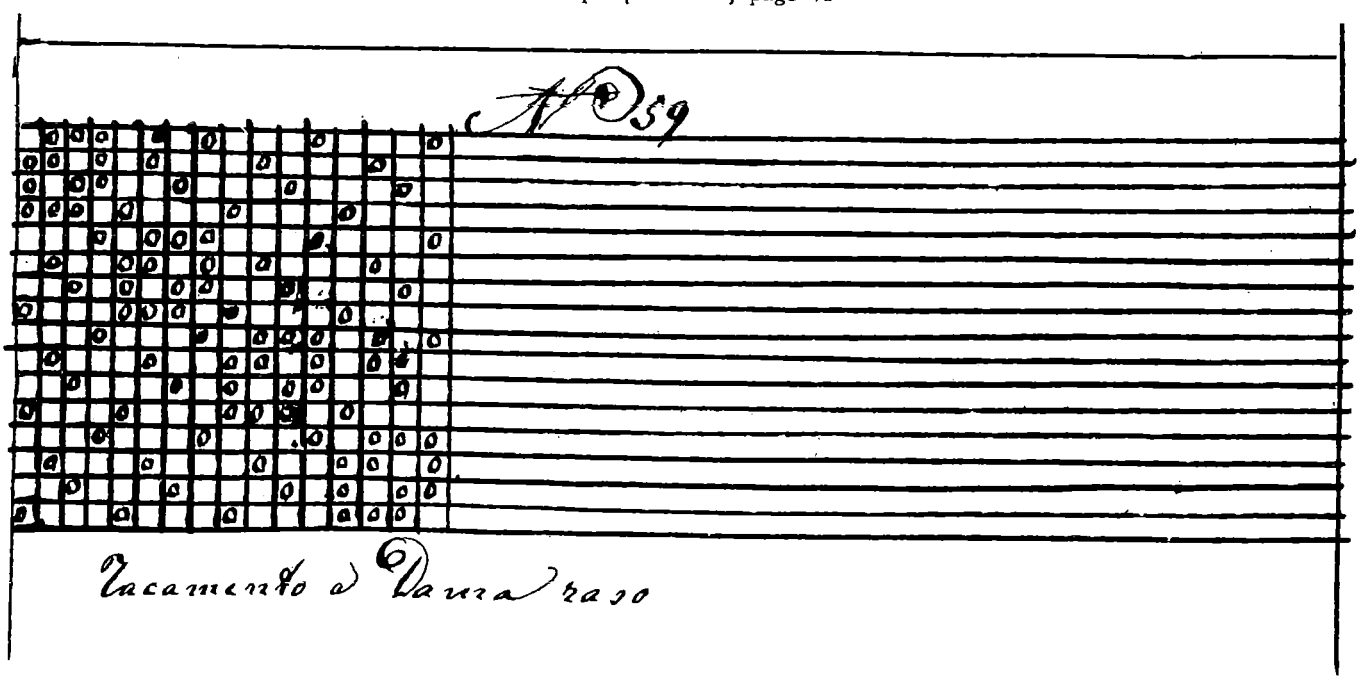
Commentaires : Michieli spécifie toutes les modalités techniques pour exécuter la serviette qui doit avoir "5 étoiles majeures", bandes latérales et lisières.
Il propose la technique du sergé 3 lie 1, graphique N° 32 et de celle du satin de 4, graphique N° 59.



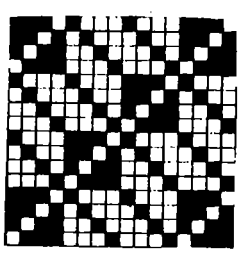
Graphique de la page 25.



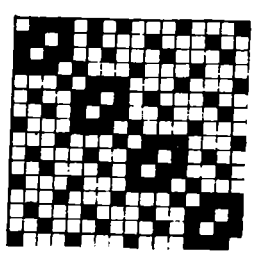
Graphique N° 32, page 13



Graphique N° 59, page 20



Partie gauche du graphique N° 52



Partie gauche du graphique N° 59

Summary

Linen weaving was a very prosperous industry in Carnia and Friuli during the 18th century. Jacopo Linussio set up his first factory in 1717. Thanks to the protection of the Venetian government, the undertaking became extremely successful, so that by 1728 Jacopo employed 4500 weavers and was exporting his products as far afield as the Americas. In 1745 he produced more than 20 000 pieces and in 1755 more than 40 000. He became one of the richest men in the Venetian Republic.

Napoleon's victories put and end to the Linussio factories, but their traditions and techniques were preserved by weavers working privately. A relic of this tradition is an extremely interesting manuscript, recently discovered, the Libro di tacamenti eccetera, di Antonio Michieli Filosa, 1869 Cavazzo Carnico. It contains the detailed technical notes diagrams, samples, etc., of Antonio Michieli Filosa. The present article is a study of a number of examples selected from the manuscript. The manuscript is to be published in its entirety by Attiliana Zanetti, with the assistance of Gilberto Ganzer, and will then be deposited in the Museum of Popular Arts and Traditions, Tolmezzo-Udine.

In memoriam Alice Balwin Beer

RARE COPTIC TEXTILES WITH BUCOLIC AND MYTHOLOGICAL ICONOGRAPHY (1)

by Deborah THOMPSON

The first time the link between literature and tapestry weaving was systematically explored was in Kurt Weitzmann's paper (2) on textile representation which is a reflection of a lost book illustration. His subject was a small brown-and-white tapestry medallion (12,5 cm. dia.) (3) in the Frankfurt Museum für Kunsthandwerk (fig. 1). On it is seen the submission before Iphigenia, priestess of Artemis (whose statue is in the center), of her brother Orestes and Pyladès ; in Euripides' lost drama, from which this scene derives, she was then supposed to sacrifice the two men. The altar is seen between the two bound captives.

The Frankfurt tapestry is woven on an S-spun linen warp and contains undyed unspun silk wefts, and wefts of S linen, Z brown wool, and a mixture of unspun silk and S linen. Parallels to certain features of the scene : the barbarian warrior at the right, Iphigenia's knife, the pose of the two prisoners, were found by Weitzmann in sarcophagus reliefs (which themselves, he postulated, reflect narrative illustrations) and in Pompeian wall painting, with its more emblematic, mosaic-like, type of composition. Weitzmann dated the tapestry ornament in the sixth to seventh century and viewed it as an Egyptian work derived from Alexandrian tradition, seeing in it a witness, like later Byzantine works of art, to the continuing vitality of literary works which subsequently disappeared. The textile's unusual silk wefts (see note 3), were not made known until 1978, and this aspect of the work might have influenced Weitzmann's dating.

In cataloguing and studying numerous Coptic textiles I have become aware over the years of a handful of other tapestry ornaments which can be associated with the tradition of the Frankfurt medallion, and which also are late antique depictions of literary themes. Excluded from consideration here are the many inwoven tapestry ornaments which reflect a generalized Dionysian meaning, showing dancers, musicians, nymphs, and the like. The latter are usually in the conventionally called "purple-and-white" group (the purple is actually most often a brownish, and sometimes a maroon dye color) though red-and-white is a fairly common variant of the purple-and-white group of Coptic textiles. In the other rarities we shall discuss, natural rather than dyed yarns and muted effects similar to natural yarns, create the predominant effect, and it is possible, given the evident luxury in weave and careful delineation of the scene, that the brown in the Frankfurt medallion is a natural yarn.

In contrast to the black-figured style of the Iphigenia scene is a fragmentary tapestry square in the Dumbarton Oaks Collection with a Dionysian scene much more specific in its details than the scenes on most Dionysian Coptic ornaments (4) (fig. 2) ; it is 11,5 cm. in height. It presents a scene of Dionysian celebration of the kind often scen on Roman sarcophagus reliefs, with Silenus at the left raising a wine bowl, a drunken central figure possibly with Dionysos' nebris projecting and thus the god himself, if not Pan who often appears with him (5) ; and the dancer leaping over a pedum at the right, probably the satyr who is frequently represented with Dionysos (or Herakles) and Silenus.

Semi-recumbent bacchantes appear on representations of thiasoi, (6) and the figure below is probably one of them ; it appears to wear blue trousers, a conventional indication that the figure is not Greek. Thus although its pose is somewhat comparable to that of the right and (nude) captive on the Frankfurt textile, the presence of trousers may suggest the influence of another iconographic source. Weitzmann suggests the possibility of influence from the Dionysiaca of Nonnus, as well as from texts in which Dionysos himself was bound. However, this line of inquiry is unsatisfactory because of the loss, pointed out by Weitzmann, of Hellenistic Dionysian literary cycles. The Dionysiaca, of the fifth century A.D., contain a few generalized descriptions of bound Indian captives but they hardly appear relevant to scenes of figures surrounding a statue of a divinity, or of Dionysian thiasoi (7).

Unlike the Iphigenia ornament, the Dumbarton Oaks piece contains no silk but it is extremely finely woven one-tapestry on S linen warps, both slit and interlocked (the latter finish is relatively uncommon in Coptic weavings), and has a predominantly natural brown effect because of the brown background and natural tan bodies, which is only modified slightly by dark - and various light-blue touches. For convenience, textiles in this range of muted colors can be called "brown-tone" weavings. The Dumbarton Oaks textile resembles the Iphigenia ornament in Frankfurt in reflecting the mythological-literary tradition as interpreted in classical art rather than the generalized Dionysian imagery of more commonplace Coptic ornaments. And although the Dumbarton Oaks tapestry itself is without silk, it has a counterpart in basic iconography which contains silk wefts : a textile excavated at AKhmīm/Panopolis in the late nineteenth century and now in the Cooper-Hewitt Museum (8) (fig. 3). The animal border of this example is taken from the common conflation of Dionysian and hunting imagery and is of extremely fine style, comparable to such borders in mosaic and metalwork ; it has less finely drawn parallels in more typical Coptic textiles. The background is yellowish, because it is composed of yellow silk and linen wefts carried in pairs.

The scene is of a central Dionysos with wine bowl and dagger (?), flanked by a dancing satyr with clappers and a dancing male with an animal skin on his shoulder. A panther is seen between the god's legs. The recumbent bacchantes below are trousered as on the Dumbarton Oaks textile but because the framework is a square there is less feeling of compression in their poses. Nevertheless, the captive on the left has his outer leg pulled back as if confined by the border, and the outstretched leg of the one on the right is confined in a way that recurs on a rendering derived from the Iphigenia scene (a textile in the Princeton Art Museum, our fig. 4, which is discussed below). This suggests that the Iphigenia scene was more widespread and influential than was previously thought, and contributed to the iconography ot this special group of expensive textile ornaments.

The arms of the two men at the left on the Cooper-Hewitt piece are bound behind their backs as on the Frankfurt textile, while the figure on the right holds his hands in front. To explain the dagger held by Dionysos (we should recall that Iphigenia holds one on the Frankfurt tapestry) and the bound captives as a reference to occasional human sacrifices in the Dionysian cult seems unconvincing in view of the correspondence in some details of the captives' poses with those of the Frankfurt roundel.

A few other important Coptic textiles with Dionysos reflect the iconography of sophisticated late antique art rather than the more provincial or idiosyncratic Coptic milieu (9), but we are more concerned here with a number of rarities which iconographically, coloristically, and technically seem to form a group.

Another rarity unites iconographic and technical features found in the Frankfurt roundel and the Dionysian thiasos. An all-wool tapestry square in the Princeton Art Museum (10) with its central statue of a divinity (fig. 4) is probably a later reflection of the scene in which the figure of Iphigenia as priestess has been replaced by a huntsman-warrior. This time, Thoas, the barbarian king with the Phrygian cap on the Frankfurt textile, is transformed into the archer at the left, and a huntsman in late Roman dress is at the right. The altar has disappeared. The object held by the statue of Artemis -we can tell it is one because it is shown on a plinth- is unclear because of damage. The captives in the lower field are two in number as on the Frankfurt tapestry, but trousered as in the Dionysian thiasoi. Lessened understanding of the iconography can also be seen in the fact that only one is bound ; the other has his hands extended showing influence from the pose of semi-recumbent bacchantes, as on the Dionysian textile from Akhmīm in the Copper-Hewitt Museum. However, the third captive from our Dionysian scene now fills the upper right corner, opposite a Nike who extends a wreath to the statue of the divinity, a motif borrowed from adventus and triumph iconography, and an indication of the passage of time since the prototype for the Frankfurt Iphigenia roundel was composed, because it shows the tendency to divide the field into an heraldic composition without regard for its components. The dolphins in the corners display the common antithesis in decorative art between Earth and Ocean which I discussed in a recent paper (11).

This tapestry is one of three of similar size (approximately 14,0 cm. square) cut from the same wool garment, which was probably a cloak worn over a decorated linen tunic (12). The other two textiles both show Orpheus with plectrum and lyre, possibly again a statue, amidst the animals (13), with minor differences between them (fig.5). Though relatively uncommon, Orpheus appears in Coptic sculpture, a few textiles, and a rare ink drawing on papyrus which is organized as a textile pattern (14). These three textiles have a most unusual color scheme -a light mauvish, almost ecclesiastical purple in the dark figures, contrasted with natural yellowish wool recalling the yellowish background of the Akhmīm Dionysos square, and a few linen accents. (The purple was analysed and is not true shellfish purple) (15). This set of woolen tapestry ornaments takes its iconography from the late antique complex of literary and mythological themes seen in other media rather than from the reductive patterns seen on more numerous and typical Coptic textiles. This feature, combined with their essentially monochrome coloration and wool composition using a natural wool with a yellowish cast, makes these squares best understood as variants of the unusual textile tradition which is under consideration.

Because of the confused iconography in the Princeton Artemis square, as compared to the Frankfurt Iphigenia medallion (which we must recall contained silk) there is further reason to question Weitzmann's dating of the latter in the sixth to seventh century. The Frankfurt roundel may well date from the fourth to fifth century, a period when valuable imported silk wefts would still be used sparingly in luxury garment ornaments woven by the tapestry technique, while the Princeton and Dumbarton Oaks Artemis and Orpheus squares would date a little later, probably in the sixth century. By then, luxury weavings containing silk would be more likely to be experimental drawloom textiles or embroideries. Since they were apparently woven into a cloak, the absence of silk in the Princeton-Dumbarton Oaks set has no bearing on considerations of date.

Striking in the Orpheus and Artemis textiles at Dumbarton Oaks and Princeton is the fine horizontally fluted treatment of the drapery, which apparently originated in the fourth-century sculptural tradition of Ahnās (16). However, there are other features, notably the hieratic pose within a circular field with animals in slightly overlapping planes, which is found on a sixth-century mosaic emblem comparable to the Orpheus textile (17), and the confused iconography of the Artemis square, that suggest considerable distance from the prototype and the appropriateness of a sixth-century dating.

The well known set of wool tapestry ornaments with scenes from the bucolic literary tradition, of which one roundel is in the Musée de Cluny (18) and four roundels and clavus fragments in the Brooklyn Museum (19), presents another literary theme in textiles with similar characteristics. Bucolic or pastoral iconography was a creation of the Hellenistic age, specifically of the literary tradition which began with Theocritus. His poetry expressed the impulse seen in the taste for "genre" figures in Hellenistic sculpture -in figures such as market women, foreigners, cripples, drunkards, the old, the so-called Hellenistic "Rococo", as well as for individualized portraits, all showing a new "susceptibility to nature" (20). Vergil and Longus maintained the popularity of the literary pastoral, which is reflected in late antique art, particularly in North African mosaics (21), Interestingly, Alexandria was a center for the rococo type of Hellenistic art in the third century (22), though the type then spread throughout the Mediterranean basin. Weitzmann has shown that the precisely drawn scenes on the Brooklyn-Paris ornaments probably reflect book illustrations of the Idylls of Theocritus or Eclogues of Vergil (23).

The Brooklyn and Paris textiles are characterized by a muted color scheme based on delicate brown shades but while the Brooklyn pieces have tannish backgrounds, the Cluny medallion displays a somewhat redder color, still muted in comparison with a true red ground, but not completely in the brown-tone scheme of things. The various groups of red-ground Coptic textiles, among which are found exceptional classicizing large-scale tapestries (24), present a series of problems some of which I hope to explore later in this journal. It is sufficient here to say that by the date suggested for the Cluny-Brooklyn textiles, there was undoubtedly mutual influence among the different stylistic and technical tapestry traditions, and since a red background was often used in small- and large-scale classicizing tapestries, the reddish yarn of the Cluny piece must have appeared as an appropriate variation to the weaver of what is essentially in the brown-tone tradition. The Cluny piece may actually have come from a different set of garment ornaments.

The extraordinary ornaments with bucolic scenes in Brooklyn and Paris show considerable fidelity to classical style though the bodies are more rigid and schematic in the depiction of movement than the Dionysian square at Dumbarton Oaks (fig. 2) on which three persons are shown dancing. Again, the subtle touches of color highlighting all of the Brooklyn-Paris ornaments are mostly in the blue and green range, but altogether they contain a much wider range of weft colors and despite their overall brown effect (the Brooklyn textiles exhibit a whole range of delicate browns) are more like paintings than the Dionysian square at Dumbarton Oaks. Again, both the bucolic tapestries and brown-tone Dionysian square have a simple classicizing wave-crest border.

Although the bucolic roundels and Dumbarton Oaks square are nearly the same size, the actual medallion of the Dionysian tapestry is much smaller, one reason -as well as its better depiction of motion, and the general effect that it

gives of being closer to the prototype for dating it in the fourth to fifth century, while I would now date the bucolic tapestry set in the late fifth to sixth.

The five roundels of the bucolic set are all different and show young and old shepherds in different occupations with their sheep, watering cattle, preparing food and eating, with landscape elements and other figures ; mothers with young children ; small boys with dogs (a black child appears on the Cluny roundel) ; musicians playing the flute or syrinx. No other Coptic textiles with bucolic iconography are their equal in complexity and literary quality.

None of the rare Coptic textiles with bucolic iconography which have been published are of the brown-tone group, so far as is known (25). One is the well known purple-and-white square with a milking scene (34 cm.) but most are small medallions with red backgrounds, wavecrest borders and with one or two figures, e.g., a man carrying poultry on a yoke, a milking scene, a women feeding poultry ; these are woven on linen, sometimes plied, warps (26), and usually have wool and linen wefts. The relation of these "red-ground" bucolic textiles to textiles with mythological scenes, and to experimental silk weavings, are subjects which cannot be explored here. It can be said, however, that bucolic subjects are atypical within the red-ground group, which is probably the reason why most of them (27) are in a sense extracted from larger scenes such as appear on the Brooklyn-Paris set, and that none with larger and varied bucolic scenes have come to light.

Two other small tapestry ornaments are known to me which appear to represent the rare brown-tone tradition, and additional examples probably exist. One is an exceptionally fine linen tapestry medallion in the Textile Museum, Washington (fig. 6) showing an old bearded man, hamper on his back, holding a duck or goose (28). In technique it is probably closest to the original weaving tradition which we see reflected in the textiles so far examined. The medallion is 5,8 cm. in height, woven on Z linen warps in tabby with an equal distribution of warps and Z-spun wefts, atypical for Coptic Egypt, and has only unspun tan and white silk wefts, with Z-spun linen used for soumak wrapping. The study of textile ornaments in mummy paintings shows that small size is typical and thus a sign of early date in Coptic weavings (29). Again, a traditional wavecrest border appears.

The fleshiness and liveliness of the bodies of man and goose, and the man's hunched pose (30), make this work appear a textile equivalent to small Hellenistic sculptures of peasants, bringing us back to the "susceptibility to Nature" which is a hallmark of Hellenistic literature and art. In the absence of comparative material dating such a textile must be subjective, based largely on a developed appreciation of what can be assigned to other periods on firmer grounds. I think this textile probably represents a Hellenistic textile tradition, though possibly it is an early imperial one, and find it reasonable to date it no later than in the second century A.D. Possibly it was made at Alexandria, with its strong Greek tradition, through its non-Egyptian technique makes importation equally likely.

The second example, in the Coptic Museum, Cairo, consists of a pair of small tapestry roundels woven into the shoulders of a linen tunic, which show the same pattern with very minor variations (31). They are of linen and grey wool with a faintly purplish cast (fig. 7). A shepherd in a short spotted tunic leans on his staff, surrounded by five spotted sheep ; his right hand is raised

as if the pose was taken from that of a man carrying something. The finely woven linen tunic in which they are woven has inwoven stripes and soumak ribs. Representations of Orpheus amidst the animals may sometimes contribute to this kind of image, but since these roundels contain no specifically Orphic features and clearly depict the shepherd's staff, the scene may relate to the transformation of the pagan pastoral image into that of the Good Shepherd (32). The close agreement in pattern between the roundels on the left and right suggests the influence of drawloom weaving, which affected tapestry patterns by making their repeats like accurate copies rather than fanciful variations ; this feature makes probable a dating in the seventh century.

The choice of muted colors in the textiles we have discussed remains to be discussed. Their fine style, technique, material, execution, and complex iconography in some cases, show that they were all in various ways objects of considerable luxury and even rarity, and that the muted colors were intentional. Other textile rarities, which cannot be discussed here, date from the third to fourth century and are woven in a large range of colors used with great subtlety, sometimes even including gold-wrapped wefts. Thus ours is a different and special tradition. The very small silk medallion with a shepherd in the Textile Museum, which I suggested stems from late Hellenistic or imperial Roman tradition, and the set of ornaments with bucolic scenes in Brooklyn and Paris have color parallels in the muted tones of pastoral book illustration. Closest in general tone is the Vergilius Romanus of the late fifth century containing the Eclogues, one of the major bucolic texts. Its place of origin is still not known, and its illustrations are by two different painters. The first illustrator, however (33), clearly works from the tradition seen in our bucolic textiles, particularly the Brooklyn-Paris ornaments, another reason why they probably date from the late fifth to early sixth century. (A few intrusions from other iconography and the figural style are among reasons not to date these textiles earlier). He shows the generally brown tones of Mediterranean landscape, except during a brief spring or beside water, the same as are reflected in the Textile Museum medallion and the Coptic Museum "Good Shepherd".

The black-figured mythological textiles we have studied -the Iphigenia tapestry in Frankfurt and Dionysos square in the Cooper-Hewitt Museum- probably originated in the classical silhouette tradition, familiar from mosaic and vase painting. But these textiles were influenced by the brown-tone group and influential upon them. We have seen how the captive figures and bacchantes in some of the Dionysian thiasoi show the influence of poses of captives on the Iphigenia textile. Likewise, the choice of tones of brown and yellowish tan comes into the Cooper-Hewitt and Dumbarton Oaks Dionysos renderings from the bucolic pictorial tradition. By the time, apparently, that the little "Good Shepherd" roundels in the Coptic Museum were woven, probably in the seventh century, the muted colors taken from bucolic painting had been so far influenced that the textile manifests features of both groups : it is now essentially a pale two-color tapestry, like the Frankfurt Iphigenia and Cooper-Hewitt Dionysos textile, but light-figured as an inheritor of the muted bucolic color scheme.

NOTES

1 - This paper is a revision of one read at the general meeting of CIETA in September, 1983. I am grateful to Professor Kurt Weitzmann for reading it and making suggestions (letter of 15 February 1984) helpful in its revision. He commented that he was unable to judge its technical aspects but that I might well be right to date the Frankfurt textile earlier than he had proposed.

2 - "Eine Darstellung der euripideischen Iphigenia auf einem Koptischen Stoff", AntK, (1964), 42-47 ; it is Frankfurt, Museum für Kunsthandwerk, acc. no. 3610.

3 - New York. Metropolitan Museum of Art. K. Weitzmann, ed. Age of Spirituality, Late Antique and Early Christian Art, Third to Seventh Century. Catalogue of the exhibition... (New York, 1979), no. 218. Its analysis was performed by Nobuko Kajitano (Metropolitan Museum of Art, memorandum of 17 February 1979). The textile has S undyed linen warps with 31 wefts per cm. in tabby, 18 wefts per cm. in tapestry. Wefts are of undyed unspun silk, Z-spun brown wool, unspun silk and S linen combined, and S undyed linen. I wrote Professor Weitzmann requesting this analysis because I suspected the presence of silk when I saw the textile on exhibition in New York.

4 - Dumbarton Oaks Collection acc. no. 72,8 - 11,5 x 10,0 cm., formerly in the collection of Royall Tyler, gift of William R. Tyler. Warp : S linen ; wefts : S undyed linen ; S brown, tan, dark blue, light blue (several mixtures), wools. 1-Tapestry, slit and interlocked ; 12 warps, 26 wefts per cm. See D. Thompson, Catalogue of the Late Antique and Medieval Textiles in the Dumbarton Oaks Collection (Bangor, Maine, 1975), manuscript at Dumbarton Oaks, no. 17 ; hereafter cited as Thompson, Catalogue.

5 - Cf. Boston, Museum of Fine Arts acc. no. 53.18 (Essen. Villa Hugel. Koptische Kunst : Christentum am Nil, 3. Mai bis 15. August 1963 in Villa Hügel, Essen (Essen, 1963), 307, no. 267, illustrated, hereafter : Essen (1963), an exceptional wool tapestry square featuring Pan and Dionysos, which is probably from a hanging. On the pose of the drunken Dionysos, see D. Levi, Antioch Mosaic Pavements, I (Princeton, 1947), 40-45.

6 - F. Matz, Die antiken Sarkophagreliefs, vol. IV (Berlin, 1968-69) ; K. Lehmann-Hartleben and E.C. Olsen, Dionysiac Sarcophagi in Baltimore (Baltimore, 1942), fig. 9.

7 - See (as suggested by its author), Karl Weitzmann, Greek Mythology in Byzantine Art (Princeton, 1951), 179-83. See Nonnos, Dionysiaca, transl. W.H.D. Rouse (Cambridge, Mass. and London, 1940), I, xv, 115-150, pp. 511, 513 ; I, xvii, 115-125, p. 41.

8 - Cooper-Hewitt Museum acc. no. 1902-1-107, gift of J.P. Morgan (R. Forrer, Römische and Byzantinische Seiden-Textilien (Strasbourg, 1891), pl. I ; Baltimore. Walters Art Gallery. Early Christian and Byzantine Art. An Exhibition Held at the Baltimore Museum of Art, April 25-June 22 (1947) (Baltimore, 1947), no. 796, hereafter : Baltimore (1947). It measures 18,4 x 17,6 cm., is 2/3 Tapestry, slit ; is woven on an S linen warp with linen wefts carried in pairs, wool wefts singly. Wefts are Z linen ; Z dark brown wool, Z unspun yellow silk. Its background is composed of pairs containing each one linen and one yellow silk weft.

9 - In addition to the Boston textile cited in note 4, Boston, Museum of Fine Arts, acc. no. 46.401 and 46.402 (A.C. Weibel, Two Thousand Years of Textiles (New York, 1952), nos. 11 and 12 ; Bern, Abegg-Stiftung acc. no. 650 (M. Lemberg and B. Schmedding, Abegg-Stiftung Bern in Riggisberg : II, Textilien, Schweizer Heimatbücher 173/174 (Bern, 1973), pl. I).

10 - Princeton Art Museum acc. no. 52,77 ; 14,5 x 14,2 cm., dimensions of square in reinforced wool tapestry. Warp : S yellowish undyed wool ; Wefts : S undyed linen ; S yellowish undyed, S purple (with loose fibers, possibly goat hair) wools. 1-Tapestry, slit and dovetailed ; 12 warps, about 35 linen wefts, 37-39 wool wefts, per cm. See Baltimore (1947), no. 806 unillustrated.

11 - "New Technical and Iconographic Observations about Important Coptic Hangings with Marine and Hunting Themes", Bull. de Liaison du Centre International d'Etude des Textiles Anciens, 54 (1981, II), 63-79.

12 - Cloaks with square tabulae are occasionally represented in other media ; see D.P. Dimitrov, "Le système décoratif et la date des peintures murales du tombeau antique de Silistra", CahArch 12 (1962), 35-52, figs. 3 and 6.

13 - Princeton Art Museum acc. no. 52,76, 13,2 x 13,8, same fibers as in note 8 ; 11-12 warps, about 30 purple wefts, 31 linen wefts per cm. Baltimore (1947), no. 804B unillustrated. (Variations in thread counts among the different squares in this set are caused by their unequal condition). It differs in details of the animals from the Dumbarton Oaks piece - it includes a satyr opposite the centaur and a sphinx (?) at the upper left (an area missing on the Dumbarton Oaks piece), and a serpent in place of the giraffe. The Dumbarton Oaks piece is acc. no. 72,4, formerly in the collection of Royall Tyler, gift of William R. Tyler. 13,4 x 13,5, measurements of purple square across gaps. Same fiber and weave as above ; 12 warps, 20-35 linen wefts, 30 purple wool wefts, per cm. Linen and yellowish wool are used in contrast in the same pattern zones (e.g. the drapery of Orpheus) for flying shuttle and soumak wrapping. See H. Peirce and R. Tyler, L'art byzantin, vol. II (Paris, 1934), 122, pl. 159, a, and Thompson, Catalogue, no. 8

14 - For a sculptural example, see Service des Antiquités de l'Egypte. Catalogue général des antiquités égyptiennes du Musée du Caire. Koptische Kunst, by J. Strzygowski (Vienna, 1904), 31, no. 7287, fig. 36 ; for textile examples, London, Victoria & Albert Museum acc. no. 290-1888 (Department of Textiles. A.F. Kendrick, Catalogue of Textiles from Burying-Grounds in Egypt, I, The Graeco-Roman Period (London, 1920), no. 42, pl. XIV) ; Leningrad, Hermitage Museum acc. nos. 11158, 11159, 13217 (M.E. Matie and K. Ljapunova, Khudozhestvennye Tkani Koptskogo Egipta (Moscow and Leningrad, 1951), nos. 38, 38a, 39, pl. XX, 2,3,5). Victoria & Albert Museum acc. no. T. 15-1946 is the ink drawing on papyrus showing Orpheus and the animals beside a clavus-like border.

15 - Analysis performed by Dr. Max Saltzman in 1974. Correspondence on file at Dumbarton Oaks ; Thompson, Catalogue, introduction to chapter I. See J.T. Baker, "Tyrian Purple : An ancient Dye, a Modern Problem", Endeavour, 33 (1974), 11-17, a reference I owe to the kindness of Professor P.L. Goodfriend.

16 - E.g. U. Monneret de Villard, La scultura ad Ahnâs (Milan, 1920), figs. 16, 18. For an assessment of the Ahnâs material, see E. Kitzinger, "Notes on Early Coptic Sculpture", Archaeologia (1938), 181 ff. I am grateful to G. Vikan for his comments here.

17 - See M. Avi-Yonah, "Mosaic Pavements in Palestine", QDAP, 2 (1933), 136-88, no. 133, a probably sixth-century pavement from Jerusalem. The first mosaic representation of the Good Shepherd, derived from catacomb painting, is that in the early fourth-century Basilica of Theodore at Aquileia.

18 - Paris, Musée de Cluny acc. no. 22.454. This example shows a shepherd holding a lamb at the lower left ; two confronted animals with heads reversed in the right lower field ; above, a flute player beside a body of water or landscape element ; and a small black (dark blue) boy behind an animal or object.

19 - Brooklyn Museum acc. nos. 44.143 A-G, roundels average 12,0 x 12,0 cm. The set is slit, 1-Tapestry, 19-20 warps, 20 wefts, per cm. woven into a tabby ground on S-spun natural light brown wool warps ; it has Z-spun wefts : light brown, medium olive green, light green, yellow, red, wools, and S-spun wefts or purple and dark blue wools. For a full bibliography, see D. Thompson, Coptic Textiles in the Brooklyn Museum (Brooklyn, N.Y., 1971), 18, to which should be added : Age of Spirituality, 249-51, nos 227-30, and R. Bianchi Bandinelli, Hellenistic-Byzantine Miniatures of the Iliad (Olten, 1955), 91, note 2, 127 ; Bandinelli's explanation of the muted colors of the Brooklyn textiles is not valid because it takes as a starting point a weft-looped hanging or curtain in bright colors of a totally different technical and stylistic group ; such large textiles are woven equivalents to wall paintings and mosaics. (To him, the muted tones appear as an indication of a later date).

20 - A. Lesky, A History of Greek Literature, trans. J. Willis and C. de Heer (New York, 1966), 726.

21 - See for a recent treatment of the subject, P. Romanelli, "Riflessi di vita locale nei mosaici africani", Colloques internationaux du Centre National de la Recherche Scientifique : Sciences humaines. La mosaïque gréco-romaine. Paris, 29 août-3 septembre 1963. Paris, 1965, 275 ff.

22 - M. Bieber, The Sculpture of the Hellenistic Age, rev'd. ed. (New York, 1961), 136, 143.

23 - K. Weitzmann, Ancient Book Illumination (Cambridge, Mass., 1959), 108 ff. and fig. 155, and in AntK, 7 (1964), 46-47.

24 - In regard to largescale red-ground tapestries, see my article cited n. 11, esp. 63 and nn. 8 and 9. Smallscale red-ground tapestry insertions and ornaments are discussed briefly in Thompson, Catalogue, no. 18.

25 - See for citations, Thompson, Coptic Textiles, no. 19.

26 - P. du Bourguet, Musée National du Louvre, Catalogue des Etoffes Coptes, I (Paris, 1964), 136, D 15 and 137, D 47 (Louvre acc. nos. 4356 and 4126), both cited in preceding reference ; to these many be added Lyon, Musée Historique des Tissus, acc. no. 35555, a clavus fragment showing a woman with her baby in a sling, to which I was directed by the kindness of Dr. A. Baginski.

27 - The exception is Louvre acc. no. X 4252 (du Bourguet, Catalogue, C 39), a band on which a number of pastoral vignettes are shown, its background color unspecified. However, the arrangement of these different scenes is much more formal than in our brown-tone examples, and derives from the common organization of textile bands, especially cuffbands, rather than from a late antique book-painting tradition.

28 - Washington, Textile Museum acc. no. 71.131, medallion 5,8 x 5,4 cm. Warp : Z linen ; wefts Z linen for soumak wrapping ; unspun tan and white silks. Woven into Z-spun linen tabby with 17-18 square count ; in tapestry, about 20-21 warps, 75-80 wefts, per cm. Unpublished.

29 - K. Parlasca, Mumienporträts und verwandte Denkmäler (Wiesbaden, 1966).

30 - Cf. Bieber, Hellenistic Sculpture, figs. 591, 594.

31 - Cairo, Coptic Museum acc. no. 8470, spin and fiber examined through exhibition case but apparently S-spun linen and wool ; published but not illustrated in : R; Habib, The Coptic Museum, a General Guide (Cairo, 1967), 58, no. 122. I am grateful to Bernard V. Bothmer for his efforts in photographing this tunic, and to M. Girgis, Curator of Textiles, for his assistance.

32 - Regarding the development of this iconography, see K. Weitzmann, Catalogue of the Byzantine and Early Mediaeval Antiquities in the Dumbarton Oaks Collection, vol. three, Ivories and Steatites (Washington, D.C., 1972), 2-15, pl. IVA-C.

33 - For a good color illustration, see K. Weitzmann, Late Antique and Early Christian Book Illumination (New York, 1977), pl. 11 ; see E. Rosenthal, The Illuminations of the Vergilius Romanus (Zurich, 1972).

Résumé

Quelques tapisseries coptes rares à iconographie bucolique et mythologique.

Parmi les milliers de tapisseries coptes subsistantes, il existe quelques rares spécimens à figures et scènes relevant de deux traditions littéraires différentes, l'une bucolique, l'autre mythologique, qui sont dépeintes avec assez de précision pour être comparées à des oeuvres de la Basse Antiquité dans d'autres techniques. Quelques unesde ces tapisseries contiennent des chaînes de soie et la plupart sont dans une gamme de couleurs assourdies.

Madame Thompson étudie ces pièces et examine s'il peut s'agir d'importations représentant une continuation des traditions hellénistiques et romaines tardives.

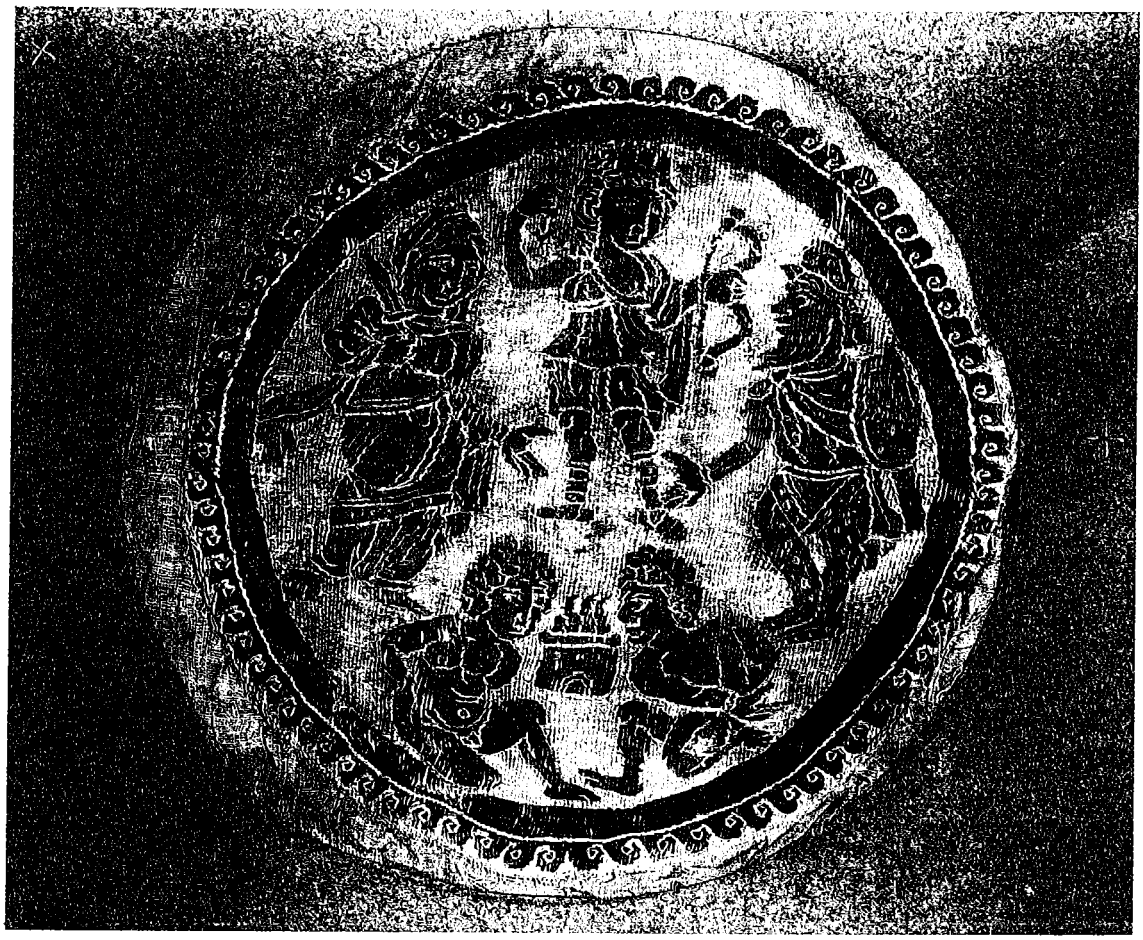


Figure 1 - Tapestry roundel containing silk which shows Orestes and Pylades before Iphigenia. Courtesy of the Museum für Kunsthandwerk, Frankfurt am Main (acc. no. 3610).

Figure 2 - Fragmentary tapestry square containing silk with scene of Dionysian thiasos. Courtesy of the Byzantine Collection, Dumbarton Oaks (acc. no. 72.8).

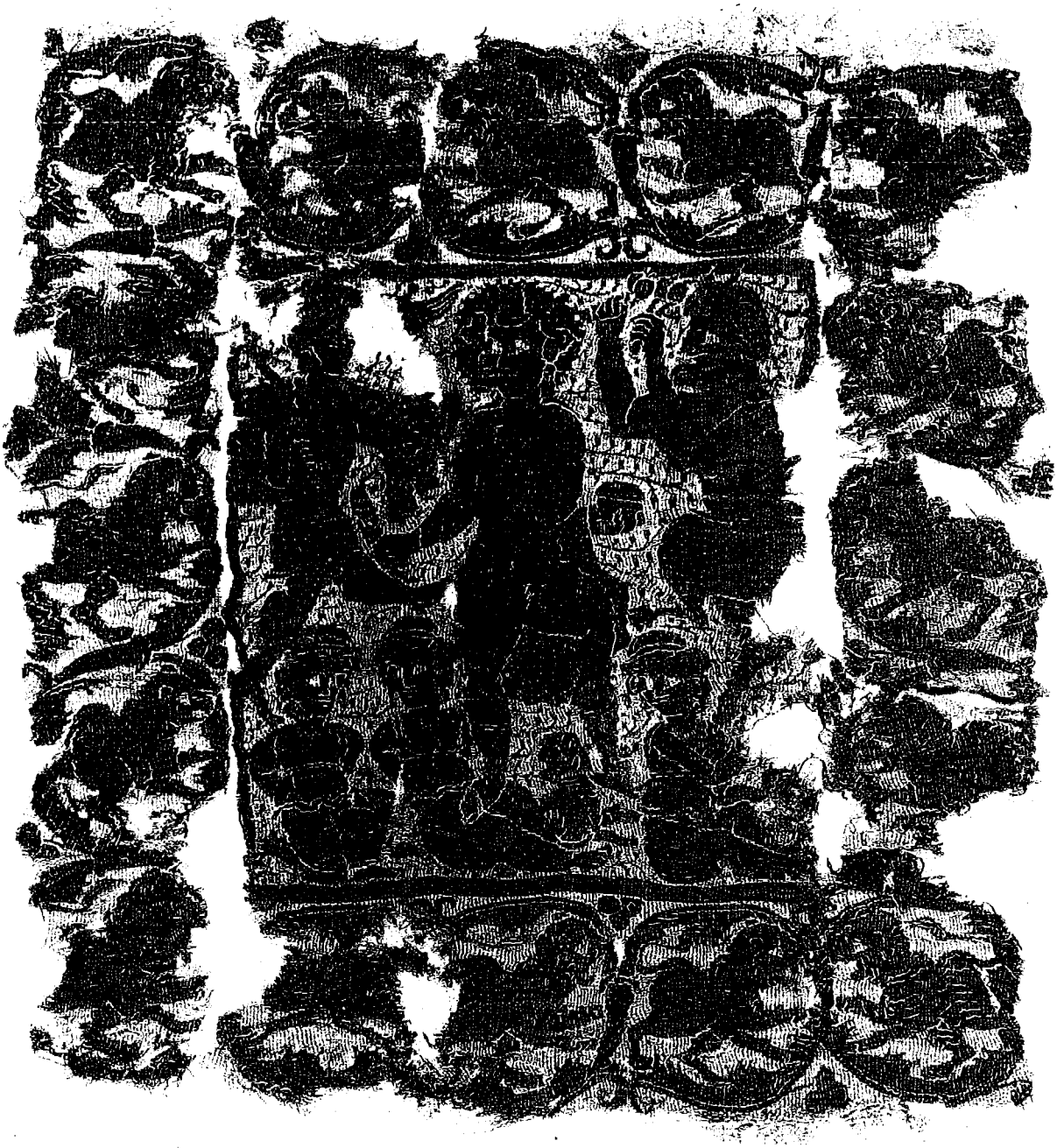


Figure 3 - Fragmentary tapestry square containing silk with scene of Dionysian thiasos, excavated at Akhmīm/Panopolis. Courtesy of the Cooper-Hewitt Museum, the Smithsonian Institution's National Museum of Design (acc. no. 1902-1-107).

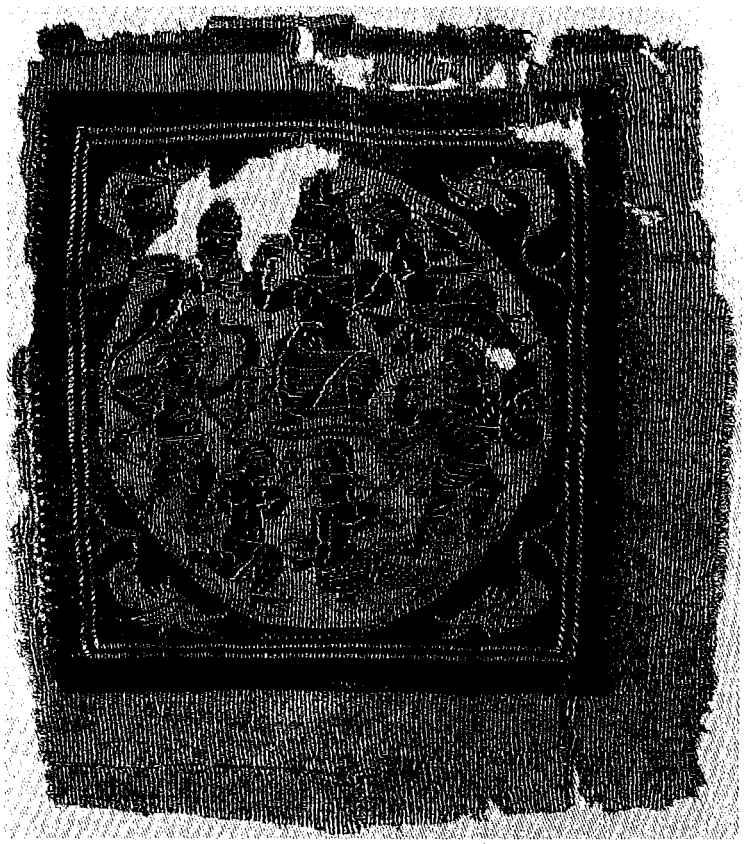


Figure 4 - Wool tapestry square with central divinity. The Art Museum, Princeton University (acc. no. 52-77).

Figure 5 - Wool tapestry square showing Orpheus, perhaps a statue, amidst the animals. The Art Museum, Princeton University (acc. no. 52-76).

Figure 6 - Small tapestry medallion containing silk in linen ground, which shows an old man carrying a hamper and a goose or duck. Courtesy of the Textile Museum of the District of Columbia (acc. no. 71.131).

Figure 7 - The left one of a pair of tapestry roundels in the ground of a linen tunic showing a shepherd and animals. Courtesy of The Coptic Museum, Cairo (acc. no. 8470), Mr. Girgis, Curator of Textiles, and Bernard V. Bothmer.

THE VESTMENTS OF SIXTUS IV AT PADUA

by Lisa MONNAS

Acknowledgements : I would like to express my gratitude to Padre Giovanni Luisetto of the Biblioteca Antoniana in Padua for his kindness in drawing my attention to his forthcoming publication of the documents relating to the vestments of Sixtus IV last year, and for allowing me to examine and photograph the vestments and for his subsequent help. I would also like to thank Donald King and Professor John White for all their helpful advice in the preparation of this article and M. Gabriel Vial for his generous assistance in the examination of two related chasubles in the Musée Historique des Tissus at Lyon.

In the Museo Antoniano at Padua, there are a magnificent chasuble and stole of cloth of gold (figs. 1 et 2) whose significance seems largely to have escaped the attention of textile historians outside of Italy. On the rear of the chasuble, there is an applied blue shield, embroidered with an oak tree, the stemma of the Della Rovere family, surmounted by the papal tiara and keys (fig. 3). The stole and chasuble are thought to be only two pieces to survive from a set of vestments comprising a cope, a chasuble, two dalmatics, two stoles, three maniples, three amices and an altar frontal, given to the Basilica di S. Antonio by Pope Sixtus IV (1471-1484). In 1934, the cope from this set was recorded as being in a private collection in the United States, but I have been unable to discover its present location (1). Despite the fact that the remaining vestments seem to have suffered damage and restoration over the years, and that the chasuble has lost its orphrey cross, it seems likely that the chasuble and stole do indeed come from the vestments given by Sixtus IV, as they are made from a brocaded silk velvet whose complex pomegranate pattern is enriched with the Della Rovere acorn, not found in any other surviving example of this design (2). The importance of these vestments lies in the particularly full documentation attached to them. Although part of this documentation has been published before, the whole has only recently become accessible due to Padre Giovanni Luisetto's publication of 1983 of Paduan sources, in which he has collated all the previously printed texts concerning the vestments together with some additional material, and has presented it in a coherent chapter (3). From the framework of contracts and records of payment in Padre Luisetto's text, we can gain real insight into the way that the vestments were manufactured and can evaluate the relative roles of the painter who designed the embroideries for the vestments and of the embroiderers themselves. Of no less importance is the fact that the woven material represents the only extant woven silk of the 15th century which is documented as of Venetian manufacture. This, together with the fact that they are dated pieces, makes the chasuble and stole of inestimable value for the grouping and dating of comparable silks. Although the Paduan vestments have been mentioned briefly in earlier publications, I believe that they deserve fuller attention and hope to redress the balance by discussing the documentation surrounding them in this article. I hope, at a later date, to publish a more thorough physical description of them, but will have to return to Padua before it is possible to do so accurately (4).

1 - The cloth of gold

The donor of the vestments, Francesco della Rovere, who had risen through the ranks of the Franciscan order to become Pope Sixtus IV, had a particular devotion to the cult of St Anthony and specific links with Padua. In his youth, he attended university in Padua, receiving his licentiate there in 1434. In 1441, he received his doctorate in a ceremony in the Basilica di S. Antonio and stayed in Padua to teach logic and then philosophy until 1451 (5). In his first year as Pope, Sixtus IV published a Bull specifically recording his close ties with Padua and promoting the cult of St Anthony of Padua with special emphasis on the attendance of the Feast of this saint (6). It is hardly surprising, in view of the Pope's close ties with the Basilica di S. Antonio, that the texts printed by Padre Luisetto show that Sixtus IV may have commissioned more than one set of vestments through the agency of the friars there. There are records of payment in Sixtus IV's name for two separate lots of cloth of gold woven in Venice for papal vestments. As subsequent records of the Basilica del Santo reveal only one set of vestments given by Sixtus IV, it is possible that the first set was intended for the Pope's own use in Rome (7).

On 21 April, 1472, paper was purchased specifically for designs to be made for vestments of cloth of gold (8). For the design of this cloth, the administrators of the tomb of St Anthony turned not the painters and weavers of Venice, but to Jacopo da Montagnana, (documented 1469-1508) a respected local artist who happened to be working in the Basilica at the time, frescoing the Gattamelata family chapel (9). On 8 May, the friars recorded that they were having designs made for the cloth of gold which they intended to send to Florence (10). Nothing more is heard of these designs, and it is possible that by sending a design to Florence the friars may simply have been trying to find out whether they should have the cloth for the papal vestments woven in Florence or in Venice, as on the same day, 8 May, three friars journeyed to Venice to attend to the vestments of cloth of gold (11). Evidently, they found a suitable weaver in Venice, as on 5 June, 1472, Jacopo da Montagnana was paid 12 lire and 8 soldi "for two designs he made for the cloth of gold for the vestments, one of which was sent to Rome and the other to Venice". On that day, the same three friars as before returned to Venice to see about the weaving of the cloth for the vestments (12). Presumably, the design which was sent to Rome was intended for the Pope's approval (13). The design which was sent to Venice may well have been a sketch rather than a working drawing from which the warp could be prepared and the cloth woven from it. No drawing of this type survives from the fifteenth century, but it is likely that it would have involved a meticulously prepared diagram, possibly on squared paper, or at least an annotated drawing from which the effects of light and shade and colour change could be translated into areas of different treatment on the cloth. There is no evidence that Jacopo da Montagnana designed woven cloth on a regular basis before or after this commission, and his involvement with this particular project seems to have ended when he supplied the designs as he is not mentioned again in the documents. The price that he was paid for the designs was comparatively low. Florence de Roover, in her study of the firm of the Florentine silk merchant, Andrea Banchi (1372-1462) has found that this merchant regularly employed two specialist designers, Giovanni d'Antonio and Baldassarre di Giovanni, paying them prices varying from 4 lire for simple designs to 15 or 16 lire for more elaborate ones (14). Jacopo da Montagnana was paid only 12 lire and 8 soldi for two drawings of what was likely to have been a complex cloth of gold. Although, like other fifteenth century painters, he was a skilled draughtsman who habitually supplied designs for other disciplines, it seems likely, both in view of Jacopo's comparative inexperience in the field of textile design,

and of the low price paid for the designs, that the drawing sent to Venice was a sketch which would have been adapted by a weaver or specialist designer (15).

The administrators of the tomb of St Anthony made more than one trip to Venice to arrange for the weaving of this cloth of gold. The first weaver, whose name is not recorded, died, and it was necessary to place the commission a second time. This was done on 26 June, 1472, when expenses were recorded for a trip to Venice for this purpose : "for the journey to Venice to attend to the business of the cloth of gold, as the master who should have made it has died" (16). On 5 March, 1474, payment was made to Pietro Bettino della Seta, who was probably a silk merchant rather than a weaver, "Pietro Bettino della Seta, citizen of Venice has received... in the name of Pope Sixtus IV, 2072 gold ducats in final payment for 112 braccia of cloth of gold sold to [the administrators of the tomb of St Anthony] at the rate of 18½ ducats per braccio" (17). It seems reasonable to suppose that the cloth of gold purchased in the Pope's name in 1474 should be the cloth for which Jacopo da Montagnana had supplied the designs just under two years earlier, as it would have taken this length of time to weave such a large amount of elaborate gold cloth (18). The price paid for the cloth, 18½ ducats per braccio, was very high, reflecting the quantity of gold thread used. An even higher amount was paid in 1480 for the riccio sopra riccio cloth given by the Mercanzia guild of Florence to the Baptistry, which cost 20 ducats per braccio on condition that a stipulated amount of gold thread be included in the cloth (19).

After the entry concerning the final payment to Pietro Bettino della seta in 1474, Padre Luisetto comments : "Questo panno d'oro e servito certo per fare parecchi parati : i cosi detti parati di Sisto IV " (20). (This cloth of gold was certainly used to make some vestments : the so-called vestments of Sixtus IV). Other authors have, by implication, agreed with Padre Luisetto's assessment by ascribing the cloth of gold of the vestments at Padua to the design of Jacopo da Montagnana (21). However, the 112 braccia which were ordered in Sixtus IV's name constituted far more cloth than would have been required for the set of vestments of modest proportions that remained in the Basilica del Santo. For this reason it seems likely that the first 112 braccia of cloth of gold may have been purchased through the agency of the Basilica for a large set of vestments for the Pope's own use in Rome and that the vestments of Sixtus IV which remained at Padua were made of 36 braccia of slightly cheaper cloth of gold which were purchased by the administrators of St Anthony's tomb in the Pope's name from a Venetian silk merchant, Giovanni Antonio della Seta, for which payments are recorded from 1478 to 1483 (22). This may well be the cloth of gold for which the friars recorded that designs were being made in May, 1477, without specifying the artist who was responsible for them (23). Thirty-six braccia would seem to be just enough cloth for a set of vestments of which the principal pieces comprised a cope, a chasuble, two dalmatics and an altar frontal. The largest piece, the cope, would have required between ten and twelve braccia and the other three vestments rather less (24). We know that the altar frontal took six braccia as a payment of 96 ducats was recorded on 19 June, 1478 for six braccia of cloth of gold for this purpose (25). From this entry, it can be deduced that the cloth of gold supplied by Giovanni Antonio della Seta cost 16 ducats per braccio and was slightly less expensive than the first cloth. An entry of 1483 seems to confirm that the papal vestments were made from this cloth, as it states "Ser Iohannes Antonius... dedit brachia 36 pani (sic) aurei de quo facta fuerunt paramenta pontificalia et unum antipectum ab altare..." (Ser Giovanni Antonio...

gave 36 braccia of golden cloth from which the pontifical vestments were made and an altar frontal...) (26). The payments and contracts for the embroidery of these vestments run from May 1477 to May 1482, roughly corresponding with the time span for the design, weaving and delivery of the cloth of gold provided by Giovanni Antonio della Seta. In consequence, it seems that the vestments given by the Pope to the Basilica del Santo were made from the second amount of cloth of gold purchased in his name, which could have been but was not necessarily woven to the design of Jacopo da Montagnana.

The design of the silk at Padua incorporates the Della Rovere acorn in a conventional pattern of pomegranates on bifurcating stems bursting from a cusped surround within the framework of an interlocking ogival trellis. The overall design is strongly three-dimensional, aided by subsidiary elements such as the overlapping carnations and leaves which form the stems. This quality is further enhanced by the skills of the weaver. The ground is brocaded with gold thread, with the design outlined in red silk pile, and filled in with bouclé gold threads. The latter are of two different thicknesses, and woven in two heights, giving certain motifs a quality of relief, by deliberately contrasting areas of higher and lower weft loops. This can be seen, for example, in the acorns, where the cups are composed of higher, thicker threads than the nuts (fig. 5). The linear surface pattern is carefully maintained as in areas where the red cut silk pile becomes more than an outline, its solidity is relieved by an infill of red uncut silk pile, standing higher than the surrounding cut silk pile. Unlike the design of the frontal given by Sixtus IV to the Basilica di S. Francesco at Assisi (fig. 5) whose heraldic and figurative composition stands equal comparison with similar motifs in painting and sculpture, the silk of this chasuble and stole fits specifically into the evolution of Italian silk design. As early as 1349, a lotus blossom on bifurcating stems appears on the mantle of the Madonna by Paolo da Venezia (active 1333-1358) in S. Martino in Chioggia (27). The ogival trellis, thought to have originated in China, may have been introduced into Italy from the Near East. During the 14th century it appears in textiles represented by the Florentine painter, Bernado Daddi (documented 1312-1348) and in a related group of silks (28). The format of the ogival trellis continued into the fifteenth century and may be seen in the silk found in the tomb of Sigismondo Malatesta (d. 1468) and in the chasuble of Pope Pius II (1458-1464) (29). Although the silk of the vestments at Padua and of the chasuble of Pius II share certain elements, such as the carnation viewed in profile, and the pomegranate bursting from its surround, the three-dimensional quality of the silk at Padua is more developed than that of the latter. It is, however, impossible to build a neat picture of the evolution of Italian silk design on this foundation, as a textile with a strongly three-dimensional ogival trellis had already been depicted by Bartolommeo Vivarini on the mantle of a Madonna dated 1465 in the Museo di Capodimonte in Naples (30).

There exist at least three silks with a pattern that is closely related to Sixtus IV's vestments, with the notable omission of acorns from the design. These are : a chasuble in the Schnütgen Museum in Cologne, and two chasubles in the Musée Historique des Tissus at Lyon (31). The existence of such close parallels raises the question of whether the designer of the papal silk was the originator of this particular design, or whether he responded to the commission by simply incorporating the appropriate symbolism into a pre-existing pattern. The vestments at Padua do seem to be the earliest manifestation of this pattern. The earliest dated representation that I can find (1504) is on the cope of SS. Thomas and Martin in Timoteo Viti's painting of SS. Thomas and Martin with Archbishop Arrivabene and Duke Guidobaldo in the Galleria Nazionale delle Marche

in Urbino (fig. 6). The appearance of this pattern in a painting some thirty years after the inception of the design must reflect the conservative nature of the artist as well as the enduring popularity of the silk in question.

As the cloth of gold purchased for Sixtus IV in both 1472 and during the period 1478-1483/4 was all woven in Venice, the vestments at Padua have the distinction of being the only surviving Italian silk of the 15th century to be documented as of Venetian manufacture. This, combined with the fact that they are dated, makes them of great value for the grouping and dating of other silks. However, their importance with regard to the grouping of silks around a centre of weaving is slightly diminished by the fact that other towns in Italy are known to have copied Venetian silks. For example, the 15th century Florentine treatise on silk weaving edited by Gargiolli describes the loom width required for voided velvets on a satin ground "alla viniziana " (32). Hence it would be foolish at this stage to assign every existing silk with a comparable design to Venetian manufacture. To my knowledge, no systematic attempt at using the vestments of Sixtus IV as the starting point for creating a group of Venetian silks has yet been undertaken. So far, I have been permitted to examine the chasuble and stole at Padua and the two chasubles at Lyon, the latter with the generous guidance of Monsieur Gabriel Vial. Without a further examination of the Paduan chasuble and the inspection of other examples, I cannot draw any conclusions as to the origin of the Lyon chasubles. One point of interest has emerged so far.

The chasuble and stole of Sixtus IV are of costlier material than the vestments at Lyon. While the ground of silk in Padua is brocaded with two threads of gilded metal strip around a yellow silk core to one of yellow silk, the proportions at Lyon are inverted to two yellow silk threads to one of gold. Similarly, the chasubles at Lyon incorporate only one thickness and height of bouclé gold thread.

2 - The embroideries

From the printed sources, we can infer that Sixtus IV left the decisions as to the manufacture of his vestments up to the administrators of the tomb of St Anthony of Padua. For the design of the embroideries, they turned, as with the design for the first cloth of gold, to another local artist who was working in the Basilica : Pietro Calzetta (documented 1450-1500), the brother-in-law and collaborator of Jacopo da Montagnana (33). Although very little survives from the hands of these two artists, their work in the Santo and elsewhere in and around Padua is well documented (34). As far as the Basilica del Santo is concerned, they seem to have been involved in a wide range of activities covering the general decoration and upkeep of the church. These included, in Pietro Calzetta's case, such varied tasks as the redecoration of the organ, and painting a cloth to go behind it (1480-1483) (35), the painting of candleholders (1472) (36) and gilding parts of Donatello's high altar (1477) (37) as well as major works such as the decoration of the façade of the Cappella del Santo (1480-1481) (38). Although there is no direct evidence that Pietro Calzetta had designed any embroideries before the commission for Sixtus IV's vestments, there are grounds for believing that he might have done so. In 1472, at the time that the first cloth of gold was purchased, Pietro Calzetta was engaged in frescoing the Gattamelata family chapel in the Basilica together with Jacopo da Montagnana and another artist. We do know from a codicil in the will of Giacoma Gattamelata dated 23 May, 1459, that the money for the decoration of the chapel was also to provide for a set of vestments of silver and velvet cloth and adorned with orphreys embroidered with pearls (39).

Pietro is first named as the designer of the papal orphreys in the contract for the embroidered orphrey crosses of the chasuble dated 19 January, 1478 (40). This contract cites the "planeta Gattamelatae" as a reference for certain dimensions. The reference in this context suggests that Pietro Calzetta was either shown the cope, or was familiar with this vestment, and it is quite possible that he, together with Jacopo da Montagnana may have had a hand in the production of the vestments of the Gattamelata chapel as part of the whole scheme of the furnishing and decoration of this chapel. It may have been because they had successfully tackled one such commission that they were subsequently singled out to provide designs for the embroidered orphreys and for the first amount of cloth of gold for the Pope. On the day that the contract for the orphreys of the chasuble was drawn up, Pietro Calzetta also acted as witness for a payment to Giovanni Antonio della Seta for the cloth for the altar frontal and for payment for 10 braccia of cloth of gold whose purpose is unspecified (41). On 25 August, 1478, Pietro Calzetta was named as the designer of the embroideries for the cope, hood and two dalmatics, in the contract for their execution (42).

The embroiderers who worked on the papal vestments seem, for the most part, to have come originally from Milan, a renowned centre of embroidery (43). The orphreys of the chasuble were commissioned from an embroiderer from Milan working in Venice, "Magister Bernardus recamator q. Leonardi de Mediolano habitator Venetiis". (Master Bernardo, embroiderer, son of Leonardo from Milan residing in Venice). (44). Magister Bernardus may be the Bernardo Scudellino who undertook, on 2 May, 1480, to embroider a set of vestments for the Bishop of Padua (45). Another embroiderer from Milan, residing in Padua, was responsible for the embroidery of the cope, its hood, the dalmatics, stoles and maniples. He was "Magister Petrus q.d. Ioannis de Pusterla, de Mediolano recamator habitator Paduae". (Master Pietro, son of Giovanni da Pusteria from Milan residing in Padua) (46). Pietro da Pusteria may already have been living in Padua when the commission to execute embroideries for the papal vestments was given to him, rather than being called from Milan, as there is mention of him in Padua in 1463, when he made a votive offering to the tomb of St Anthony (47). In 1479, Pietro da Pusterla was to have taken an apprentice into his house for two years, "Ludovico, son of Benedetto of Milan, embroiderer" under the usual conditions, that he be fed, clothed and housed for that time. However, a note below the contract, "discordantes recessant", suggests that the parties withdrew from this contract (48). Another embroiderer appears once in the documents. On 1 July, 1483, "Il ricamatore Vincenzio" (the embroiderer Vincenzo) is recorded as making three amices for the papal vestments (49). Vincenzo may well be the "Vincenzo da Milano" who is recorded in Paduan sources as embroidering an altar frontal for the duke of Milan to give to the Basilica del Santo in 1494 (50). Finally, there is mention of "M. Zampiero" or "Zuampiero olim Ministro" (M. Giovanni Pietro formerly a cleric) who was paid on 14 February and on 4 May 1481 for working on the cope and its hood (51). He may possibly be identified with "Mag. Iohannespetrus q.ser Iacobi de dicta contrata (S Luciae)", (Master Giovanni Pietro, son of ser Jacopo of the said quarter (of St Lucy) who, in 1474, formed an association with two other embroiderers : "Mag. Ambrogio and Francesco, son of Ser Beltrami" (52).

The contracts for the commissions to Master Bernardo and Pietro da Pusterla give a detailed account of the method of payment for such work, and form an interesting comparison to the way in which paintings were ordered (53). They concentrate on the quality of execution rather than the quality of materials, in contrast to contracts for paintings which include stipulations as to the amount and grade of ultramarine and gold leaf to be used (54). In both contracts the embroiderer

was responsible for furnishing the materials for the work at his own expense, including the gold thread, for which he would subsequently be reimbursed. The embroiderers were also responsible for paying the painter for his designs, which evidently had not been produced at this stage. Although the painter was thus effectively subcontracted to the embroiderer, rather than directly employed by the patron, he does seem to have been specifically chosen by both parties, and to have been present when the contract for the chasuble was drawn up. Both embroiderers seem to have provided a sample of their workmanship, as they are both required to adhere to the standard of the sample provided as well as to follow the designs which Pietro Calzetta would supply. Strict injunctions are made in Master Bernardo's contract that the embroideries should be as beautiful as the designs that were to be submitted by the painter, both in the quality of their execution and the style, with the proviso that the embroiderer could improve, but should certainly not fall short of the quality of the sample that he himself had provided. These terms are slightly less punitive than those of the contract mentioned above between Bernardo Scudellino and the Bishop of Padua for the embroidery of a set of vestments. This stipulated that not only should the embroideries correspond to a sample provided by Master Bernardo and be of a comparable quality to the embroidery of a set of vestments in the Duomo which had been shown to him, but also that the faces should be well executed, and that those which did not please the bishop should be changed (55). The requirements in the contracts for the embroidery of both the Bishop of Padua's vestments and those of Sixtus IV show that the patrons exercised a strict quality control over their commissions, and took no risks of receiving work either of lower quality or differing in style from that which they intended. Although such injunctions must have been fairly standard, they do underline the high fidelity required in the reproduction of designs, and are interesting in the context of the faithful rendering of Pollaiolo's style in the embroidered panels for the vestments given by the Mercanzia Guild of Florence to the Baptistry, now in the Museo dell'Opera del Duomo, Florence. The latter were greatly admired by Vasari, who states that "Paolo da Verona, a marvellous master of such work, the most skilful to be found, who executed the figures with a needle no less finely than Antonio did them with the brush, so that the patient sewing of the one was no less useful than the skilful design of the other" (56). For the chasuble, the number of embroidered panels and their measurements were carefully laid down, with no reference to their iconography which may not have been fully worked out at this stage. The exception to this is the inclusion of stipulations as to the placement of the papal arms. There were to be four embroidered panels on the rear of the chasuble, corresponding in size to a panel held by Master Bernardo and also to a figure on the Gattamelata chasuble. There were to be three subjects on the front, consisting of medium sized figures corresponding to the size of another panel in Master Bernardo's possession with the arms of the Pope and the papal tiara and keys above them. For the other vestments, Pietro da Pusterla simply agreed to follow the number of panels in Pietro Calzetta's design.

Payments for the embroidery of the chasuble were to total 200 ducats, and were to be made in three stages : a third two days after the Feast of St Anthony (June 13) 1478, a third at the Feast of the Nativity of Our Lord, 1478, and the rest at the Feast of St Anthony, 1479. The contract for the embroidery of the cope, its hood and the dalmatics was slightly more elaborate. Pietro da Pusterla was first to execute the cope and its hood, and then, if they were well executed, he would be allowed to produce the embroideries for the dalmatics. He was to be paid two hundred ducats if he did the same amount of work as that on the chasuble and proportionately more or less if he did more or less work. He was to receive a monthly allowance of 4 ducats for expenses, and to be paid for

each square as it was handed over. Pietro da Pusterla later wanted to limit this agreement to work on the cope, and asked that the work on the dalmatics should be paid for on the basis of valuation by other professional embroiderers (57). A legal arbitration went against him, and he was obliged to abide by the original agreement (58). The administrators of the tomb obviously felt that the embroiderer had suffered in this matter, as on 31 December, 1484, they specifically stated that by way of recompense to Pietro da Pusterla, as well as by way of completing the vestments, they were commissioning him to execute two embroidered stoles, and three maniples for the vestments of Sixtus IV (59). The Pope was, by this time, deceased and the vestments are referred to as "olim S.mi.Papae Sixti" (of His late Holiness Pope Sixtus). When the stoles and maniples were finished, they were to be measured and paid for at the same rate as the other embroideries for the cope and dalmatics. On 2 January, 1485, Pietro was paid L.35:6, and this was presumably a payment for the stoles and maniples (60).

Sadly, almost none of the embroidered orphreys or apparels for the vestments have come down to us. As the contracts do not describe their iconography, we can only conjecture as to the original appearance of the dalmatics. We do, however, have some information as to the appearance of the cope and the altar frontal. An inventory of the sacristy of 19 June, 1487, relates that there was "A most excellent cope, of cloth of gold, with crimson silk pile, enriched with boucle gold threads, with a most elaborate and beautiful border embroidered with saints, and an admirable hood with the figure of St Anthony above a walnut tree, with the figure of Pope Sixtus IV with his arms, with a pendant ornament of gold, and nineteen buttons of gold, one of which, namely the top-most one, is large, with trimmings of red silk and gold, and with a morse of gilded silver, with the figure of God the Father crowning the Holy Virgin, with St Anthony and a female saint, in a surround enamelled with the arms of Pope Sixtus" (61). This entry gives some idea of the rich combination of disciplines involved in the production of such specially commissioned vestments by describing the enamelled morse (62). The iconography of the cope can be compared to that of the altar frontal given by Sixtus IV to the Basilica di S. Francesco at Assisi, (fig. 5) which once more incorporates the figure of Sixtus IV, the donor, with the figure of St Francis, the saint for whose church his gift is intended, together with Della Rovere heraldry (63). Despite the absence of documentation concerning the manufacture of the altar frontal belonging to the set of vestments at Padua, it too appears in the 1487 inventory as a completed item. The entry describes "a frontal of the richest cloth of gold made in the name of Pope Sixtus IV with his arms, with silver sequins around them, with the mitre and papal keys, with three crowns of gilded sequins on the said mitre, with some jewels bound in imitation silver, and some small pearls, with a fringe of silver and of green silk, lined with red canvas" (64).

The only portion of the embroidery to survive, is, in fact, the shield bearing the Della Rovere oak tree, with the papal tiara and keys above it, which is now attached to the rear of the chasuble, although it would originally have been placed on the front of this vestment (fig. 3). The oak tree is executed in couched sequins on a ground of metallic thread couched with blue silk in the or nué technique. While the keys are entirely composed of sequins, the papal tiara is of a mixed technique. The prolific use of sequins in this work contrasts with the execution of the stemma of Sixtus IV on the altar frontal at Assisi, where all the gold is of couched file threads. Although it has been suggested that the tiara and keys are of eighteenth century work, the general appearance of the tiara, keys and shield, with extensive use of sequins, conforms well to the description of the arms embroidered on the altar frontal of this set, described above (65).

3 - The making up of the vestments

Although the contract for the embroideries for the chasuble stipulate that they should be finished before 13 June, 1479, it is evident that most of the vestments were not completed until 1483, with payments for them continuing into 1485. On 24 January, 1483, cotton and silk thread were purchased for sewing the vestments of cloth of gold and M. Piero sartore (Piero the tailor) was paid for the making of the cope, chasuble and dalmatics specifically designated "del pano (sic) d'oro del papa" (66). On 5 April, 1483, the friars were having a fringe made for the cope, and payments for this are recorded again on 9 April (67). On the same day, cotton and silk thread and linen were purchased, and it is recorded that four camisini (albs) were being made for the papal vestments (68). On 1 July, 1483, there is a record that the embroiderer Vincenzo should have made three amices for these vestments, but the linen cloth for them was not purchased until 26 May, 1484 (69). The last payment for the vestments published by Padre Luisetto is the payment to Pietro da Pusterla in January 1485, cited above. Surprisingly, there is no documentation regarding the manufacture of the altar frontal, for which the cloth of gold was purchased in January, 1478, and which is described in the 1487 inventory.

In view of the emphasis placed by recent studies on the production of embroidered vestments on the role of the banderai or professional vestment makers in the making up of these garments, it is perhaps worth noting that in this case the set was made up by a sartore or tailor (70). This was not an isolated occurance as in 1495 and 1498 two other tailors, "m. Domenego Quaieta sartore" and "maistro Menegin sartore", were paid for sewing vestments for the Basilica del Santo (71). It is possible that professional vestment makers were more likely to exist in large towns with complementary industries of cloth weaving and embroidery such as Florence. There they could rely on the bread and butter trade provided by large silk firms who would command a steady flow of vestments to be sold as ready made items. Florence de Roover describes just this type of situation in her discussion of the firm of Andrea Banchi, who employed two vestment makers, Cristofano and Tommaso d'Antonio. They did not work exclusively for Andrea Banchi, but regularly cut and sewed vestments for other leading Florentine silk merchants (72). The fact that the Paduan vestments were made up by a sartore rather than a banderaio is important as it shows that it would be wrong to assume, simply because banderai are known to have existed, that all vestments were made up by professional vestment makers during the fifteenth century.

Conclusion

The vestments given by Sixtus IV to the Basilica di S. Antonio are of central importance for the study of fifteenth century Italian textiles. Although almost all the embroideries are sadly lost, the surviving cloth of the chasuble and stole provides an invaluable peg for the grouping and dating of other silks. The documentation which surrounds them allows us some insight into the way the friars went about supervising such an important commission and increases our knowledge of the involvement of painters in the design of embroideries and of woven silks. It must be admitted, however, that this importance lies partly in the fact that the systematic study of existing textiles in conjunction with the rich archival material in Italy has not yet been attempted on anything like the scale that it has for the disciplines of painting, sculpture and architecture. If this is carried out, in all probability the vestments of Sixtus IV at Padua will eventually form part of a series of fifteenth century vestments for which we shall have learnt the circumstances of design and manufacture, shedding more light on this important problem.

NOTES

1 - Ita de Claricini Dornpacher. Stoffe. Ricami. Trine. Appartenenti alla Pontificia Basilica del Santo ora raccolta nel Museo Antoniano. Padua. 1934. Entry "Pianeta di Sisto Quarto".

2 - The chasuble has been recut and relined with deep red silk and lace has been inserted into the neckline. The stole is made from the same material as the chasuble, is lined with identical silk, and has crosses of modern brocaded material machine-sewn onto it. This stole may be of comparatively recent manufacture, as it seems to have been cobbled together from another vestment from the set given by Sixtus IV, as the original stoles from this set are known to have been embroidered, rather than of woven silk.

3 - Vestments given by Sixtus IV to the Basilica di S. Antonio are mentioned by Padre Bernardo Gonzati in "La basilica di S. Antonio di Padova". Vol. I, 1852, p. 73. Part of the documentation concerning the vestments was published by Padre Antonio Sartori in "Documenti par la Storia d'Arte a Padova". Edited by Clemente Fillarini, in the series "Fonti e Studi per la Storia dell'Arte a Padova". "Fonti, 3. Vicenza, 1976. pp. 30-36 & 180. The documentation discussed in this article is mainly drawn from : Padre Giovanni Maria Luisetto. Archivio Sartori Vol. I. Basilica e Convento del Santo. Padua, 1983. pp. 712-716.

4 - Andrea Moschetti. Di Jacopo da Montagnana e delle opere sue. Bolletino del Museo Civico di Padova. N.S. IV. (XXI) 1928. p. 172.
Ita del Claricini Dornpacher. op. cit. 1934. ibid.
Ulrich Middeldorf. Überraschungen im Palazzo Pitti. Pantheon. Vol. XXXII. No. 1. 1974. pp. 18-22. Ill. Fig. 3.
Giovanna Dacanio, entry on textiles in "S. Antonio 1231-1981, il suo tempo, il suo culto e la sua città". Catalogue of an exhibition held by the Comune di Padova, Assessorato ai Beni Culturali. Padua, 1981. Catalogue No. 107.

5 - Egmont Lee. Sixtus IV and Men of Letters. Rome, 1978, pp. 15-16.

6 - The Bull is dated 12 March, 1472, and is published by Gonzati. op. cit. Document XLVII, pp. LII-LIV.

7 - I owe the suggestion for this interpretation to Donald King.

8 - Luisetto. op. cit. p. 712. No. 25. 21 April, 1472. "Per carta per far disegni per li paramenti de pano (sic) d'oro L. O : 4" (AdA. reg. 350.c.55)

9 - For Jacopo da Montagnana's career, see :
Gonzati. op. cit. pp. 59, 258, 296.
Napoleone Pietrucci. Biografia degli Artisti Padovani. Padua, 1858. pp. 157-198.
Bernard Berenson. Italian Pictures of the Renaissance. Venetian School. Volume I. London, 1957. pp. 118-119.
Vittorio Lazzarini. Documenti Relativi alla Pittura Padovana del secolo XV. Illustrazioni e note di Andrea Moschetti. (Reprint of 1902-1923 eds.) 1974. pp. 117-118.
Andrea Moschetti. Di Jacopo da Montagnana e delle opere sue. Series of 4 articles in Bolletino del Museo Civico di Padova. N.S.I. (XVIII) 1925, p. 149 ff., N.S. IV (XXI), 1928, p. 165 ff, N.S. VI (XXIII), 1930, p. 122 ff., N.S. X-XI (XXVII-XXVIII), 1934-1939, p. 31 ff.

10 - Luisetto. op. cit. p. 712, No. 26. 8 May, 1472 'Si fa fare un disegno "per lo pano doro (sic) per mandar a Fiorenza. L. 2 : 4" (ADA. reg. 350, p. 55v).'

11 - Luisetto, op. cit. p. 712, No. 27.

12 - Luisetto, op. cit. p. 712, No. 27. 5 June, 1472. "A maistro Iacomo da Montagnana depentor, per dui designi el fe del pano (sic) d'oro deli paramenti uno fo manda a Roma e l'Altro a Venesia 12 : 8". "Per andar a Venesia misser fra Bortolamio Cortarolo e miss. Benvegnudo e mi per li diti paramenti 4 : 12".

13 - This interpretation was put forward by Moschetti, op. cit. 1928, p. 172.

14 - Florence Edler de Roover. Andrea Banchi, Florentine Silk Manufacturer and Merchant in the Fifteenth Century. Studies in Medieval and Renaissance History, III, 1966, p. 256.

15 - Although, in the case of the vestments given to the Baptistry of Florence by the Mercanzia guild, the design for the cloth was prepared by a weaver, Francesco Malocchi, in order for it to be woven by another weaver, Bartolommeo d'Amerigo Corsini (Maud Cruttwell. Antonio Pollaiolo, London, 1907, p. 263, No. 9) M.C. Mendes Atanasio has identified a painter working in Florence during the second half of the 15th and early 16th century who may regularly have intervened to adapt the designs of other painters for the loom. He is Giovanni Paolo di Bartolommeo detto il Biancho who appears several times in documents concerning the making of a set of vestments for the Cardinal of Portugal's chapel in San Miniato al Monte in Florence. He is cited as a painter, and, on another occasion is paid for "certain expenses for arranging a loom for vestments. "Mendes Atanasio identifies him with the painter, Giovanni Paolo di Bartolommeo di Barone, born in 1440 who, in 1502, formed a compagnia with three silk weavers. (M.C. Mendes-Atanasio. Il Cappuccio di Piviale al Museo Poldi-Pezzoli e altri paramenti della Cappella del Cardinale di Portogallo. Commentari. Vol. XIV, No. 4, 1963. pp. 233-234). Vasari does tell of a Florentine painter who supplied designs for woven silks, including cloth of gold : Andrea da Feltrini (1477-1458), a pupil of Cosimo Rosselli and of Morto da Feltre. However, Andrea da Feltrini can also be considered as a specialist designer, as he concentrated on executing decorative commissions, such as ornamenting ceilings with groteschi and painting cassoni with heraldic designs as well as contributing designs for woven silks on a regular basis. (Gaetano Milanesi ed. Le opere di Giorgio Vasari con nuove annotazioni e commenti... Sansoni, Florence, 1973. Vol. III, p. 209).

16 - Luisetto. op. cit. p. 712. No. 27. 26 June, 1472. "Per andar a Venesia per far merchà del pano (sic) d'oro per esser morto el maistro el doveva far, 5 : 2" (ADA. reg. 350 c. 56).

17 - Luisetto. op. cit. p. 712, No. 29. "Pietro Bettino della seta, cittadino di Venezia riceve dai PP, MM. Giampietro di Belluno e Agostino di Velletri, a nome del Papa Sisto IV, ducati d'oro 2072, ultimo acconto per 112 braccio di panno d'oro venduto agli stessi in nome del Papa in ragione di ducati 18 e mezzo per ogni braccio"(ADA, reg. 155, perg. 28).

18 - De Roover. op. cit. p. 246. The weaver, Domenico di Michele, took six months to weave 50 braccia of velvet with three heights of pile, and brocaded with gold.

19 - Cruttwell. op. cit. ibid.

20 - Luisetto. op. cit. p. 712. No. 29.

21 - Moschetti. op. cit. 1928. pp. 171-172 & pp. 194-195.
Middeldorf. op. cit. p. 18.

22 - Luisetto. op. cit. pp. 713. No. 37, 714 Nos. 56, 57, 60 & 61.

23 - Luisetto. op. cit. p. 712. No. 31. May, 1477, "Per far far el desegno del pano (sic) d'oro 6 : 4" (AdA, reg. 352, c. 42).

24 - The quantity of cloth required for a cope appears in the documentation surrounding the vestments for the Cardinal of Portugal's chapel published by M. C. Mendes Atanasio. op. cit.
p. 235, Doc. II. "...per costo di braccia 11 di domaschino paghonazzo, per un piviale per Monsignore di Portoghallo..."
p. 237. Doc. III. "...sono per brac. 12 di domaschino paghonazzo chermezi... per fatura di uno peviale".
p. 241, Doc. XV. "...per brac. 20 di domaschino biancho, brochatollo d'oro per fare 2 peviali...".

25 - Luisetto. op. cit. p. 713, No. 37. 19, June, 1478. "...ser Zuane de Antonio de la Seda de Veniexia si confessa aver habudo e rezevudo... ducati nonanta sie d'oro da messer Piero Musato masaro de L'Archa del glorioxo sant'Antonio... et questo fo per braze sie de pano d'oro el qual el dito ser Zanin aveva dado per far el palio de l'altaro del dito messer Santo Antonio, val ducati 96". (...ser Giovanni Antonio della Seta of Venice admits that he has received... ninety-six gold ducats from messer Piero Musato, administrator of the tomb of the glorious St. Anthony... and this is for six braccia of cloth of gold which ser Giovanni Antonio had given to make the altar frontal of the said St. Anthony, worth 96 ducats).

26 - Luisetto. op. cit. p. 714, 61.
The previous document quoted by Padre Luisetto, No. 60, dated 1 July, 1483, suggests that Giovanni Antonio had promised the cloth for the pontifical vestments, but that he had not delivered it all by this date. However, payments had been made for the sewing of the vestments on 24 January, 1483 (p. 714, No. 58) and the document 61, quoted in the text, of 14 June, 1484, suggests that Giovanni Antonio did provide all the cloth for the vestments, and at this stage he was paid L. 248. (AdA, reg. 355, c. 31).

27 - Ill. Michelangelo Muraro. Paolo da Venezia. Pennsylvania State Univ. Press. 1970, p. 79.

28 - For silks with ogival trellis designs represented by Bernardo Daddi, see Brigitte Klesse. Seidenstoffe in der italienischen Malerei des vierzehnten Jahrhunderts. Abegg Stiftung, Bern, 1967. Text p. 112 ff., ills figs 155, 156 & coulour plate IX, and catalogue No's 471-473.

29 - The silk from Sigismondo Pandolfo Malatesta's tomb is illustrated by Giorgio Sangiorgi in Contributi allo studio dell'Arte Tessile. Rome, 1925 (?) "Reliquie Tessile Rinvenute nelle Tomba di Sigismondo Pandolfo Malatesta in Rimini". fig. 4.
The cope of Pius II is illustrated by Donata Devoti in L'arte del Tessuto in Europa. Bramante Editrice. Milan, 1974, pl. 92.

30 - Ill. Rodolfo Pallucchini. I Vivarini ; Antonio, Bartolomeo, Alvise. Venice. 1962 - fig. 150.

31 - For the chasuble in the Schnütgen Museum, see : Fritz Witte. Die Liturgische Gewänder und Kirchlichen Stickereien des Schnütgenmuseums Köln, Berlin, 1926. Plate 1, No. 26, No. 1 & text p. 14, "venetianischer Goldbrokat des 15 Jarh"

32 - Girolamo Gargiolli ed. L'Arte della Seta in Firenze Trattato dal secolo XV. Florence 1868. p. 91, "Zetani vellutati alla viniziana".

33 - Pietro Calzetta is referred to as the brother-in-law of Jacopo da Montagnana by the Anonimo Morelliano (Marcantonio Michiel) in "Notizie di opere di disegno". published and illustrated by J. Morelli ; edited by G. Frizzoni, Bologna, 1884. pp. 7-8 & p. 15. See also Andrea Moschetti op. cit. 1925, p. 158, n. 5.

34 - For Pietro Calzetta see : Gonzati, op. cit. pp. 56, 58, 252 ; Pietrucci, op. cit. pp. 60-61 ; Lazzarini op. cit. pp. 173-176 ; Rigoni op. cit. pp. 25, 26, 36 & 37 ; Sartori op. cit. pp. 30-36.

35 - Sartori, op. cit. p. 33 & 35.

36 - Sartori, op. cit. p. 31. 2 June, 1472, "La fragia de mess. S. Antonio di de dare a l'archa per 64 chandeliri che fo refati par la festa de el santo de depentura, a maistro Piro Chalceta, i quelli promesse di pagare le spese de che andava... L. 32".
(AdA, reg. 351, c. 41v) (The confraternity of St. Anthony, who promised to pay for the expenses incurred, must pay the administrators of the tomb for 64 chandeliers that were repainted for the feast of the saint by master Pietro Calzetta... L. 32).

37 - Sartori. op. cit. p. 32. "A.M. Piero Frigole per pezze 500 d'oro el qual a M. Piero Chalzeta per (rivar = finire, terminare) l'altaro grande, ducati 5 val. L. 31". (AdA, reg. 352, c. 40 v.) & "Memoria denariorum expeditorum per dnum. Petrum Mussatum in arzentando voltum et manus sanctorum altaris magni ecclesiae Sancti Antonii de faciendo cetera necessaria pro fabrica dicti S. Antonii datorum Magistro Pietro Calzetta etc". (To M. Pietro Frigole, for 500 pieces of gold which M. Pietro Calzetta has for finishing the high altar, 5 ducats, worth L. 31. and A record of money spent by master Pietro Mussata, given to master Pietro Calzetta for adorning with silver the hands and faces of the saints of the high altar of the church of St. Anthony and other things necessary for the fabric of the said St. Anthony).

38 - Sartori, op. cit. pp. 33-34.

39 - Erasmo da Narni (Gattamelata) left in his will of 30 June, 1441, the sum of 500 to 700 ducats for the building of a funerary chapel dedicated to S. Francesco. (Gonzati. op. cit. p. XXXVIII, doc. 33 & text pp. 52-53). On 15 November, 1456, his widow, Giacoma, obtained permission to build a chapel to S. Bernardino and in a codicil in her will of 23 May, 1459, she left 2,500 ducats for the fabric and furnishings of the chapel. This was to include chalices and missals as well as vestments made of cloth of silver and velvet, adorned with orphreys embroidered with pearls. (Gonzati, op. cit. p. XL, doc. XXXIII, and text pp. 52-53). Only 300 ducats of this sum were for the painting of the chapel. (Gonzati, op. cit. p. XLII, doc. XXXVII). The work of painting was not started until 28 November, 1469, when the commission was entrusted to Pietro Calzetta and Matteo del Pozzo. In 1470, Jacopo da Montagnana was also commissioned to work on the chapel. In mid-September, 1471, Matteo del Pozzo died, and on 24 July, 1472, he was replaced by Angelo Zoppo. The painting of the chapel was completed by 1477. The Gattamelata chapel, which was initially dedicated to both S. Bernardino and S. Francesco, became the Cappella del Sacramento in 1651. At the time of its conversion the frescoes which adorned the Gattamelata chapel were utterly destroyed. (Gonzati, op. cit. pp. 58-59).

40 - Luisetto. op. cit. p. 712, No. 36 & Appendix I. of this article.

41 - Luisetto, op. cit. p. 713, No. 37.

42 - Luisetto, op. cit, p. 713, No. 38 & Appendix II of this article.

43 - For Milan as a centre of embroidery, see Francesco Malaguzzi-Valeri. La Corte di Lodovico il Moro. Volume 4. Le Arte Industriali, La Letteratura, La Musica. Milan, 1923 pp. 1-13.

44 - Luisetto, op. cit. p. 712, No. 36 & Appendix I of this article.

45 - Sartori, op. cit. p. 621. & Appendix IV of this article.

46 - Luisetto, op. cit. p. 713, No. 38 & Appendix II of this article

47 - Sartori, op. cit. p. 618.

48 - Luisetto, op. cit. p. 713, No. 39.

49 - Luisetto, op. cit. p. 714, No. 63.

50 - Sartori, op. cit. p. 622, gives two texts, dated 26 September, 1494, referring to the altar frontal given by the Duke of Milan. Sartori quotes two further payments to Vincenzo, in 1495 and 1506, not connected with the Duke of Milan's frontal or the papal vestments.

51 - Luisetto, op. cit. p. 714 No's 52 & 55.

52 - Sartori, p. 603, 12 May, 1474. "Mag. Ambrosius rechamator, q. dni. Paganini, habit. Paduae in contr. S. Luciae, et mag. Iohannespetrus, q. ser Iacobi, de dicta contrata, et mag. Franciscus rechamator, filius ser Beltrami, de contrata Domi, omnes tres socii rechamatores..." (Master Ambrogio, embroiderer, son of Paganino, resident of Padua, of the district of St. Lucy, and master Giovannipietro, son of ser Jacopo, of the aforesaid district, and master Francesco, embroiderer, son of ser Beltramo, of the district of the Cathedral, all three a society of embroiderers).

53 - For these contracts, for the Latin text, see Luisetto, op. cit., p. 712, No. 36, p. 713, No. 38 & p. 715, No. 67 & for an abridged translation of them, see Appendices I, II & III of this article.

54 - For example, the contract between the Florentine painter, Domenico Ghirlandaio and the Prior of the Spedale degli Innocenti of 23 October, 1485, published by Michael Baxendall in Painting and Experience in Fifteenth Century Italy. Oxford, 1972. pp. 5-6. "... he must colour the panel at his own expense, with good colours and with powdered gold... and the blue must be of ultramarine of the value of about four florins an ounce".

55 - Sartori, op. cit. p. 621 for full text in Italian and Appendix IV of this article for abridged English translation.

56 - Vasari/Milanesi, op. cit. Vol. III, pp. 299-300 "Paolo da Verona, divino in quella professione e sopra ogni altro ingenio rarissimo, dal quale non furono condotte manco bene le figure con l'ago che se l'avesse dipinte Antonio col penello".

57 - Luisetto, op. cit. p. 714, No. 66.

58 - Luisetto, op. cit. pp. 714-715, No. 66.

59 - Luisetto, op. cit. p. 715, No. 67. and Appendix IV of this article.

60 - Luisetto, op. cit. p. 716, No. 76.

61 - Luisetto, op. cit. p. 715, No. 68, "Unum pluviale excellentissimum de pano aureo cremesino rizato cum ornatissimo et pulcherimo frixo recamato cum sanctis et capuzeto mirando cum figura S. Antonij super nogaria cum figura Sixti pontificis maximi cum arma sua cum pendenti de auro et decem et novem bottonis aureis inter quos est unus magnus videlicet sumus cum serico rubeo et parte de aureo suffulto cendato cremesino et cum una bocheta argentea deaurata cum figura dei partis coronantis beatem virginem cum S. Antonio et una sancta et circum circa smaltata cum arma sisti pontificis". (AdA, reg. 74, p. 32).

The image of St. Anthony above a nut tree is an allusion to his teaching from a tree at Camposampiero. See George Kaftal & Fabio Bisogni. Iconography of the Saints in the Painting of North East Italy. Florence, 1978, p. 74, No. 21q.

62 - The morse was made by "m. Iacomo orevese". who was paid on 31 April, 1481 and 16 June, 1481 for making it. cf. Luisetto, op. cit., p. 714, No's 54 & 57.

63 - For the Assisi frontal, cf. Rosalia Bonito Fanelli, entry on textiles in "Il Tesoro della Basilica di San Francesco ad Assisi.. Introduction by Ulrich Middeldorf. Florence, 1980, pp. 83-84.

64 - Luisetto, op. cit., p. 712, No. 23. "Uno palio de panno doro richissimo fo facto a nome de papa sixto quarto cum la sua Arma, cum schaiete de arzento intorno, cum la mitria, le chiave papale, cum tre corone de schaiete dorade su dicta mitria, cum algune zogie ligade in arzento contrafacte, et algune perle non grosse cum una franza de argento et de seda verde foderà de tella rossa". (AdA, reg. 74, p. 94v).

65 - For the opinion that the tiara and keys are of 18th century work, cf. Moschetti, op. cit., 1928, p. 171 ; Claricini Dornpacher, op. cit., entry "Pianeta di Sisto Quarto". De Canio, op. cit., No 107.

66 - Luisetto, op. cit. p. 714, No. 58 "A m. Piero sartore, per la fatura del piviale e pianeta e tonesele del pano d'oro del papa, contà in tre volte, d'acordo 24 : 16".

67 - ibid.

68 - ibid.

69 - Luisetto, op. cit. p. 714, No. 65.

70 - In Florence, the banderai were affiliated to the Silk Guild and formed part of the Setaiuoli Minuti together with other silk workers such as the Giubbonai e Farsettai (the Vest and Doublet-Makers). Cf. Edgcumbe Staley. The Guilds of Florence, London, 1907, p. 213. For a more recent discussion of the role of the banderai, cf. Bonito Fanelli. op. cit. p. 84. For documents mentioning banderai, cf. Mendes Atanasio. op. cit. pp. 228, 235, 237 & 243. and Eve Borsook. Documents for Filippo Strozzi's Chapel in Santa Maria Novella and other related papers. Part II. The Documents. Burlington Magazine. CXII. No. 813, December, 1970, p. 802 (These documents are discussed in Part I of this article, Burlington Magazine CXII, No. 812, November, 1970. p. 741).

71 - Luisetto, op. cit. p. 716, No's 91, 93 & 94.

72 - De Roover, op. cit. pp. 233 & 256.

APPENDIX I

Contract between Master Bernardo, embroiderer, and the administrators of the tomb of St. Anthony of Padua, for the embroidery of the orphrey of a chasuble. 19 January, 1478.
(Abridged translation. Full Latin text in Luisetto, op. cit., pp. 712-713, No. 36)

"Master Bernardo, embroiderer, son of Leonardo of Milan, living in Venice, in the district of St. Bartholomew, of his own accord etc. agrees with the noble master Archoano de Buzacharinis and master Pietro Mussato, citizens of Padua... to make fine orphreys for a chasuble. (He will do this) entirely at his own risk and expense, both regarding the gold and the silk (thread) and other things necessary (for this work). (The orphreys should be) of the same quality and form as the design which is to be made by master Pietro Calzetta, here present, who has been unanimously chosen by the parties to this agreement. This design is to be made by the same master Pietro at the expense of master Bernardo. These orphreys are to be made with four figures on the back of the chasuble, three corresponding in length to a certain panel in the possession of master Bernardo, and the other should be of the length which is marked, and there should be a further figure on the rear corresponding in size to a figure on the Gattamelata chasuble... There should be three figures on the front, corresponding in length to another panel in the possession of master Bernardo, and two half-length figures, with the arms of Our Lord Pope Sixtus IV and the papal tiara beneath these half-length figures.

And the aforesaid orphreys may be made more rather than less beautiful than the sample given by the said master Bernardo to the representatives. And for the payment of the same master Bernardo for the aforementioned work the aforesaid representatives have promised to give the same master Bernardo two hundred gold ducats in three installments : that is to say a third two days after the next Feast of St. Anthony, a third at the next Feast of the Nativity of Our Lord after that, and the balance at the Feast of St. Anthony in the year 1479. With this (proviso) however, that the said master Bernardo should give and hand over the completed orphreys to the same administrators before the eve of the Feast of St. Anthony after next, in order that the orphreys can be placed on the chasuble and sewn, ready for the said eve".

APPENDIX II

Contract between Pietro da Pusterla, embroiderer, and the administrators of the Tomb of St. Anthony of Padua for the embroidery of the orphreys of the cope, and its hood, and the borders and apparels of two dalmatics. 25 August, 1478.
(Abridged translation. Full Latin text in Luisetto. op. cit. p. 713, No. 38)

"... the aforesaid master Pietro undertakes and ought and thus promises (that he will execute) entirely at his own expense, both regarding the gold and silver and silk (thread) and all things necessary, first of all the embroidery of the orphreys of one cope with its hood, and after he has finished the said work, if he has done it worthily and well, he is also to make the orphreys and apparels of two dalmatics for the divine worship of the said Tomb, and he should make and has promised to make the said orphreys and hood and apparels according to a panel or example given by master Pietro himself to the said administrators, both with regard to the way in which they are worked and the excellence of the figures, and also according to a design to be made by master Pietro Calzetta, both in the number and style of the figures.

(This is to be done) in such a way that the said orphreys and hood should be worthy as above. And for their part, the aforesaid administrators have promised the aforesaid master Pietro, who is present etc., to give and pay for his labour, and for all expenditure regarding gold, silver, silk and other things incurred in the aforesaid works, two hundred gold ducats for all the work involved, and it is estimated that the work shall be of an equivalent amount to the work on the orphreys of the chasuble executed for the aforesaid Tomb. And if the aforesaid work turns out to be more or less than this, payment shall be increased or decreased according to the rate paid for the orphreys of the aforesaid chasuble. In addition, there are the following agreements and conditions : that the said master Pietro undertakes to and should hand over each completed panel to the said administrators, and that the aforesaid administrators undertake to and should, give or have given to the said master Pietro, four ducats each month for expenses, and after each square has been handed over, the aforesaid administrators should completely pay the aforesaid master Pietro for the amount of squares he has done, with the exception, however, of five ducats per square, which will be retained by the administrators and this will happen successively from square to square until the whole work is finished, at which time the administrators should complete all the outstanding payments to master Pietro".

APPENDIX III

Contract between Pietro da Pusterla, embroiderer, and the Administrators of the tomb of St. Anthony of Padua for the embroidery of two stoles and three maniples. 31 December, 1484.
(Abridged translation. Full Latin text in Luisetto, op. cit., p. 715, No. 67)

"... the Administrators and the Governors of the tomb of the aforesaid most glorious divine Anthony the confessor, in order to complete the adornment of the vestments of His Late Holiness Pope Sixtus IV and to make up for the damages which the aforementioned Pietro the embroiderer claimed that he had sustained,... have agreed with master Pietro himself that he should make two stoles and three maniples, worked with the same embroidery as master Pietro himself executed for the cope of the said vestments, in this way : that for the present the aforesaid Lords Governors and Administrators should give for the support of the aforesaid master Pietro the balance which was owed to him by the Tomb, while the excess embroidery, about which the parties were in dispute, would be retained by the Tomb.

And the said master Pietro should make one of the said stoles or maniples, and that this (whichever of the two) once completed, should be measured, and that he should be paid according to the rate agreed for the work he had already done on the embroideries of the dalmatics and of the said cope, and that this should happen successively, for each of the aforesaid stoles and maniples and whereas at that time, as the parties have said, no written record was made of the said agreement, now however the aforementioned... master Jacopo, for his part alone, and master Prosdocimo de Comitibus in his own name and in the name of the aforesaid associates, on the one hand, and the said master Pietro, embroiderer, from Pusterla, living in the district of St. Lucy, on the other hand, in the execution of the said accord have both agreed with solemn promises to mutually attend to all the things written above and to observe them in everything and through everything".

APPENDIX IV

Contract between Master Bernardo Scudellino, embroiderer, and Jacopo, Bishop of Padua, for the embroidery of a chasuble, dalmatic and tunicle, four maniples, and episcopal gloves. 2 May, 1480.
(Abridged translation. Full Latin text in Sartori. op. cit. p. 621)

"Let it be known and manifest to whoever should read this that a pact, accord, and agreement has been made between Monsignor of Padua and Bernardo Scudellino in the following form, style and condition : that the said master Bernardo is bound and obliged to make and hand over an orphrey cross, complete in all its parts (lit. furnished from in front, and behind and across), according to the example which the said master Bernardo has brought and shown, with the arms of his lordship (to be placed) both in the front and the rear. With the pact and condition that the faces should be good and well made, and that those which do not please his lordship should be changed and made in a more pleasing manner, and that he (Bernardo) shall be bound and obliged to make all the mitres of the saints of pearls, which the said Monsignor will give him, and that the cross of the said chasuble shall be furnished (by him)... at the latest at the feast of Pentecost, or at the very latest at the feast of the Trinity which shall be the 8th of the Pentecost.

Item, that the said master Bernardo shall be obliged to provide the dalmatic and tunicle with all their apparels in this way : that he should make all the panels, for the back and the front of the said tunicle and dalmatic, which are 8 in umber, conform in measurement to the size that they are cut, and, where there are spaces, they should be filled with two good figures, so that each panel should have two figures.

Item, that he should make the... maniples of the dalmatic and tunicle, of which there are four, two each, according to the size which is indicated on the paper so that each maniple has two figures each on the upper part, and should have some gold flowers on the lower part, with no figures.

Item, that he should make all the embroideries necessary for the ornament and furnishing of the said dalmatic and tunicle, and of the collar and of the sides, conform in quality, quantity and style to the embroideries of the tunicles of the Duomo of Padua, which he has seen, and which were shown to him, and these apparels for the tunicles shall be furnished and made by the feast of St. John next June, at the very latest.

And for the work and the making of all the abovementioned things, the aforesaid most reverend Monsignor of Padua has undertaken and promised to give master Bernardo 95 ducats in gold or other coins, whichever shall seem better to his lordship, for the above mentioned items, when they are finished, or, if the said master Bernardo should hand over some of the things in advance of the completion date, Monsignor is happy to give him money from time to time, according to the things he receives, but otherwise he is not obliged to advance money.

Item, the above mentioned master Bernardo is found and obliged to make the episcopal gloves, with a design on each, with the understanding that the panels and maniples should correspond to the gold embroidery of the orphrey of the chasuble. And these aforementioned pacts and agreement have been made and concluded on the second day of May, 1480, and read and published in the chamber of the abovementioned Monsignor of Padua... I Jacopo, bishop of Padua in confirmation of the above written (agreement) have signed in my own hand. I, Bernardo Scudellino of the vestments have signed in (good) faith".

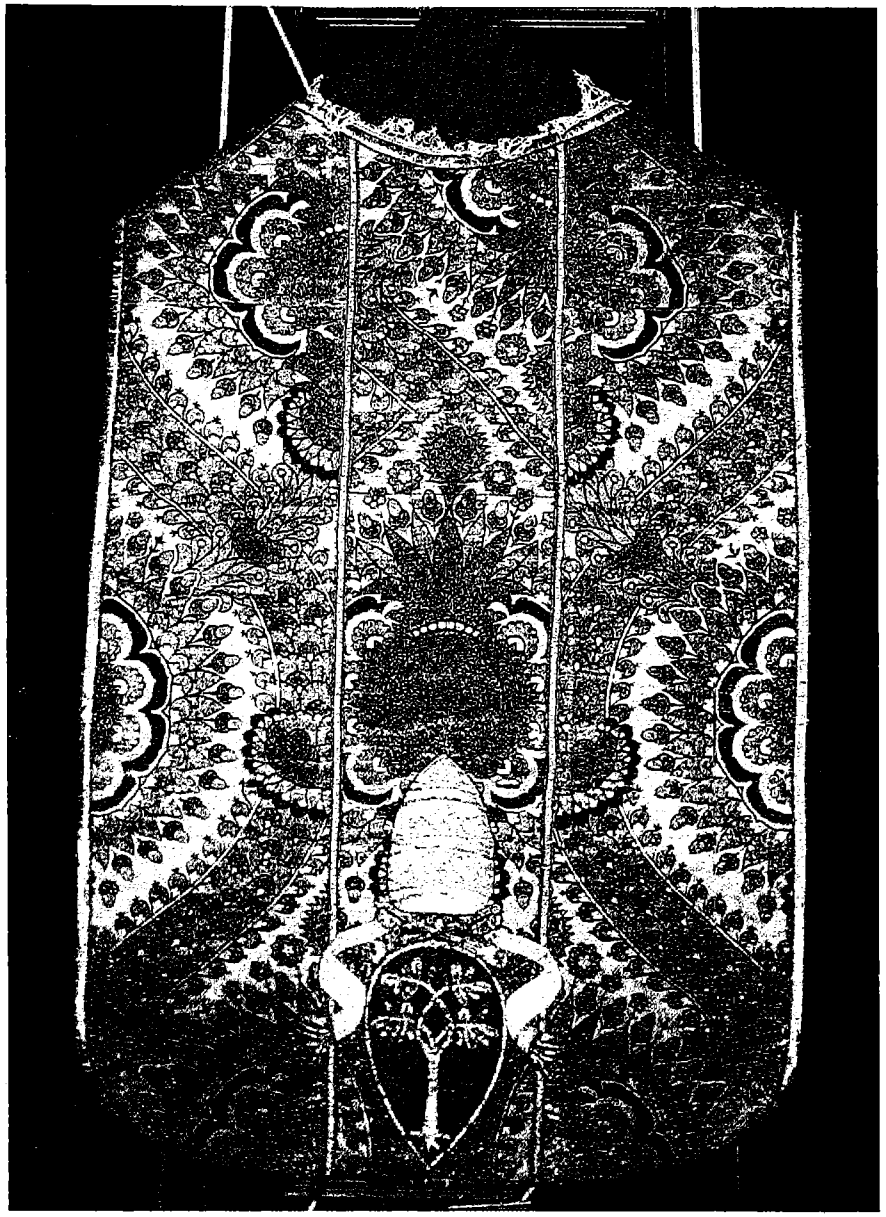


Figure 1 - Chasuble of Sixtus IV. (Dimensions : 69 cm. wide at the shoulders 106 cm. long shoulder to hem). Front.
Biblioteca Antoniana, Padua.

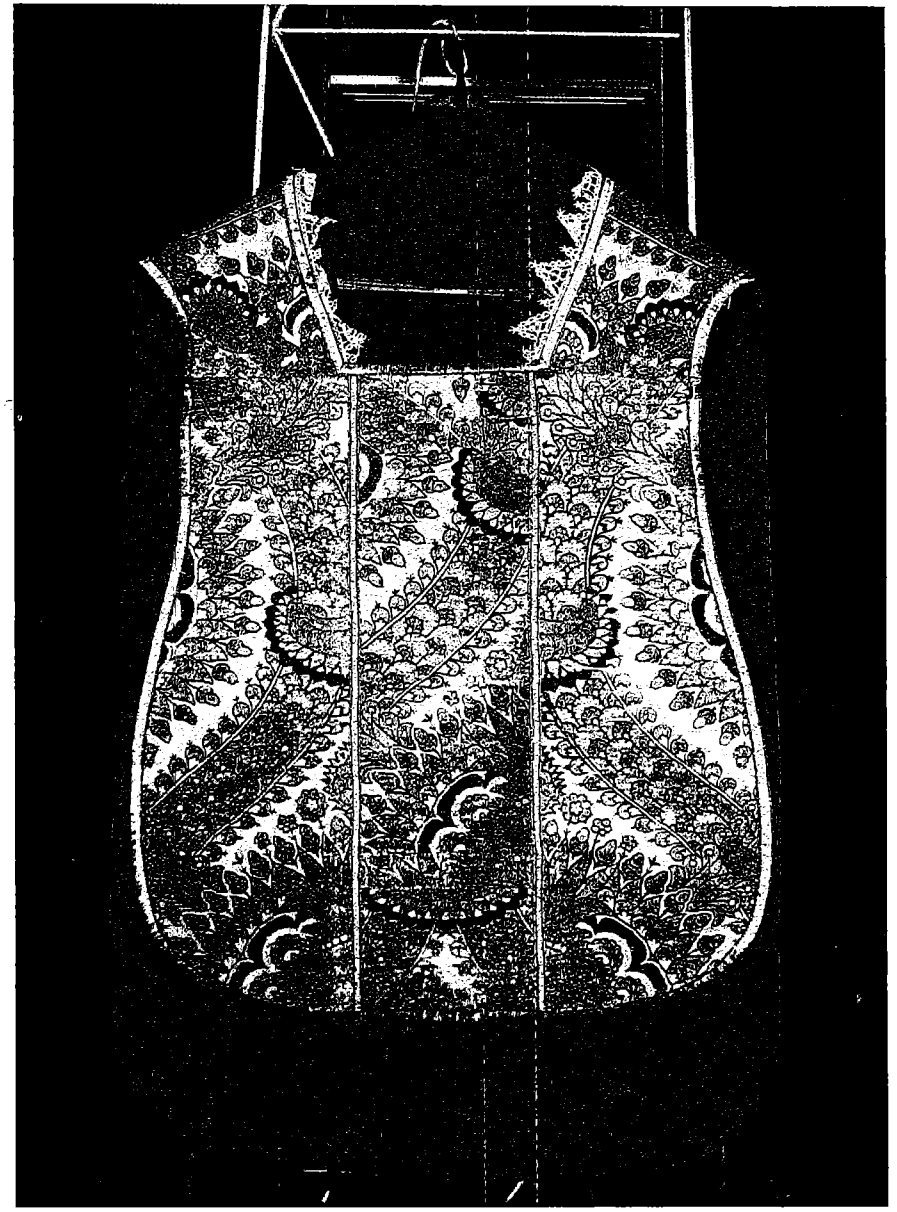


Figure 2 - Chasuble of Sixtus IV. (Dimensions : 69 cm. wide at the shoulders 106 cm. long shoulder to hem). Rear.
Biblioteca Antoniana, Padua.

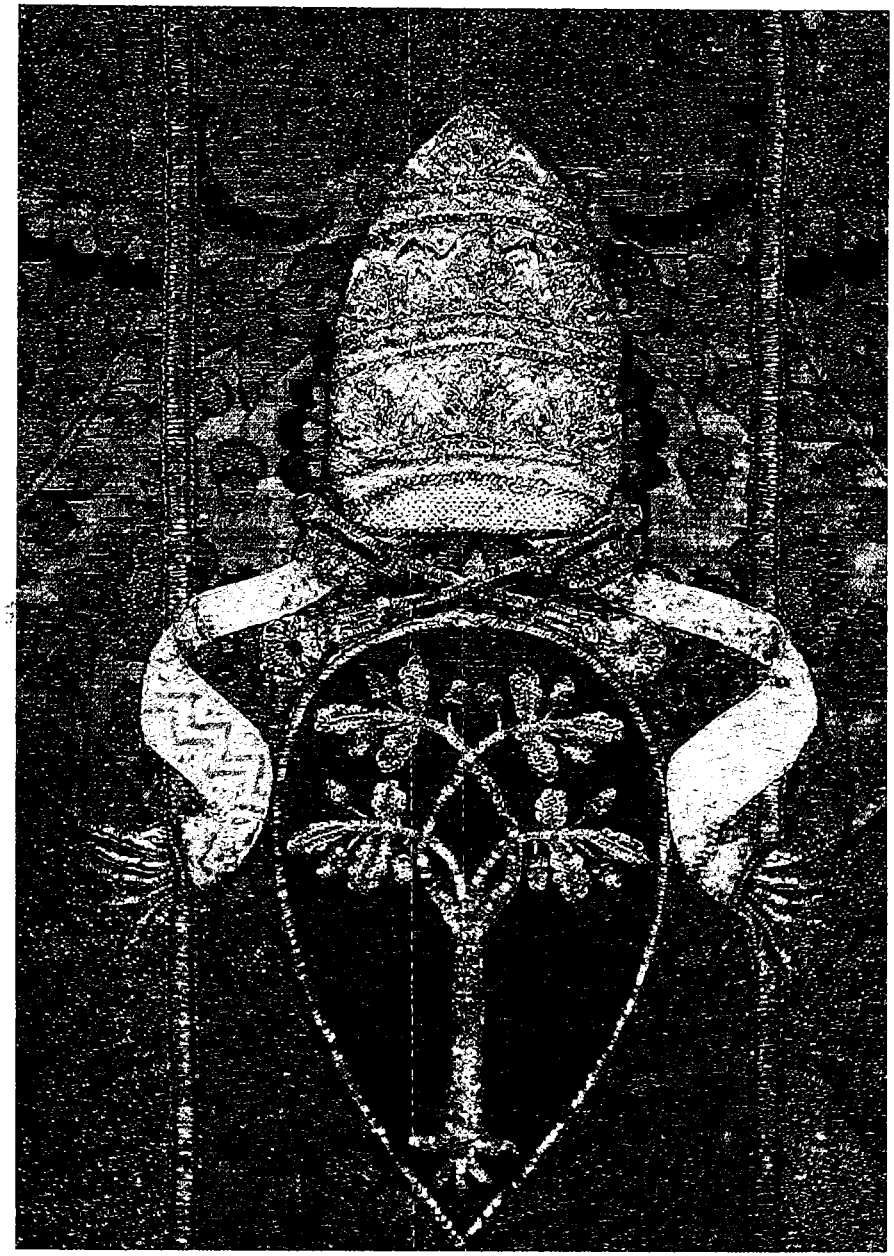


Figure 3 - Stole of Sixtus IV.
Biblioteca Antoniana, Padua.

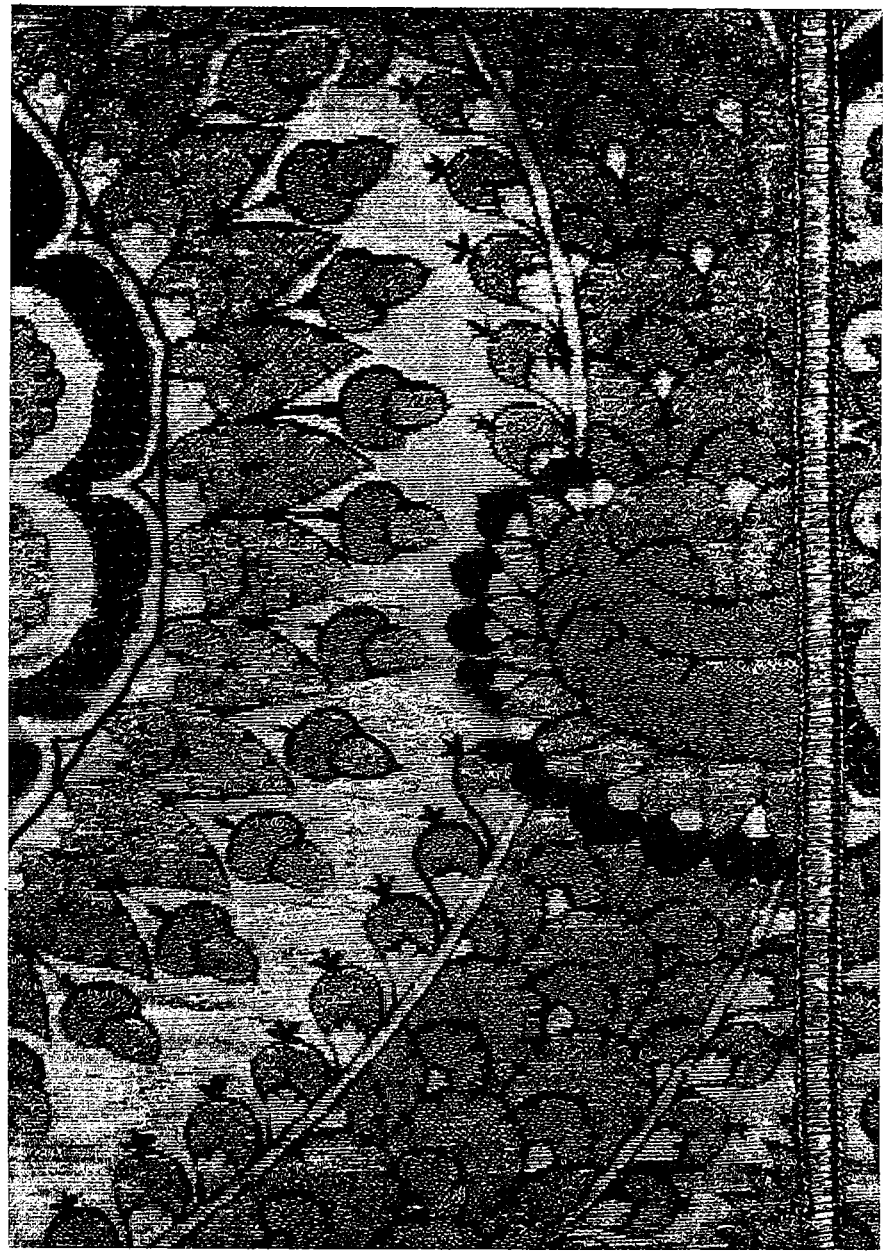


Figure 4 - Stemma of Pope Sixtus IV. (Detail of the chasuble).
Biblioteca Antoniana, Padua.

Figure 5 - Altar frontal with St. Francis and Sixtus IV as donor.
Museo-Tesoro della Basilica di S. Francesco, Assisi.

Résumé

Le Musée Antoniano à Padoue possède une chasuble et une étole qui sont considérées comme les seuls éléments survivants d'un ensemble de vêtements liturgiques donnés à la Basilique de Saint Antoine par le Pape Sixte IV (1471-1484). La chasuble porte l'écusson armorié de ce pape, brodé et rapporté, tandis que le drap d'or présente un riche décor où figure le gland de chêne des della Rovere (ce détail n'apparaît pas dans les autres exemplaires survivants de ce même décor). Ces ornements liturgiques sont d'un intérêt spécial en raison de la documentation qui les accompagne et qui donne un aperçu de la façon dont ils furent commandés et exécutés. Les administrateurs de la tombe de Saint Antoine contrôlèrent la production des vêtements, passant commande à des artistes et artisans locaux pour les dessiner et les exécuter et effectuant les paiements au nom du pape. Les broderies, dont il ne subsiste que l'écu armorial rapporté, furent dessinées par Pietro Calzetta (actif 1450-1500) -un artiste de Padoue qui travailla beaucoup dans la Basilique- et furent exécutées par des brodeurs formés à Milan. Le tissu de soie de la chasuble et de l'étole pourraient avoir été dessinés par Jacopo da Montegnata (actif 1469-1508), beau-frère et collaborateur de Pietro Calzetta. Jacopo avait, en 1472, fourni deux dessins de draps d'or, l'un étant envoyé à Rome et l'autre à Venise et fut acheté entre 1476 et 1483 à Giovanni Antonio della Seta, un marchand de soie vénitien. Comme le drap d'or de la chasuble de l'étole de Padoue constitue le seul tissu de soie du XVe siècle solidement documenté comme de manufacture vénitienne, il devrait fournir une base précieuse pour aider à grouper et dater d'autres tissus de soie. Pour cette raison, l'auteur espère publier une description plus détaillée de ce tissu à une date ultérieure.

Figure 6 - Timoteo Viti. SS. Thomas and Martin with Archbishop Arrivabene and Duke Guidobaldo. Tempera on panel.
Galleria Nazionale delle Marche, Urbino.

THE TWO DALMATICS OF SAINT AMBROSE ?

By Hero GRANGER TAYLOR

A justifiably famous collection of early textiles is preserved in the church of Sant'Ambrogio, Milan. The present article discusses the particular group to which most of the Sant'Ambrogio textiles belong, "The Relic of the Dalmatics of Saint Ambrose" (1). Two major conclusions will be offered : first it will be shown that this group can be seen to consist of two clearly defined parts, composed, on the one hand, of Late Antique textiles - the "relic" itself - and, on the other hand, textiles employed in the 11th century covering-over of the earlier pieces ; it will then be argued that out of the Late Antique textiles it is indeed possible to reconstruct two dalmatic-type tunics. The article begins with a history of the group, including a short account of the Medieval textiles. The second section is devoted to the Late Antique textiles and their reconstruction as dalmatics. In conclusion, the significance of differences between the two tunics will be considered.

All the textiles to be discussed have already been published by Alberto De Capitani d'Arzago in his 1941 catalogue Antichi Tessuti della Basilica Ambrosiana. The intention here is not to supersede De Capitani d'Arzago's careful and thorough work. Rather, it is hoped to take his identification of the different textiles one step further, to discover their original uses, to redefine their weaves with CIETA terminology and only in one or two minor cases to assign altogether different dates (2). This account relies on De Capitani d'Arzago especially in the section on the later history of the group, the documents referred to being those already quoted by him and with new information limited to that extracted by a study of the textiles themselves. Where available, De Capitani d'Arzago's work should be consulted in particular for its many and well-reproduced illustrations ; it has not been possible to equal this range here, partly for reasons of cost, but also because the orginals of his plates, including the 19th century photographs, appear to be lost. The numbering system used below, with S. standing for silk and L. for linen, is copied exactly from De Capitani d'Arzago's catalogue.

The interest of the Sant'Ambrogio pieces for the textile historian is assured, regardless of the question of original ownership. But the reader will notice that the approximate dates to be suggested for the two tunics in no way quarrels with the traditional attribution to St. Ambrose. Over the centuries, St. Ambrose's fame has rested mainly on the continued influence of his theological writings ; it was this which gave him, along with St. Jerome, St. Augustine, and St. Gregory the Great, the Medieval title of Doctor of the Church. But St. Ambrose is also one of the best documented historical figures of the late Roman Empire. As Bishop of Milan from 374 until his death in 397 A.D. and before that as governor of Aemilia, he wielded considerable political power. His close relationships with the Emperors, particularly Theodosius, is recorded in his own Letters. The Letters, along with descriptions of him by his contemporaries, notably that by his pupil Augustine in the Confessions, also give a vivid impression of his day-to-day life as Bishop. Furthermore, in Milan, a number of more tangible memorials survive. These include : the ancient parts of the three churches founded by him - Sant'Ambrogio itself (the Basilica Martyrum, rededicated to St. Ambrose after his death) (3), San Nazaro (the Basilica Apostolorum) (4), and San Simpliciano ; two silver reliquary caskets - the square "capsella" from San Nazaro and the spherical

"teca" of Manlia Daedalia, both now in the cathedral treasury (5) ; the turned wood litter or couch from the chapel attached to Sant'Ambrogio, San Vittore in Ciel d'Oro (6) ; and from the tomb beneath the high altar in Sant'Ambrogio, a well preserved skeleton (7). In this context, the most remarkable aspect of the story of "The Relic of the Dalmatics of St. Ambrose" is perhaps not so much that tunics belonging to St. Ambrose may have been kept, but rather that such fine and delicate textiles should have survived for so long and in such large pieces.

The history of "The Relic of the Dalmatics of St. Ambrose" : a) from the present day back to the 11th century.

A necessary first step towards understanding the original state of the tunics is a review of the later history of the group. Following the example of De Capitani d'Arzago, this can be carried out most easily by working backwards through time. The textiles are at present exhibited in the museum at Sant'Ambrogio. They are hung on walls, framed between double sheets of glass : with the exception of the larger pieces, which require the assistance of a ladder, they are arranged so that they can be examined by eye without difficulty (8). The textiles were moved to their present position in 1949, the year the small museum was first opened (9). Between 1940 and 1949 they had been stored for safe-keeping away from Sant'Ambrogio, in Milan cathedral, and in this way escaped completely the bombing of the church in August 1943 (10).

1940, together with 1862-3 and the archbishopric of Ariberto (1018-1045) is one of the three important dates in the history of the textiles. In April 1940 they were removed from the glass-fronted altar at the end of the South aisle in Sant'Ambrogio in which they had been exhibited since 1863. At that stage, it was intended simply to prepare the textiles for an exhibition held the following month, May 1940, in celebration of the sixteenth centenary of St. Ambrose's birth (11). But, as De Capitani d'Arzago recounts (12), on unpacking the tray-like paliotto or altar frontal, the collection was found to be both more interesting and more numerous than previously thought. (Between 1863 and 1940 only the 11th century pieces had been visible. De Capitani d'Arzago's Figure 1 shows the paliotto half unpacked). A programme of study and restoration was therefore decided on, the final results being De Capitani d'Arzago's catalogue and the unfolded, mounted state of the textiles as we now see them.

The restoration work, apart from the use of sticky cellophane-like strips to hold together weak areas and to attach the textile to glass (figs. 5 and 6), was on the whole correctly cautious and restrained (13). With the possible exception of the 11th century linen, L.3, there is no evidence that the textiles were washed ; they have not been artificially flattened (there is a narrow gap between the two sheets of glass) ; above all the temptation to further dismember and separate the different cloths was almost altogether resisted. For the historian trying to re-establish the original appearance of the textiles, there are only two changes made in 1940 that are really regrettable. First is the unpicking of the patches in the lion hunt damask, S.7, and the rearrangement of the fragments afterwards onto piece a) of the linen lining, L.2, in accordance with their design but not apparently in their original positions. Second is the turning back and sewing down of loose stretches of the 11th century backing linen, L.1, along the middle of the long sides of the main piece of the first dalmatic, S.1. As will be explained, these stretches of loose linen marked the place where the lower front and back segments of the dalmatic originally joined the rest of the silk ; they can be seen before having been turned back in De Capitani d'Arzago's Figure 3.

The relatively good care given the textiles in 1940 is in contrast to their poor treatment in the last century. Up until late 1862 "The Relic of the Dalmatics" had been kept in its own reliquary chest in the Sacristy. The chest was opened from time to time for the contents to be shown to visitors. Evidently, by the late 1850's in addition to devoti these visitors included a growing number of people with an antiquarian interest in early textiles (14). Among them was Charles de Linas, who, in the course of an article of 1860 discussing the evolution of ecclesiastical dalmatics, records his visit to Sant'Ambrogio (15) - "Le premier en date est une dalmatique que l'on m'a montrée dans la sacristie de St. Ambroise à Milan et que le témoignage authentique de l'archevêque Héribert attribue à St. Ambroise lui-même. Je n'ai pas osé déplier et mesurer ce vêtement si respectable à tous égards, vu les ravages du temps qui l'ont réduit en lambeaux ; néanmoins il m'a été permis de l'étudier fort à l'aise. L'étoffe est un damas de soie, blanc très fin, ouvré de lions couchés, du plus beau dessin, avec un reste d'angusticlave pourpre foncé, semé de croix (stauracin) en épais tissu aussi de soie". But others were not so respectful ; in two letters of November 1862, the then Prevosto, Monsignor F.M. Rossi, complains not only of accidental damage being caused but also of fragments of the textiles actually being stolen (16). Rossi's latter assertion is proved by the fact that the Victoria and Albert has a piece of the Islamic silk, S.3, which was bought by the Museum from Franz Bock in 1863 (17). Fragments of five different Sant'Ambrogio textiles from private Italian collections, now in the museum at the Castello Sforzesco, Milan (18), were also probably removed before January 1863 since there is no evidence for the paliotto having been opened between then and 1940.

Given the circumstances, Monsignor Rossi's decision of November 1862 to transfer the textiles to what was in effect a sealed show case was a wise one. However all the indications point to Rossi himself being guilty of the worst crime, the splitting up of the, until then, more or less complete dalmatics. His reasons for acting in this way are very hard to fathom. Perhaps by making the very large objects into a number of smaller pieces it became easier to arrange them in the paliotto. As will be shown, at present the first dalmatic consists of three separate pieces, one large and two much smaller, while the second dalmatic is in four pieces, with a fifth piece, the central area, missing altogether. However, in the Minutes of 12th November, 1862, which record the appearance of the textiles as they were removed for the last time from the reliquary, among five items listed, three were still large cross-shaped cloths (19). One of these three, item 5, can be identified as the separated 11th century linen backing of the second dalmatic. Items 1 and 2, however, must be the two original dalmatics themselves. That Rossi had no idea of what a Late Roman dalmatic looked like is shown by his belief that the two other large textiles, the red-yellow silk and the dark blue Islamic silk, were the original relic (20). Evidently by 1862 these two coloured silks had come away from the dalmatics they had been used to cover (they appear by themselves as Items 3 and 4 respectively in the November 12th Minutes). Rossi did get as far as realizing that in earlier centuries they had lain against the Late Antique white silks. But he was led by the rather more obvious charms of the coloured silks into believing that it was the white silks that had been added as a later protective lining or covering, and not vice versa (21).

Over the preceding centuries the textiles presumably underwent a degree of decay as well as damage by handling. The worst staining, the large circular damp marks on the second dalmatic, is matched by stains on the dalmatic's Medieval linen backing and so must have occurred between the 11th century and the time, probably in the first half of the 19th century, when the two became separated.

Wear, as opposed to rottenness, is detectable in a number of places, particularly on the parts of the Islamic silk that covered the central area of the second dalmatic. But there is no sign of any deliberate change or addition having taken place during the eight hundred years before 1862. This is despite the fact that the group as a whole was transferred at least once during this period, when it was moved to a new reliquary chest given by cardinal Federico Borromeo in around 1608 (22). Whatever the container, the dalmatics were probably kept all this time in the sacristy at Sant'Ambrogio. "The dalmatics of St. Ambrose" are listed in 17th and 16th century sacristy inventories and a 14th century reference to "the alb and dalmatic of St. Ambrose" suggests that they were already in the sacristy by that point (23).

The history of the dalmatics : b) the wrapping-up by Archbishop Ariberto

The earliest document relating to the relic is also itself one of the textiles in the group. This is tablet-woven pallium, S.11, with an inscription in Latin (24). It reads "SUB HOC PALLIO TEGITUR DALMATICA SCI. AMBROSII + SUB QUO EANDEM DALMATICAM TEXIT DOMNUS HERIBERTUS ARCHIEPISCOPUS". This can be translated literally as "Under this pallium is covered the dalmatic of St. Ambrose. Under it Father Ariberto, Archbishop, covered the said dalmatic". The pallium was attached to the second tunic, but clearly Ariberto did what he himself describes for both. That is to say, he completely enclosed them, backing the reverse of each of the flattened out garments with linen and covering the fronts with sheets of silk and other smaller embellishments. Since it had the effect of completely hiding the original Late Antique textiles, this may at first seem a strange undertaking. But it obviously did, as desired, provide protection. And it is not an exceptional case ; among the numerous Medieval examples of the wrapping of relics in precious cloths, there is a small number of others where the relic itself is a textile (25).

The first dalmatic, which when first made consisted of a single sheet of white silk, S.1, still retains in situ three or four of the 11th century additions. Present on all three fragments is the plain linen backing, L.1, (fig.5). The largest fragment, the central piece S.1 b), in addition has, on its face towards one end, a rectangle made from strips of a kind of cloth of gold (S.10, a silk with a pattern made by a lancé weft of gilded membrane). Meanwhile, the smaller fragments S.1 a) and c), carry, at their outer edges, panels of linen embroidered with human figures, L.4 A and B respectively. To complete the picture of the first dalmatic after the wrapping-up, we need only replace the two-faced 1:2 twill silk, S.2, red side up. That this silk was used to cover the whole of the front of the dalmatic is indicated by parts of it that remain between both the cloth of gold and the panels of embroidery and the original white silk, as well as by the wisps of its unspun red and yellow weft which still adhere in many other places.

The evidence concerning the wrapping-up of the second dalmatic is rather more confusing. This is not only due to the fact that here none of the 11th century textiles remain in position. The layers are anyway not so clearly defined because, unlike the silk of the first dalmatic, the Late Antique damask, S.7, had from the beginning its own linen lining, L.2, as well as in places, on top of it, strips of the dark red silk, S.8, its original applied decoration. Nonetheless, if the remaining loose textiles in the group are studied with care all four can be seen to have formed part of Ariberto's covering (26).

L.3, a linen with a design of roundels made by a second, "flushing" warp, has the four round stains already noted which match stains on the early linen, L.2. These stains seem to prove beyond doubt that L.3 was used to back the second dalmatic. On the patterned linen there are also bits of dark blue sewing thread which are the same as sewing thread to be found, in turn, on the blue Islamic silk, S.3. The conclusion to be drawn is that the Islamic silk, an "incised" 1:2 compound twill with a paired main warp, formed the upper layer of the sandwich, and like the red-yellow silk in the case of the first dalmatic, covered the whole of the front of the second. Further proof of the relationship between the patterned linen and the Islamic silk is indicated by another textile, the gold on purple embroidery, S.6/4. (27) The base silk of S.6/4, another 1:2 compound twill with paired main warp, is very rotten and now only really exists where it is held together by the embroidery ; the largest of four surviving fragments measures 38 by 4 cms. But futher traces, along with bits of the gold thread, are found at some of the edges of both the patterned linen and the Islamic silk. Apparently, this embroidery was originally substantially bigger ; it seems to have been employed as an additional embellishment in something like the manner of the embroidered panels on the first dalmatic. The fourth textile, the silk tablet-woven pallium, S.11, was listed in the Minutes of November 1862 together with the cruciform remains of the dalmatic itself (28). However, one would assume that in order to have been visible, it must have been sewn over the outer covering formed by the Islamic silk. When Charles de Linas saw the pallium he described it as "fixé...à l'enveloppe du vêtement" (29). And visible on the two largest fragments of the silk, S.3 a) and b), is a long narrow unworn strip where the surface has been protected in some way. This strip corresponds in width to the pallium.

Unfortunately there is not space here to go into the 11th century textiles fully (30). But they are an important collection in their own right and it is worth noting that, by identifying their part in the wrapping-up of the relic ordered by Archbishop Ariberto, one has provided them with a terminus ante quem, a final possible date for their last use at the end of Ariberto's life (Ariberto became Archbishop is 1018 and died in 1045). Two of the eight textiles in addition have a terminus post quem, a fixed earliest possible date. One of these is, of course, the pallium with its indisputable connection with Ariberto ; the other is the Islamic silk, the woven Kufic inscription of which reveals it to have been made after 1010 and probably before 1024/5 A.D. (31). All of the silks and the design at least of the figured linen, in addition have very good parallels among other textiles of the period, particularly those from the tombs at Bamberg and Speyer cathedrals (32).

Perhaps the most interesting item, among the wrappings is the pair of embroidered panels L.4 A and B. It is a pleasure to be able to report that the central section of L.4 B, missing from the church itself, is preserved in Milan, in the museum at the Castello Sforzesco (fig. 1 shows the left-hand side of the Castello fragment) (33). From this fragment one learns that, apart from some minor differences in iconography and the treatment of the features, the two panels repeat. The scene, showing an enthroned king between his queen, swordbearer and other courtiers, is of a type that had by the 11th century a long history. It can be traced via the Sacramentary of Henry II (1002-1014) back to the Codex Aureus of Charles the Bald (870) (34) and eventually to the Missorium of Theodosius (388) (35). It is inappropriately secular for attachment to a relic, as De Capitani d'Arzago remarks (36), and clearly this was not the first use the panels had been put to. Originally they had been embroidered so as to finish at either end with a diagonal, a shape that would have suited the cuffs of a garment ; the rectangular outline was afterwards built up by the incorporation of bits of a similar embroidery. Yet judging by the style of the embroidered figures, the two applications were not far apart in time (37).

De Capitani d'Arzago believed that the panels were probably made for one of the various coronations that took place at Sant'Ambrogio (38). Having now established that their second use is very unlikely to have been later than 1045, only one ceremony would appear to remain possible, the coronation of Conrad II as King of Italy in 1026. Without reference to the panels Charles de Linas had suggested in 1859 that two other textiles could have been used in this coronation, the red-yellow silk, S.2, and the "cloth of gold", S.10 (39). One could indeed interpret most of the eight wrapping cloths as having been originally bought or ordered for the celebrations of that year. And regardless of the coronation, it seems very likely that at least one of the kings represented is Conrad himself. By the 1030s the alliance between Ariberto and Conrad had developed into a power struggle. The sewing of the panels upside-down along what is the bottom edge of the Late Antique dalmatic should nevertheless probably not be seen as Ariberto's final insult to Conrad. The side seams of the dalmatic had very likely been unsewn long before, and given the extent to which clothing types had changed over the intervening six hundred years, Ariberto may simply have mistaken the lower part of the dalmatic for its sleeves.

The history of the dalmatics : c) from the 11th century back to Late Antiquity

It would be difficult to say for certain where in the church the dalmatics were kept during the first centuries of their history (40). There is no record of the tomb having been opened in the 11th century (41). Two hundred years earlier, during extensive alterations to the church which included the installation of the new gold enamel altar, the gift of Archbishop Angilberto in 835, the level of the sanctuary had been raised and the body of the saint "translated" to a new sarcophagus (42). Yet, significantly the one major 9th century textile at St. Ambrogio is not from the group of the dalmatics, but is the "Hunter" compound twill from inside the doors of Angilberto's altar (43).

The dalmatics show none of the typical stains of clothing use to dress the body. As mentioned above, the worst stains, on the second dalmatic and on its 11th century backing, must post-date Ariberto. The better preserved first dalmatic actually retains clearly indented straight fold lines, the sharpness of which shows them to have been acquired before the later layers were added and indicates that the tunic had been put away unworn after laundering (44). Had the dalmatics even been put inside the tomb, but not in the sarcophagus, one would still have expected much more damage by damp than exists. It is known that the area under the high altar is very wet, water having caused Rossi considerable difficulties in the 1860s during the construction of the new crypt (45). When, in 1871, the porphyry sarcophagus containing the skeletons of Ambrose and the two protomartyrs Gervasius and Protasius was eventually opened, it was still two thirds full of water (46). Rossi records that with the skeletons were found traces of other clothing or wrappings, including two jewelled buttons and much gold thread ; these textile remains do not appear to have been kept, but Rossi's conclusion that most dated from the time of Ariberto is presumably correct.

De Capitani d'Arzago has conscientiously discussed all the known and conceivable translations of the body (47). Because a coin of Theodoric (475-526) was found in the tomb, he assumes that the tomb was opened in around 500 and considers the possibility that the earliest textiles in the group were added to the contents at that time. But De Capitani d'Arzago did not realise that any of the textiles were more than anonymous cloths. The fact that the Late Antique textiles actually once formed two tunics does not by itself prove their age.

It does, however, make it extremely unlikely that they should have been added to the contents of the tomb at a later date, as new pieces of clothing.

Such damage as the tunics did suffer before the 11th century in fact seems to be the result of their having been too easily accessible, rather than of neglect. The first dalmatic, generally better preserved than the second, does not appear to have been actually altered prior to Ariberto. On the other hand, the state of the damask surface of the second dalmatic, both before the restoration of 1940, showing many overlapping patches (fig. 9), and now, with the fragments still attached to the linen being without any consistent warp direction, implies that, before disappearing under the 11th century cloths, this tunic had undergone a number of sessions of repair. It is reasonable to assume that one of these sessions was at the time of Ariberto, a neatening in preparation for the wrapping-up. The presence of four square panels or "pockets" seems however, from the textiles involved, to record a different and earlier set of repairs.

These pockets are linen panels about 11 cms. square. Two are still in place, sewn down to fragment L.2 b) of the second dalmatic, the other two are loose but were probably previously sewn to the other side of the tunic, now L.2 a) (48). They were described as pockets by De Capitani d'Arzago because in 1940 they were found to contain tiny fragments of the lion-hunt damask (49) ; one would imagine that these were fragments that had broken off and were too small to sew, larger pieces having at the same time been reattached as patches. The linen of the panels, unnumbered by De Capitani d'Arzago, is a plain loosely woven tabby with 23-28 threads per cm. in the warp and 16-18 in the weft. Both yarns are singles Z-spun. An attempt to date a completely plain linen may seem foolhardy, nevertheless, one can state that the uneven relationship between warp and weft found here is not a feature of later Medieval and modern linens. To take an example of the latter type, the 11th century backing of the first dalmatic (L.1 - visible in figure 5) exhibits a regular 19-20 threads per cm. in both warp and weft. On the other hand, linen textiles of Antiquity, in the Mediterranean region at least, tended to have a considerably higher proportion of warp threads, with the spacing of the threads, particularly in the warp, usually rather unequal (50). Presumably a change in equipment was involved, perhaps from a vertical loom to a horizontal loom with reed, and apparently the older equipment had been used for the linen of the pockets.

The silk covering of the pockets only survives as the minutest fragments. It is a soft pink in colour with warp and weft unspun. The largest piece (fig. 2) is just large enough to show the well-known Chinese figured monochrome weave with a tabby ground and a pattern based on diagonals in 1:3 twill (51). Traces of embroidery on the linen of the pockets - simple motifs in tobacco, pink and white silk and bright red and yellow wool thread - would tend to push the addition of the pockets to the end of the possible range for the linen and Chinese silk, perhaps in the 7th-9th century (52) ; as far as we know, embroidery was not usual in Roman Italy, the colours in question also being untypical of Late Antique textiles (53).

What was probably for the second dalmatic an even earlier and yet more fundamental programme of repairs involved a textile that is itself, to all appearances, of Late Roman manufacture. This textile is the dark purple-coloured silk, S.9. Now extremely fragmentary, it survives only as tiny pieces caught under a thick brown wool sewing thread, the thread that had presumably been used to attach it. S.9 seems to have been sewn to the second dalmatic in long strips since the remains of it, together with two parallel lines of brown thread, can be traced

around the three outer edges of the four surviving pieces of the dalmatic, as well as across the middle of piece L.2 b), following the seam in the white lion-hunt damask (fig. 13). The largest fragment, measuring about 7 x 9 mm., occurs near the inner left-hand corner of L.2 a). This is just big enough to reveal the two contrasting surfaces of a 1:3 and 3:1 twill damask. The warp, despite the overall effect of purple, is grey, in a fine Z-spun yarn with, very approximately, 70 threads per cm ; the purple weft is unspun, with c. 35-40 threads per cm. In the warp-faced area the twill is in the Z direction ; the weft-faced area, apparently a regular block 12 ends wide, is in S-twill.

The purple silk was evidently in a slightly better condition when first seen by De Capitani d'Arzago as he, for instance, mentions the presence of a selvedge (54). Having remarked on the difficulty of making out the whole design he adds "it seems that it would have been geometric" and draws a comparison with the geometric twill damasks from Conthey and Trier (55). It will be recalled that Charles de Linas, in his 1860 article, spoke of a thick deep purple silk sprinkled with crosses. While "thick" applies better to the dark red compound tabby S.8 (fig. 11), S.9 is certainly dark purple. Had S.9 also had a design of crosses, it would have compared well with other damasks, such as the undyed Trier fragment. Confirmation that we are at least dealing with a geometric damask is provided by the contrasting directions of twill, a feature of Mr. De Jonghe's Group I ; his Group II, figurative damasks such as the lion-hunt silk, have a continuous line of twill through figures and background (56). The latest dated examples among the small of surviving geometric damasks are the Trier pieces ; these were placed in the tomb of St. Paulinus in 395 (57).

Charles de Linas's use of the term angustus clavus, the Roman narrow shoulder stripe, reminds us to consider the possibility that S.9 was part of the original applied decoration of the tunic. But while the strip covering the seam on L.2 a), may have resembled a shoulder stripe, there is no precedent, either among surviving Late Antique clothing, or in depictions of clothing, for the decoration of all the outer edges of a garment (58).

In fact there are three further aspects of the purple damask that show it to have been put on after the tunic had ceased to be worn : the thick wool thread used to attach the purple silk is much coarser than the threads used in the original construction of the tunic (the two areas where the original sewing can be seen are the surviving hems on the linen lining and the straight seams in the lion-hunt damask surface) ; the strips of S.9 were laid over parts where the neat hems of the linen L.2 had already been undone ; S.9 crosses over fragments of the white lion-hunt damask, S.7, that protrude beyond the original edge of the linen edge. The impression given is that S.9 was added to finish off a set of rather ham-fisted alterations to the damask surface of the tunic. These alterations apparently involved the wholesale movement of large fragments of the white damask, probably taking pieces from one side of the garment to fill up gaps on the side to be displayed.

Further evidence for the moving of the silk also supports the early application of the crosses made from the compound tabby silk, S.8. On one fragment of the lion-hunt damask there is a "shadow" showing where a bar of cloth of the same shape and size as one of the bars of the applied crosses had once been sewn. This fragment of the white damask is attached to piece L.2 a) of the linen lining and is one of those that extend beyond the edge of the linen under the remains of the purple damask. The shadow lies parallel to the purple strip and is so close to the edge that there is no longer sufficient room for the cross-bar

that presumably once accompanied it. Conversely, on the other side of the dalmatic (the half with very little surviving white damask surface) the one remaining bar of the compound tabby cross on L.2 d) has clearly been taken off and resewn ; it is attached with white thread rather than the original red, and there is now no damask lying between it and the linen lining as there still is under the cross on L.2 c) (fig. 13). The best explanation of these facts is that the lion-hunt damask was rearranged some time after the original application of the compound tabby crosses ; as already set out, the purple damask must have been added after the white damask had been moved. The purple damask, S.9, was probably not woven later than the 5th century. One cannot be certain that it was not used on the second dalmatic at some point afterwards, for instance at the time the linen pockets were added. The likelihood remains, however, with the second dalmatic itself apparently dating to the second half of the 4th century, that the repairs and alterations in which S.9 was involved took place within fifty or a hundred years of the dalmatic having been made. It appears that wear rather than decay made these first repairs necessary. The white damask S.7 is very fine and thin, but had it itself become brittle at that stage, it would probably not have survived the following one and a half thousand years in such comparatively large quantities. The linen lining, L.2, moreover, although cut, remains today otherwise in really quite good condition. The silk surface may have become damaged while the dalmatic was still being worn. When a relic, the tunic would also have been subject to handling. That the touching of relics, especially clothing, was a practice of the Late Roman period, is illustrated by a remark of St. Ambrose himself. In the same letter to his sister in which he describes finding the bodies of Saints Gervasius and Protasius, he writes "you yourselves have been acquainted with many people, who, when they had touched with their hands the clothes of saints, were cured of their illnesses " (59).

The first dalmatic : reconstruction

The white silk, S.1. which constitutes the first dalmatic is a simple tabby with 40-45 threads per cm. in the warp - the warp yarn Z-spun - and 30-36 threads per cm. in the weft - the weft yarn being without appreciable twist. The ground weave is modified for six plain reddish-purple weft-faced stripes, the only decoration ; in the stripes the warp is paired, with even and odd threads kept separate (fig. 16), and the weft here is also used in pairs, 1.4 - 1.5 cms of the finer coloured weft being accompanied on each side by 25 cms. of paired white threads (fig. 3) (60). As with the other textiles, De Capitani d'Arzago gives further details on the degree of spin, the type of fibre, dye tests and so on (61).

The condition of the silk varies (fig. 4). In the central area of the largest fragment, b), it is fair, with the exception that the coloured weft has rotted more than the surrounding undyed white. Most of the outer parts of b) and all of the smaller pieces a) and c) are, in contrast, poorly preserved ; these were presumably the areas that were on the outside of the bundle when the dalmatic was folded. The 11th century linen backing, where it has been brought round to the front of the silk for hemming, has had the effect in addition of hiding most of the original edges of the silk. But, at the same time, the sewing of the linen has helped to hold together a border-like band of silk just in from the outside edges which is more or less complete on all three pieces (figs 4 and 5).

Following the 1862 description of this silk and its backing as cross-shaped, De Capitani d'Arzago reassembled the pieces as in figure 4, with the warp of the silk running vertically throughout (62). He discussed at some length the possibility that the cross shape might represent a dalmatic, but finished up bewildered. However, to anyone better acquainted with excavated Late Antique sleeved tunics, including the earlier "Coptic" examples, the form is, in principle, familiar. It will be remembered that, as a rule, these tunics were woven to shape with the warp running horizontally in the garments as worn (63). Weaving was carried out beginning at the end of one sleeve ; when this sleeve was complete, two additional sections of warp were added on to either side to form the body of the tunic ; when the second edge of the body was reached, the warp was reduced to the original width for the final part, the second sleeve. Narrow-sleeved tunics, the majority of the excavated examples, do not give an outline with proportions as we see in figure 4. But if instead one takes what is probably the best preserved of a smaller group of wide-sleeved tunics, Victoria and Albert Museum 361-1887, (from Akhmim, dating to around 300) (64), it will be seen that its shape as woven is very like the Sant'Ambrogio silk, though rather smaller (fig. 14).

Confirmation that the silk, S.1, was also shaped during weaving is found in two woven details. Linen hems cover most of the edges where one would hope to find selvedges, but figure 5, a detail of the outer piece a), shows holes in the linen through which the unspun weft can be glimpsed passing round a selvedge of two or more thick linen warp threads or cordelines. In the uncovered silk to the right it will be noticed that the weft, as it approaches the selvedge, tends to group itself into sixes, some threads even crossing over each other, where, at the edge of the loom, the sheds did not completely reverse. This grouping phenomenon cannot be thoroughly explained without a proper examination of the selvedge itself (perhaps six picks were worked across the web together and were then taken round the selvedge as a single unit), but for the meantime it can be accepted as indicating the nearby presence of a selvedge. The grouping is found on the outer vertical edges of the smaller pieces a) and c), that is along the lines 3-4 and iii-iv on figure 4. It occurrs again on the central section, b), on the sides 1-2, i-ii, 5-6 and v-vi. However, no grouping is visible on either side of the gaps between the pieces, 2-5 and ii-v. These last edges would have been in the midst of continuous cloth if the tunic had been woven to shape.

Moving to the horizontal edges, one should hope to find some sign of weaving beginning or finishing. The rotten state of the later linen on the two outer pieces, particularly along the side ii-iii of c), has left bare the remains of a silk hem, now cracked and broken, but which had once been folded back and sewn in the manner shown in figure 6. At the centre of this hem the tightly spun silk warp threads can be seen reaching beyond the limit of the weft and forming an untidy fringe, while the unspun weft threads, elsewhere closely beaten, spread out and loosen as they approach the fringe. There is no starting border of closing cord such as one would expect to find in an equivalent position on a tunic of wool (65), but quite clearly this edge has not been cut. The fact that these fringes are found on the subsidiary side sections of the web, put together with the evidence already discussed for selvedges, confirms that the cross-shaped form of S.1 was created during weaving.

The remains of the six purple stripes all occur on the large central fragment, b). Most obvious are the two, 30 cm. apart, which run across the centre of the silk. The poor preservation of the purple weft makes it impossible to be certain exactly how and where these central stripes finished, but we know that they cannot have continued on into the side sections because on the right

side of b) at least, uninterrupted white silk survives beyond them (fig. 4). The four other stripes are to be found as two pairs, one pair at the top of b), the other at the bottom. Although now only visible as fragments, these paired stripes can be traced from selvedge to selvedge, that is across the cloth just inside the lines 1-i and 6-vi on figure 4. If, following the example of the excavated tunics, one now folds the cross shape of the silk down the central vertical line and then turns the whole object through 90° so that the warp runs horizontally, it should become obvious that the two central stripes are the shoulder stripes of a tunic and the pairs of stripes are at the ends of the tunic's sleeves. This dalmatic is slightly unusual in that the shoulder stripes or clavi stop at about waist level instead of running the full length of the garment, but the shorter version is a respectable alternative, occuring for instance on a tunic fragment of the mid-3rd century from Palmyra (66) as well as in a North Italian work of art contemporary with St. Ambrose, the ivory diptych of Stilicho and his family (67) (in figure 7 the reconstruction of the dalmatic, the ends of the clavi have been copied from Stilicho's tunic).

On the excavated tunics of the 4th and 5th centuries the neck opening is nearly always a woven detail, consisting of two internal selvedges extending between the two shoulder stripes. In the silk S.1 there are no selvedges in the area one would expect them nor is there any trace of the thicker or grouped selvedge cordelines which were normally carried on for some distance beyond the opening. It was suggested in 1983, at Lyon, that this lack might be explained if instead of a slit opening, a cut shaped neck such as one finds on some later Egyptian tunics had been intended ; this might never have been cut out if the tunic as a whole had never been made up. Recognition of an opening on S.1 is made difficult by the fact that nearly every gap in this area was closed up in the 1940 restoration, using the cellophane strips. A closer and more recent inspection, however, has shown up one split in the silk which runs the whole 30 cms. between the stripes (fig. 3). This is slightly to the left of centre on the silk as it is mounted on the 11th century backing, but is bordered by traces of stitching and continues the line of a sharp fold which runs the full length of the cloth. This split can probably be interpreted as the remains of a sewn horizontal neck opening, the fold being the fold along the top of the shoulders and the sleeves. (Other evidence for the tunic having been made up and worn, also not noted in 1983, is the hemming of the horizontal edges just mentioned).

To complete the reconstruction of the tunic, two further bits of sewing must be put back. First is the main underarm-to-side seams ; unlike medieval ecclesiastical dalmatics, sleeved tunics of the Roman period were closed at the sides, with only the underarm angle itself sometimes left open (68). Second is a feature found on nearly all the surviving tunics, the purpose of which is not yet proven, but which may have been to do with the need to adjust ready-made clothing to individual requirements. This is a sewn tuck running right round the garment at about waist level (69). On the silk a tuck cannot be identified with certainty, but towards the right of the central piece b), there is a pleat in both silk and linen, running vertically, which may be the remnants of one, though unusually, it would pass through the sleeves as well as the body of the tunic. In the reconstruction in figure 7, a tuck has been shown in this place ; the total depth, 5 cms., is calculated as the amount of cloth, which, if taken out also from the right side of b), would bring the neck opening back onto the central axis.

The dalmatic as reconstructed is remarkable for its excessively long and deep sleeves. The width from one cuff to the other of 268 cms. is far more than any human arm span. Yet it is not a totally unwearable piece of clothing. The sleeves could have been kept from covering the hands by supporting them with crooked arms, in the same way that the very large imperial toga had had to be held up by the left arm. And the length of the tunic, at roughly 149 cms., is not so extreme, being about floor length for a person of 167 cms., or 5 foot 6 inches. St. Ambrose's own height has been calculated from his skeleton to have been rather less - 163 cms. (70) - and it must also be admitted that in the nearest thing we have to a portrait of St. Ambrose, the mosaic in figure 8, the tunic as worn stops some distance above the floor. Nevertheless, what is undeniable is that the mosaic tunic, even though shorter and exhibiting the long variety of clavi is a garment very similar in appearance to the surviving dalmatic.

The first dalmatic : discussion

Display of status may partly explain the tunic's exaggerated proportions. Although by the 4th century figurative designs on textiles were becoming more common, as the second Sant' Ambrogio dalmatic illustrates, Mediterranean clothing had previously been characterised by very simple decoration consisting mainly, as here, of plain weft-faced stripes (71). With opportunities for display in effect restricted by this plainness, attention seems to have concentrated on the quality of raw materials, both fibres and dyes, and the quantities in which these materials were used. Three surviving tunics from Late Roman Italy, the two Sant' Ambrogio dalmatics and a slightly earlier tunic with a silk warp and a wool weft from the Sancta Sanctorum in Rome (72), were each bigger in total area than every one of the excavated wool or linen tunics from Syria or Egypt, a fact that cannot be satisfactorily explained by differences in physical stature only. Roman art, particularly portrait sculpture of the 1st and 2nd century, confirms that garments that were anyway loose or simply draped could be very large when worn by the grandest people (73).

If this Sant' Ambrogio dalmatic had been St. Ambrose's, then he cannot have considered appropriate to him, as an important bishop, advice that he gave the clergy in general, that they should not add to their appearance with "expensive and white clothing" (74). That this tunic was indeed very expensive is indicated by the fact that the fibre used is a cultivated white silk. In all probability, silk growing had not yet been introduced into the West at the time the tunic was woven ; in other words the silk must have been imported in some form or other, China being the most likely source (75). The only comparatively modest aspect of this first dalmatic is in the quality and amount of purple decoration it exhibits, something which to contemporaries would have been its most obvious mark of status. Although the dye used was very probably the famous purpura derived from sea-snails (76), the colour of the stripes even before becoming faded seems not to have been the prized very dark shade, which used up the maximum amount of precious dyestuff. And while, because this is a tunic with very deep sleeves, there is twice as much purple on the sleeves as on the actual clavi, the width of all the stripes is comparatively narrow, between 1.4 and 1.5 cms. This compares with a width of probably at least 7 or 8 cms. wide for the latus clavus of the traditional sleeveless tunic worn by senators (77).

Up to this point, both the Sant' Ambrogio tunics have been referred to "dalmatics" without any attempt to define the term. We do know that the term had been applied, to the second tunic at least, from the 11th century onwards.

But because "dalmatic" has had its own later meaning, for a church vestment of a gradually evolving type, the medieval use does not show that the tunic as reconstructed is a dalmatica in the Late Antique sense.

There are usually many pitfalls in attaching terms for garments occurring in ancient texts to types of clothing known from works of art and archaeological finds. In this case, however, the link-up can be made with a degree of confidence just because of the dalmatic's later history in the church. One can draw on the evidence of other actual tunics also known by tradition as dalmatics. Foremost among these is the white silk tunic with red stripes, "the Dalmatic of St. Hydulphe", from Moyenmoutier, France (78). This dalmatic, dating probably to around 700, differs only in minor ways from the first Sant' Ambrogio tunic (fig. 14 and De Capitani d'Arzago, fig. 4). Also useful is the nearly complete chronological line of depictions of clerics dressed in a wide-sleeves tunic ; very often, as in the mosaic of St. Ambrose (fig. 8), it is shown worn beneath the closed semi-circular cloak which may have originally been called birrus or paenula, but which is certainly the forerunner of the chasuble (79). In the mosaic panel with Justinian at San Vitale, Ravenna, of the 540s, the three churchmen are all dressed in the wide-sleeved tunic, the bishop wearing his under a chasuble (80). At San Prassede, Rome, in the apse mosaics of c.820, the sleeves of Pope Paschal's tunic are completely hidden by his chasuble, but on the right the familiar type can be seen worn by a deacon. This deacon's tunic is, in turn, very like that of the deacon David Peter in the slightly earlier Nonantola manuscript at Vercelli (81) ; and so on.

The word dalmatica (with tunica presumably understood), having first occurred in the mid-2nd century, becomes common in Latin literature and documents of the 3rd and 4th centuries (82), a progression echoed by the rise to popularity of sleeved tunics, with both wide and narrow sleeves, as traceable through finds and representations (63). A notable early reference is found in the Life of St. Cyprian, where Cyprian, Bishop of Carthage, is described as having prepared for his martyrdom in 258 by taking off his cloak, birrus, then his dalmatica, to stand dressed only in his linen underclothes, linea (84). By the date of the earliest definition of the word, Isidore of Seville's in the first half of the 7th century, the dalmatic seems to have dropped out of common use, and was associated with priests - dalmatica... est tunica sacerdotalis candida cum clavis ex purpura (85). But in origin it was a secular, perhaps rather fashionable garment that was adopted by the clergy along with the chasuble-type cloak, not as a vestment as such, but just as a respectable everyday garment of no special significance. A paragraph in St. Ambrose's own writings indicates that his dress did not differ from that of his lay social equals ; in recalling his brother Satyrus, who had never been a priest, he states that his brother was often mistaken for him (86).

The simplicity of the first Sant'Ambrogio dalmatic would make dating by means of internal evidence only a tricky task. The dating assumed by the traditional association with St. Ambrose, the end of the 4th century, seems quite acceptable, but in other circumstances, an attribution, say, a hundred and fifty years either later or earlier could have been credible. One would not be inclined to date the tunic as late as 700, the period of the Moyenmoutier dalmatic ; despite the overall similarity, the minor differences - the fact that the Moyenmoutier tunic has stripes that are red rather than purple, that the main stripes are accompanied on either side by pinstripes, that there are crosses between the stripes on the sleeves and that the sleeves end in fringes - are all features that put the tunic into a later group along with the early 9th century depictions of

dalmatics just mentioned. Very unfortunately, the Moyenmoutier dalmatic seems to have been destroyed during the Second World War (87) so that we now cannot be absolutely certain of its technique. Judging by the 19th century descriptions, it was, like the Sant' Ambrogio dalmatic, made in one piece with the warp running horizontally, but the little crosses sound as though they were brocaded, another minor but significant point (88). Brocading or the use of a lancé weft are characteristics of a group of Early Medieval textiles (89), but are not normally found earlier than about the 6th century ; had a small in-woven detail like these crosses occurred on an earlier garment one would have expected it to have been carried out in tapestry weave. Nonetheless, it is unlikely that there would have been any technical difference between the Sant' Ambrogio dalmatic and the originals of those depicted in the mosaic of the 540s at Ravenna ; the decoration on these mosaic tunics matches that on the mosaic of St. Ambrose (fig. 8). If anything, the Ravenna dalmatics are more like the surviving tunic than that in the Milan mosaic, by virtue of being longer.

Looking backwards, it will be recalled that a date of around 300 has already been mentioned for the Victoria and Albert dalmatic from Akhmim. This attribution is supported by the very simple geometric style of the white on purple interlace patterning within the main stripes (90), as well by close technical similarities with some of the Palmyra textiles, particularly in the matter of the gold and purple bar which on the Akhmim tunic is found near one of the lower corners (91) (the Palmyra textiles, of course, all date to before 273, the year of the destruction of the city). And if it were thought that the turn of the 3rd to 4th century is too early for a tunic of silk, as opposed to more traditional wool, or wool and linen, it would be worth looking at the list of clothing in Diocletian's Edict of Maximum Prices, of 301. Here one finds something that sounds very like the first Sant' Ambrogio tunic, a dalmatica holoserica virilis clavans purpurae blattae - "a man's all silk dalmatic, the stripes in purple of the reddish shade" (92). The maximum price for this, incidentally was 50,000 denarii, that is two hundred and fifty times the price for a woman's dalmaticomaforium (a dalmatic with hood ?) ex lanis grossioribus, made of coarse wool (93).

The same problem of simplicity also hampers a discussion of provenance ; the most positive statement that can be made about the provenance of the first dalmatic is that the silk it employed was imported. The technique as well as the loom (94) used in its production are standard for the Roman Mediterranean. It might well have been woven and bought in Milan, an Imperial capital in the 4th century. Equally, since the giving of expensive clothing was a common mark of patronage in the Late Roman period (95), it might have been brought from elsewhere as a gift, from Rome or Constantinople for example. At Lyon, it was suggested that the application of traditional methods to the weaving of silk that this tunic represents could be taken to indicate that a well established and wide-spread silk weaving industry had existed in the Mediterranean region centuries before the introduction of sericulture. The accumulation of evidence in support of this view now warrants a separate study (96). But for the meantime it might be borne in mind that of the host of written references that confirm that by the 4th century items made of silk had become "an everyday luxury" (97), the majority probably record textiles that were locally woven.

Silk dalmatics are listed twice in the Edict of Diocletian, in the section on purchase prices and again in the section dealing with the processing of textiles by the fullones (98), a reminder of one final aspect of the first Sant' Ambrogio dalmatic which remains to be discussed. The Latin words fullo and fullonica share the same root as the English "fuller" and "fullery", however,

they do not represent exactly the same trade. The Roman fullonica apparently offered a less specialised service, dealing with clothing and wool domestic textiles both straight from the loom and when dirty through use ; that the job of the fullones was to wash and neaten the objects rather than to shrink or felt them is indicated by the fact that silk clothing was treated alongside clothing made of wool (99). A piece of equipment that the fullones presumably made use of to flatten and smooth the washed items was a wooden screw press very like the European linen press (100). The best preserved example of such a press, from Herculaneum (101), though itself massive, has a comparatively narrow opening, showing that the large flat Roman clothes had had to be folded before undergoing pressing - presumably, as with the later European presses, flat boards were placed between the folds of thick cloths in order to equalize the pressure. Straight fold lines crossing at right angles are commonly found on Hellenistic and Roman sculpture, particularly on representations of wool mantles (102). Folds resembling those occurring on sculpture can also be seen on the silk of the first dalmatic, S.1. The folds referred to are not the heavy shadowy folds visible in De Capitani d'Arzago's figure 3, which, because they also occur in the linen, must have been formed after the linen was added, but are sharper, neater folds, that seem to have been made deliberately, if not with a hot iron, then with a press of the type just mentioned. These sharp folds are only visible on the central fragment of S.1,b) (fig. 4). Five are horizontal, alternately concave and convex, and divide up the cloth into six roughly equal panels. The only early vertical fold still visible is the central one already mentioned that continues the line of the neck opening, but this way the cloth had probably been divided into four, the second and third vertical folds having been along the lines where the smaller outer sections a) and c) have split off. As already suggested, the poor condition of these outer parts may be due to having lain for centuries on the outside of the folded tunic. It is interesting to note that the horizontal folds carry right across the central vertical fold without changing from concave to convex, or vice versa. This shows that the horizontal folds were put in before the vertical folds and that therefore the side seams of the tunics must have been undone at the time. It is not impossible that for the purposes of washing the seams of tunics were habitually unpicked ; this would not have caused enormous amount of extra labour, seams in Antiquity being anyway simple affairs, either joining edges such as selvedges that were already finished or, as probably in the case of this dalmatic, hems that had already been separately sewn. If our dalmatic had been put away after a final washing with the seams still undone, this may partly explain Ariberto's later confusion as to which areas were the sleeves.

The second dalmatic : the lion hunt damask, S.7

In contrast to the first dalmatic, the second was made up from three different textiles ; it seems advisable to deal with these textiles separately before going on to the reconstruction of the tunic.

S.7. the white silk with the lion-hunt design which formed the surface of the dalmatic, is a 3:1/1:3 twill damask, the warp-faced twill occurring in the figures, the line of twill in both effects being S. The warp has approximately 84 threads per cm. of a Z-spun yarn. The weft is unspun, with about 54 threads per cm. De Capitani d'Arzago has given a mise-en-carte and draft (his figs. 24 and 25) which show a regular découpure of 4 threads in both warp and weft. A variable découpure, of perhaps between 4 and 6 in the warp is, however, more probable (103).

The design is orientated towards the selvedge, that is to say the direction in which the animals appear to run is the direction of the warp. There are three main motifs or groups of figures : in the first a rearing young lion is back to back with a running adult male and a resting lion-like animal with spots (a panther ?) ; in the second a large lioness-shaped but spotted female plays with her two cubs, one of which is leaping onto her back ; and in the third a muscular huntsman wearing a short tunic and swinging cape spears a lioness through the neck while his dog attacks it from above. In all three motifs a wild, wooded countryside is suggested by tree stumps and small stylised bushes.

The motifs are combined in two arrangements, designated by De Capitani d'Arzago versions A and B. In both of these each motif repeats across the width of the cloth without interruption, though probably reversing at mid-point, the central axis of the warp - such a reverse is preserved on one fragment of version A (De Capitani d'Arzago, fig. 19). Lengthways, version A employs the first two motifs ; these alternate with each other and are reversed on each appearance. The huntsman motif only occurs in version B and breaks up the regular rhythm of the other two motifs. Version B was spread out further by the introduction of upright stylised trees, perhaps cypresses, between each motif, creating a kind of framework (fig. 15). But the two versions should not necessarily be thought of as separate textiles since they may well both have been woven on the same warp. The motifs have an average depth (i.e. widthways repeat) of 12.6 cms. and the largest animal, the spotted female is between 10 and 11.5 cms long from front paw to tail. In spite of this relatively large scale, in real life the impression given by the design is very subtle. The subtleness is due both to the fine quality of the weave and to the fact that, being damask, the figures only actually show up where the light hits the cloth at the right angle.

Sadly, in comparison with the thicker silk of the first dalmatic, not very much of this superb textile has survived. Probably already badly worn in the early part of its history, it is now also brittle and fragmented. What we do have is mostly attached to the four pieces of the linen lining L.2, pieces a) and c) carrying the majority, with b) having little and d) almost none at all (see fig. 13 for the linen pieces) ; the largest continuous area of silk, on the right side of a), mesures approximately 95 x 45 cms. Poor condition hampers the study of this textile ; in addition there is the problem that very few of the fragments still existing appear to be in their original positions. As already discussed, pieces seem to have been moved around during one or several early sessions of repair and recently, as part of the restoration of 1940, loose bits were re-attached to the linen rectangle a) that may not have originated there. But the present author makes no claims to have exhausted the possibilities ; a careful and extended examination should bring to light many more facts relating to the woven construction to S.7 as well as to the manner in which it was employed.

Allowing for some stylisation inherent in the technique, the design of S.7 fits very well into the context of Late Roman art (104). Probably the best comparison of all is with an object already pointed out by De Capitani d'Arzago, the Leningrad ivory diptych showing a venatio scene (105); and here one should notice the repeat, the angle of the lions, the rhythms of their curling tails and the manner in which, in one case, the spear passes right through a lion's body. This diptych is normally attributed to Rome or North Italy between 400 and 450. On a slightly earlier ivory, the Brescia lipsanothek, probably made in Milan in the third quarter of the 4th century (106), a single figure, the dog, is also very similar in treatment to the animals of the Sant' Ambrogio silk. And good though less close parallels exist over a wider range of dates. Among a number of floor

mosaics with related hunt scenes one can mention for their leaping tiger cubs the rather late (5th and early 6th century) Megalopsychia, Dumbarton Oaks and Worcester Hunt mosaics from Antioch-Daphne (107). The aggressive tigresses and the tree stumps in the two opus sectile panels from the basilica of Junius Bassus in Rome, dated to 331 or just after, are also related to the damask (108). And a stone frieze from Hadrian's Villa, now in the Vatican, showing Cupids hunting in a landscape with cypresses, provides a good precedent for general layout (109).

The relationship of the design of the Sant' Ambrogio damask with other textiles, particularly wool weft-faced compound tabbies of the 4th to 5th centuries, has been recently discussed by Donald King (110). Mr King draws attention to a series of stone sarcophagi on which the woven designs of mattress covers are represented. Figure 10, a detail showing a lion jumping at a leaping deer (the head of the deer is damaged) comes from the best known of these sculptures, the "Achilles" sarcophagus in the Museo Capitolino, Rome, a work generally dated to the mid 3rd century (111). Whatever the precise technique of the original (112), this depicted cloth proves that scenes with wild animals were already an accepted form of textile decoration about a hundred and fifty years before the damask was probably made.

It has been argued elsewhere that the figured twill damasks were the successors of the geometric twill damasks (113). The dated examples among the surviving geometric damasks fall between the mid 2nd century and the end of the 4th, and it must be admitted that a least two among the even smaller number of figured damasks (115), the Maastricht piece (114) and a red fragment in the Vatican (115) appear on the basis of style to have been made considerably later, probably in the 7th or 8th century. But while the geometric damasks, being technically simpler, were no doubt the first to be developed, the Sant' Ambrogio silk can be seen as evidence that, for a time at least, the two types coexisted. Looking at the other complex weave to be developed in the Roman period, weft-faced compound tabby, the same dichotomy can be found. It is most marked in the silk examples of this weave, as the next textile, S.8, illustrates, while among wool compound tabbies, the range of styles from the naturalistic to the very simple is already well known (116). There are good historical and stylistic reasons for dating the Sant' Ambrogio lion-hunt damask no later, say, than the fragments of geometric damask from Trier (117). And it should also be borne in mind that the purple textile, S.9, almost certainly a geometric damask, was at some point sewn on top of the lion-hunt silk.

It is perhaps time also to reconsider the by now traditional attribution of all the twill damasks to Syria (118). The origins of this attribution seem to go back to the fact that the two geometric silks from Palmyra were the first textiles in this weave to be discussed (119). But considering that nearly all the other Palmyra silk textiles originated in China, the findspot in this case really tells us nothing about the place of manufacture (120). The other examples of twill damask, to date, eight geometric damasks and ten of the figured variety (121), all come from sites or churches that were, or had been, part of the Western Roman Empire. With the exception of the much discussed wool 2:2 lozenge twills, one from Dura-Europos, and two from Palmyra (122), Syrian weaving, as we know it from the other Dura textiles, the finds from the Cave of Letters (123), and the rest of the non-silk fragments from Palmyra, had nothing in common with the twill damasks. If, on the other hand we look to the other end of the Roman Empire, more precisely to the north-western provinces, we find a majority of wool textiles in twill, many being diamond twills (124). The weave in question is 2:2 rather than the 3:1 of the damasks, but a number of the plain twills combine it

with a type of patterning by means of light reflection not unrelated to the principle of damask, namely chequer designs built up by contrasting S-spun and Z-spun threads (125). Other evidence that at least some of the silk damasks were produced in the Latin-speaking West is that the geometric type were known by a Latin term scutulatus (according to John Peter Wild the same term had also been used for the diamond twills) (126) and that one of the Trier fragments has an embroidered weaver's mark in Latin (127). Given that at least one good stylistic parallel has been found among North Italian art of the period, Milan itself emerges as a far from unlikely source for the Sant' Ambrogio lion-hunt damask. But finally, again it is impossible to be certain of provenance. Although S.7 is clearly a more specialised product than S.1, the silk of the first dalmatic, by the late 4th century damask weaving may well have been established in all the major cities of the Empire (128).

The second dalmatic : the applied dark red silk

The dark red or "purple" (129) silk used for the applied crosses, S.8 is also a representative of one of the new, more advanced weaves, though in this case the design is very simple (fig. 11). The weave is weft-faced compound tabby, but with a warp découpure of 4 main warp threads, only 12 shafts would have been necessary ; the weft découpure is six passes. Both warps are of the same Z-spun yarn, with c.25 to 27 threads of each per cm. In the weft, the lat forming the background is of a similar yarn to the two warps, while the second lat has no appreciable spin ; there are c.42 to 48 passes per cm. The unspun lat or weft is only a very slightly different shade from the spun weft - it is little darker - with the result that the pattern stands out as much by virtue of being more shiny than the background than by a distinction in colour. Where it survives, S.8 is in relatively good condition, though the unspun yarn has worn away in places Including the two fragments now in the Castello (130), the total area remaining is roughly 280 square centimetres.

Despite its simplicity, this textile helps more than any of the three others to tie down "the relic of the dalmatics" to the end of the 4th century. Like the damasks, the yet smaller group of surviving weft-faced compound tabby silks can be divided into those with naturalistic designs and those with geometric patterns. The two most famous textiles in the figured category are the Sens Maenad silk and the compound tabby (rather than the compound twill) of the two Joseph silks, also at Sens (131). In the geometric category, if one ignores the Dura-Europos example (which may be warp-faced) (132), also a fragment from Antinoe now at Lyon (133), one is left with only one other representative, the silk of a similar colour with a grid of crosses and circles from the tomb of St. Paulinus at Trier (134). Along with the geometric damasks from the same source mentioned earlier, this piece can be dated to around 395 A.D. The design of S.8 is actually even closer to the Trier damasks than to the compound cloth, and for design one can mention again the Conthey damask, another 4th century textile, probably of the late 4th century (135).

It is impossible to explain why the lifetime of the silk weft-faced compound tabbies was apparently so short, possibly the weft-faced compound twills which ousted them were considered to employ silk more economically, due to their longer weft floats - in a way the compound twills combined the lustre of the damasks with the ability to use contrasting colours of the compound tabbies. The application of weft-faced compound tabby weave to wool textiles, attested by the many Egyptian finds, appears to have begun earlier, perhaps in the first century (136), and continued for longer. Greek inscriptions on two of the silk examples (137), along with Egyptian evidence for the wool variety, suggest that this weave was mainly practised in the Greek speaking eastern Roman empire.

The second dalmatic : the linen lining

The linen lining, L.2, although in purpose humble, is by no means a textile without interest. The yarns are fine and the simple tabby weave very even, the high proportion of threads in the warp, 48-54 per cm. compared to 29-35 in the weft, giving the warp-faced effect already discussed in relation to the linen "pockets". The weft yarn is Z-spun, the warp is either Z-spun or S-spun, the warp threads being arranged in principle, though with accidental variations, as follows : 40Z, 4S, 4Z, 4S, 4Z, 4S, 4Z, 4S, 4Z, 4S, 4Z, 4S, 40Z etc. ; when viewed from the correct angle the S-spun threads show up as groups of six pin stripes. A similar use of contrasting spin direction, already noted in wool twills of the Roman period found north of the Alps, can also occasionally be detected among the finer linen textiles of Late Antiquity found in Egypt ; in the fragment in figure 12, for instance, the linen warp is grouped in pairs, ZZSSZZSSZZSS etc. The effect of stripes in L.2 complements the light reflecting properties of the other two textiles of the second dalmatic, the damask weave of S.7 and the spun and unspun weft of S.8.

The condition of the linen as represented by the surviving four rectangles is surprisingly good. Judging by the state of the edges, decay has been a less significant cause of damage than has cutting - that is both the cutting off of fragments, probably at various dates (see the large "bite" taken out of piece a), as well as the 19th century cutting up of the whole object. Discolouration is restricted to certain stains and elsewhere the effect is white in comparison, for instance, with the pale straw colour of Egyptian linen.

As presently framed, there are no selvedges visible in the linen nor is there any sign of a woven edge parallel to the weft, a fringe or starting border for instance. In the most satisfactory arrangement of the four separated pieces (fig. 13), three of the four have the warp running in the usual direction, i.e. across what had been the garment, c), however, fits in best with its warp perpendicular to the rest. Indeed, while the larger rectangles have hems or the remains of hems on three sides with the fourth and inner side a flat cut edge, the smaller pieces c) and d) look as though they may have been hemmed on all four sides ; in particular c) shows both a neat hem and the remains of a seam along what was probably its inner edge. In other words, although there is no reason to suppose that this textile was woven on anything other than one of the old vertical looms, it was apparently not woven to shape.

It has already been mentioned that some of the outer hems of the linen were, inexplicably, unpicked and partly unfolded before the addition of the purple edging, S.9. Originally, they all appear to have been between about 2 and 3 cms deep and had been turned back twice and hemmed with running stitch in fine Z-spun, S-ply linen sewing thread. Where two hems met at corners they were neatly mitred.

The fact that the linen was finished off separately from the silk may encourage suspicions that the linen was not the original lining of the damask. In answer to this one can point out the following : the dark red silk, S.8, was sewn to the linen through the damask ; the purple silk S.9 was also sewn to the linen through the damask but at some time after the linen had first been hemmed ; the damask S.7 is considerably thinner than the silk of the first dalmatic and so might be considered to have required a lining ; the combination of the independent evidence for the dating of the linen - its excellent quality, the warp-faced character, the use of contrasting spin - indicates a period no later than that of the damask itself.

The second dalmatic : its reconstruction

The reconstruction of the second dalmatic leaves many more details open to doubt than that of the first. Uncertainty is due to the poor state of the damask and to the absence of about one fifth of the linen. Furthermore, the second dalmatic represents a new type of clothing construction, of which there are no other comparatively complete examples. But there can be no question about the main conclusion, that the fragments of S.7, S.8 and L.2 did once form a dalmatic-type tunic. It was, of course, to the 11th century cloths that covered these textiles that Ariberto's inscribed pallium was sewn. The 11th century linen backing, L.3, and to a lesser extent, the Islamic silk, S.3, still retain the remains of their cross-like form. Most significant is the description in the Minutes of November, 1862, of the linen L.2 and the attached fragments of silk as cross-shaped, like the then also complete first dalmatic - "un'altra ampia tela con sopra avanzi della copertura di seta, della forma pressoche simile alla prima", that is, "tagliata quasi a forma di croce" (138).

The quickest way to establish the overall shape of the second dalmatic is to put together the 11th century backing, L.3 and the four pieces of L.2. The two larger rectangles of L.2, a) and b) can be easily matched with the later backing by means of the clearly outlined round stains that are found on both ; when matched the positions of a) and b) are as shown in figure 13. It then makes sense to put the smaller rectangles, c) and d) over the projections of L.3 of similar proportions. As arranged in figure 13, all the edges of L.2 showing traces of the added purple strip are on the outside of the overall cross-shaped form. Rectangle c) has been put back on the right side rather than the left because in this way one matches its most rotten corner with a rotten area on the later linen. In addition, with this arrangement one keeps most of the lion-hunt fragments to the right side of the central axis (it was suggested above that one of the alterations to the damask may have involved robbing one side of the tunic to complete the silk surface of the side to be exhibited). The areas of 11th century linen still now uncovered have to be explained in several ways. Spare length at the end of the projections may simply be due to the later backing always having been bigger than the original object. The flap like panels on the lower and upper left-side of the central section are at first more puzzling, but it is noteworthy that this is where the traces of gold and purple embroidered cloth, S.4/6, are found. (Although L.3 became cross-shaped by means of a number of seams and piecings, these flaps, themselves separate pieces, render the whole outline unsymmetrical ; perhaps Ariberto had had them sewn on as an afterthought, as support for a long narrow panel of embroidery which would otherwise have obscured part of the blue Islamic silk). Unfortunately, when we come to the central oblong hole at the middle of the four piece of L.2, we must be dealing with the central upper part of the tunic itself, the area in which the neck opening would have been. De Capitani d'Arzago found no trace of a fifth piece of the linen and one must assume that the whole of the missing part was lost when the dalmatic was cut up in the 1860s. Judging by the blue silk that covered it, this area would have been more worn than the rest ; Rossi, attaching no value to any part of the genuine relic, may simply have thrown it away.

The only folds visible on L.2 run down the central line of rectangles a) and b) following the direction of the warp. These are surely the equivalent of the long vertical fold line on S.1 that runs through the neck opening, in other words the fold along the top of the shoulders and sleeves that came into being as soon as the side seams of the tunic were sewn up. That one is correct to identify pieces a) and b) as the sleeve area of the second dalmatic is shown by

a comparison of an outline based on the arrangement established for L.2 (fig. 13) and the outline of the first dalmatic as woven (see fig. 14). The second tunic emerges as a garment with the same overall shape as the first, but a little narrower in the body and with slightly less deep sleeves (the length as worn was c. 145 cms and the width from the end of one sleeve to the other c, 270 cms). This second tunic was presumably also a dalmatic for the reasons discussed in relation to the first.

The best information about the way the damask S.7 was organized on top of the linen comes from a number of seams in the damask itself. These seams can be distinguished from the accumulated later sewing by the fact that they are straight and in smaller, more regular stitches ; they are overcast from the outside in weakly Z-spun, S-ply silk sewing thread. The best preserved section of seam occurs to the right side of linen piece a), on the largest fragment of damask, and this joins version B at right angles to version A (see De Capitani d'Arzago fig. 19). This largest fragment is one of the bits of the damask already discussed which overhang the limits of the linen. Close by to it, towards the outside of a), is the similarly overhanging fragment which retains a "shadow" of part of a bar of an applied cross. If one imagines moving all this silk back up the sleeve by about 10 cms, and inwards by about 2 cms, so making room for a complete dark red cross, one may be putting the seam somewhere near its original position, just below the top of the sleeve. It now looks as though one of the functions of the seam may have been to turn the direction of the design so that the motifs were the right way up for the sleeves as well as for the body of the tunic. Another fragment of silk that probably ought also to be moved up and in by about the same amount is yet another on piece a) of the linen, namely the bit of version A where the motifs reverse back to back. In the plain channel between the reversing motifs there are, in fact, traces of a worn fold ; it would make a good deal of sense if this fold had originally sat on top of the shoulder fold in the linen, so ensuring that the motifs were also correctly orientated for the front and back of the tunic.

The fragments just discussed provide the starting point for the organisation of the damask in figure 15. However, beyond the area around the top of the sleeves, this arrangement should be regarded as provisional only. A central horizontal seam has been restored because it appears unlikely that S.7, as woven, would have been wide enough to reach all the way from the front to the back bottom edge in the manner of the first dalmatic (139). Yet it is not certain that such a seam would have been in just this position or would have joined two pieces of version A as shown ; both c) and d) of the linen at present carry fragments of B as well as A, and all the sections of seam so far detected join two pieces of cloth at right angles, as in the shoulder seam.

There are also a number of aspects of the applied dark red decoration that remain uncertain. The complete cross, on piece c) of the linen, is made of two long bars of the compound tabby silk, S.8, placed across each other with four separate trapezium-shaped pieces forming the distinctive "seriphs" at their ends ; the edges of all these pieces were turned under and sewn down with running stitch in matching dark red silk thread. The single incomplete bar at the opposite side of the tunic, on d), appears to have been resewn, but judging by traces on the linen lining of a second bar at right angles, this had also originally been another cross of same size as the first. For the reconstruction, the shadow on the silk fragment mentioned above has been taken as indicating that there was yet another cross on the right side of a). Because tunic decoration of the Late Roman period was always symmetrical about two axes, that is

repeating on both sides of the garment as well as on the front and back, from this third cross we must go on and restore three more, one for the other side of the same sleeve and two for the sleeve opposite. And on the basis of every other surviving tunic, we should also probably envisage some sort of shoulder stripe.

A comparison with other tunics, however, makes clear just how unusual the crosses were. While the decoration of the first Sant' Ambrogio dalmatic is more or less normal, there is no parallel among surviving clothing or even depictions of clothing for crosses in this size or distribution. Yet, as discussed, S.8 is a textile apparently contemporary with the white damask and the linen. The shape of the cross is also quite acceptable for the period, even though a chi-rho would still have been more usual (140). A possible explanation is that the crosses were added immediately after the dalmatic ceased to be worn, for instance, at the death of St. Ambrose.

Yet, finally, it seems as though a tunic without any contrasting purple decoration (141) would have been almost more of an oddity, an all-over repeating pattern such as that of the lion-hunt damask apparently making no difference in this respect. For instance, the geometric twill damask found at Conthey was the principal textile of a tunic that also had tapestry-woven details in purple wool and some linen (142) ; the tapestry ornaments - a roundel and part of a band survive - had been sewn to the silk ready made. The same combination of an all-over repeating pattern and what again look like tapestry-woven details are found on a depicted tunic, that worn by Stilicho on his diptych (143). This narrow-sleeved tunic was borrowed from earlier for the endings of the clavi of the first dalmatic, but probably its construction would have been much closer to the second. Here the repeating design is of rows of human heads alternating with rows of standing figures in pointed niches ; the weave represented may have been a compound tabby, but a damask is more likely. The contrasting decoration, presumably purple with white on the original, consists of clavi, hem ornament and cuff stripes with a type of "Greek key" meander and a square shoulder panel with a figurative central motif inside a frame of leaves. In the case of the Sant' Ambrogio dalmatic, the application of its purple decoration in the form of crosses would have turned what would otherwise have been a very secular garment into something more suitable for a bishop.

But taken as a whole, the second dalmatic, like the first, recalls Ambrose the nobly-born Roman rather than Ambrose the cleric. That members of the Roman senate were wearing very similar garments in the late 4th century is shown by a passage in Ammianus Mercellinus (144). Writing in Rome between 378 and 395, Ammianus deplores the extravagance of senator's dress - "exceptantes eas manu utraque et vexantes crebris agitationibus, maximeque sinistra, ut longiores fimbriae tunicaeque perspicue luceant, varietate liciorum effigiatae in species animalium multiformes". This can be translated literally as - "catching up (their clothing) with both hands and shaking it with repeated movements, and especially with their left hand, so that the over-long fringes and the tunics should shine clearly, (the tunics) being figured, by means of a varying of the heddle rods, with the shapes of many different animals". The ut.. tunicae... perspicue luceant sounds very much as if it is describing damask. The translation of the word licium, singular, as heddle, and licia, plural, as heddle rod or shaft, obvious though it may seem, is not yet an accepted one (145) ; this passage, however, is one of a number which help to make its meaning clear.

Conclusion : differences between the two dalmatics

The two Sant' Ambrogio dalmatics, even in their mutilated state, are a rare and precious record of clothing in Late Roman Italy. We are especially fortunate that two apparently contemporary tunics should differ from each other so significantly, their differences seemingly encapsulating a general change in clothing construction just then beginning to take place. The first dalmatic, woven to shape, its decoration an integral part of the single textile, can be considered a conservative, backwards-looking garment, sharing the principles of its construction, if not its shape, with much earlier Mediterranean clothing (146). The second dalmatic, with superimposed decoration, a separate lining layer and a surface of several pieces joined by seams, is in contrast forward looking, an early example of the cut and sewn methods of construction which, in Europe at least, would eventually come to be dominant.

A comparison of the looms used to produce the two white silks should illustrate the extent to which differences in the original equipment are fundamental to be final appearance of the garment. The loom on which the first dalmatic was produced reveals itself in various ways. The great width of S.1, c.308 cms. across the widest part of the cross (fig. 14), strongly suggests a vertical loom, since with a vertical loom one would be working across the pull of gravity and not, as with a horizontal loom, against it. The two looms traditional in the Greek and Roman world, the warp-weighted loom and the two-beam upright loom, as well as being vertical, could also where necessary be very wide (147) ; for historical rather than technical reasons, the two-beam loom seems the more likely to have been used in this case (148). Also significant is the crossing of some of the warp threads of S.1 in preparation for the weft-face stripes (figs.3 and 16). The phenomenon of grouping the warp with crossed threads is fully explained elsewhere in this issue by Mr. De Jonghe and Mr. Tavernier, but the points relevant here are as follows. The warp was grouped with the purpose of throwing the weft up onto the surface and so to create an area of contrasting solid colour. In order to be able to continue to use the shedding mechanism for the duration of the stripe the threads were grouped keeping odd and even threads separate. This separation could only be maintained by crossing some of the warp threads over each other, in this case, the third and fourth thread in each group of four (fig. 16). From this we learn that the shedding mechanism consisted of one shaft or heddle rod, the second or "natural" shed being formed by a shed stick ; if there had been two sets of heddles it would have been impossible to rearrange the warp threads in the manner seen. Both the looms just mentioned have this primitive type of shedding mechanism, the warp-weighted loom being peculiar in that its shed rod is fixed rather than moveable (149).

The figured damask of the second dalmatic must have been produced on an altogether different piece of equipment. Exact knowledge of the form of this loom awaits a detailed study of the silk (150), but probably we should not envisage a fully-fledged drawloom. Judging by Grossi's drawing (De Capitani d'Arzago, fig. 19), while the motifs themselves repeat exactly, they do not reappear on precisely the same line either in the direction of the warp or, more curiously, across the weft (151) ; in other words the motifs do not seem to have been permanently "tied-up". In addition, the fact that the various motifs always reverse as they repeat down the length of the cloth suggests, rather than the "lacs" of the drawloom, a type of loom where it was advantageous to store the reverse of the design up the far end of the loom using thin sticks or strings (152). Nevertheless, the warp is organised, by some means or other, roughly into "chemins" so that even if the selection of the motifs was done more or less by

hand, heddle rods or leashes and cords must have brought about the widthways repetition ; with chemins of an average width of 12.6 cms. and a découpure of 4 or 6 warp threads, this would mean a minimum of between 200 and 250 heddle rods or cords in addition to eight main shafts forming two twills (153).

All this brings us at least to one certain conclusion, that because the shedding mechanism was complex, the loom must have been horizontal ; it would surely not have been possible to support all these rods or cords and the storage of the design on a loom that was vertical.

Such horizontal looms affected clothing construction through producing cloths that were both narrower and longer. Two factors limiting the width of all horizontal looms, the difficulty just mentioned of working against gravity and the problem of access to the centre of the web to carry out running repairs and so on, would have been more pronounced when a complicated mechanism was also employed. We do not know exactly what the width of the lion-hunt damask was, but even if broad by later standards, it is very unlikely to have been as wide as the silk of the first dalmatic. The consequences of this are obvious ; if a garment like the second dalmatic was made on the old generous scale but from one of the new textiles, it had to be made with additional seams. In addition, narrower and more complex looms must have rendered weaving to shape impractical. Starting borders are sometimes found on wool weft-faced compound tabbies from Egypt (154), but on none of the surviving examples of compound tabby, compound twill or damask is there any indication of shaping other than by means of cutting and sewing (155).

On the old vertical looms the winding-on and tensioning of the warp had clearly been a major undertaking. In contrast, with both cloth beam and warp beam easily accessible on the horizontal looms, long warps now became manageable. With the figured weaves, it would also have been natural to prefer a long warp wherever possible, in order to avoid wasting time on "entering" or the knotting of heddles (156). The influence of longer warps on clothing construction was an indirect one, but nevertheless important. As a result of the introduction, for the first time, of lengths of cloth as such, the existing close association between textiles as woven and the use they were put to began to weaken.

With the lion-hunt damask one has not yet reached the stage of completely anonymous cloth. The reverses in the pattern that correspond to the shape of the tunic as well as the spreading out of the design in version B suggest that from the beginning it had been intended that the silk should be turned into such a tunic. The direction in which the motifs run, parallel to the warp, though normal for early figured silks, also fits in well with the intended use ; as both dalmatics illustrate, it was still standard practice to have the warp running horizontally in the body of the garment. But, unlike the silk of the first dalmatic, the damask may have been just one length from a longer cloth sufficient for several tunics. It is also significant that in this case the contrasting decoration is not only no longer woven as part of the larger cloth, but is actually made from another advanced textile with its own quite independent pattern ; two important textiles - the geometric damask at Cologne with its tapestry band in purple wool and gold (157) and the Victoria and Albert Museum Egyptian cushion cover in wool compound tabby with in-woven square tapestry panels (158) - illustrate that, for a time at least, the weaving of contrasting decoration into the new types of textiles had not been out of the question.

Finally, it is also possible to interpret the lining of the second dalmatic as another sympton of the separation of weaving and clothing construction. The older method of achieving the desired weight for clothing had been to space the warp threads within the usual range and to beat up the weft closely or less close as desired ; a thick cloak would be in 1:2 twill so that the weft could be even more compact (159). Obviously, with a weave such as damask that requires a constant relationship between warp and weft, this choice was not available, thus the creation of the right thickness became the job of whoever cut out and sewed up the garment.

Vertical looms continued to be used for textiles in simple weaves, after all the vast majority, until well into the Middle Ages. And surviving tunics such as the Moyenmoutier dalmatic show that even in Europe weaving to shape was still in existence three or more centuries after the time of St. Ambrose (160). Moreover, in the long term, technical innovation as represented by the second Sant' Ambrogio dalmatic became only one of a number of factors responsible for changes in clothing construction. After the collapse of the Roman Empire in the 5th century, methods from outside the Mediterranean became more and more influential, in particular the Eastern practice of making shirt-like garments out of narrow lengths of cloth used vertically (161) and the Northern tradition of tailored wool clothing constructed from cut, shaped pieces (162). But the adaptation of existing clothing types to accomodate the more advanced weaves of Late Antiquity, even if only affecting the top end of the market, can be considered the first major departure from the old, classical form of dress.

NOTES

A shorter version of the above, dealing with the first dalmatic, was given in Lyon at the 1983 CIETA Conference. A more complete version formed a paper in the Late Roman Seminar series at the University of Oxford, in November 1983.

The textiles in question have been studied in Milan on two occasions, over three days in Autumn, 1981, and over five days in May, 1984. All the help received at Sant'Ambrogio, especially that given by Monsignor Biagio Pizzi, is gratefully acknowledged. Thanks are due also to the British School at Rome, for the grant which made possible the second visit to Milan.

Abbreviations

"De C. d'A" - Alberto De Capitani d'Arzago, Antichi Tessuti della Basilica Ambrosiana, Milan (Biblioteca de L'Arte - Nuova Serie II) 1941.
"Age of Spirituality" - Age of Spirituality. Late Antique and Early Christian. Art. Third to Seventh Century. Catalogue of the exhibition at the Metropolitan Museum of Art, November 1977 - February 1978, edit. Kurt Weitzmann, New York, 1979.

1 - Other textiles preserved in the museum at Sant'Ambrogio, but not part of the present discussion, include fragments from the relics of Saints Castus and Polimius (De C. d'A. S.12 - S.15), the 9th century silk from inside the doors of the high altar (A. De Capitani d'Arzago 'La stoffa del pallio ambrosiano ed i tessuti delle 'Dalmatiche di Sant'Ambrogio"' in Ambrosiana : Scritti di storia, archeologia ed arte pubblicati nel XVI centenario della nascita di Sant'Ambrogio, Milan (Biblioteca Ambrosiana) 1942, pp. 205-212), three paliotti, or altar frontals, one of which includes panels of 15th century embroidery, and lastly a set of 17th century Flemish tapestries.

2 - De Capitani d'Arzago's most obvious error is his dating of the tablet-woven pallium, S.11, which he puts as late as the 17th century (p. 64) because of its apparent use of schappe silk.

3 - Ferdinando Reggiori, La Basilica di Sant'Ambrogio, Milan 1966.

4 - Age of Spirituality, no. 585.

5 - Paolo Lino Zovatto, 'Capsella e teca paleocristiane del tesoro del Duomo di Milano', in Il Duomo di Milano, International Congress, Milan 1968. edit. M.L. Gatti Perer, pp. 47-51.

6 - Ferdinando Reggiori, La "lettiera" di Sant'Ambrogio, Milan (Biblioteca de L'Arte - Nuova Serie I) 1941. Bound with De C. d'A.

7 - F.M. Rossi, Cronaca dei ristauri e delle scoperte fatte nell'insigne Basilica di Sant'Ambrogio dall' anno 1857 al 1876, Milan 1884, pp. 259-271. L. Judica Cordiglia, 'La Malattia e la Morte di S. Ambrogio', La Scuola Cattolica 69 (1941), pp. 148-154.

8 - As so often, the twin requirements of access and conservation have not been well reconciled. Since being put on permanent display in 1949 the textiles have undoubtedly suffered somewhat from light ; the most noticeable change has been in the purple stripes of the first dalmatic, S.1, which are now faded and quite unlike De C. d'A.'s colour reproduction, fig. 64. However, it is intended in the near future to hang curtains over the frames containing the textiles.

9 - Ferdinando Reggiori, La Basilica di Sant'Ambrogio, Milan 1966, p. 191.

10 - Ibid., p. 176.

11 - Ferdinando Reggiori et al. Catalogo della Mostra dei Cimeli ambrosiani nel XVI Centenario della Nascita di S. Ambrogio, Milan 1940.

12 - De C. d'A., p. 11

13 - The restoration work was carried out in two places ; the Islamic silk, S.3, the lion hunt damask, S.7, and the associated linen, L.2, were all sent to the Vatican, while the rest were given treatment in the Instituto Salesiano in Milan (De C. d'A., p. 11). The methods used seem to have been the same for both lots.

14 - De C. d'A., p. 81 ; F.M. Rossi op. cit. (note 7), p. 40.

15 - 'Pontificalia de St. Louis d'Anjou evêque de Toulouse', Revue de l'Art Chrêtien, IV (1860), pp. 651-2.

16 - Both quoted by De C. d'A., see note 14.

17 - A.F. Kendrick, Catalogue of Muhammadan Textiles of the Medieval Period, Victoria and Albert Museum, London 1924, no. 965.

18 - These consist of one fragment of S.7 (2227 T), two of S.8 (2150 T), three of S.3 (2150 T), one of L.4B (fig. 1 ; 2229 T) and one of S.12 (2135 T). The author would like to thank Signora Chiara Buss of C.I.S.S.T. and the staff of the Civiche Raccolte d'Arte Applicata del Castello Sforzesco di Milano for making it possible for her to study these pieces.

19 - Reproduced in full by De C. d'A., p. 80.

20 - De C. d'A., p. 80 ; F.M. Rossi op. cit. (note 7), p. 68.

21 - The photograph taken in early 1863 (De C. d'A., fig. 2) in which the Islamic silk, S.3, is arranged as a sort of tunic, appears to show this silk free of any of the other textiles that had earlier lain under it. This "reconstruction" did not incorporate the most damaged parts of S.3 and so, unlike the rather more complete linen backing, L.3, (fig. 13 and De C. d'A., fig. 12), does not represent the shape or proportions of the real dalmatic.

22 - De C. d'A., p. 87.

23 - De C. d'A., p. 88 and fig. 61. The use of the term 'alb' is not surprising since the two Late Antique dalmatics were in appearance closer to a Medieval alb than to a Medieval dalmatic ; Medieval and later dalmatics are, as a rule, coloured.

24 - The word "pallium" is of course used here in its Medieval ecclesiastical sense, and not in its ancient sense.

25 - See, for instance, W.F. Volbach, 'I tessuti', Catalogo del Museo Sacro della Biblioteca Apostolica Vaticana. III, i, Vatican City 1942, T.5, Pl. IV ; and Marta Hoffmann 'Der ungenähte Rock in textilhistorischem

Zusammenhang', in Documenta textilia : Festschrift für Sigrid Müller-Christensen, edit. M. Flury-Lemberg and K. Stolleis, Munich 1981, p. 40 and note 10 ; for a later example of the same sort of thing, Mechthild Flury-Lemberg, 'Das "Ulrichsgewand" aus dem Kloster St. Urban', also in Documenta textilia, pp. 163-177.

26 - If, like De Capitani d'Arzago, one lists S.5 separately, there are five textiles in this category ; S.5 is the dark blue tabby silk still sewn in strips to S.3.

27 - It is here assumed that S.6 and S.4 are one and the same textile as De C. d'A. himself suggests they might be (p. 39).

28 - De C. d'A., p. 80.

29 - Op. cit. (Note 15), p. 652, Note 1.

30 - It is hoped to publish these separately later.

31 - Ugo De Monneret de Villard, 'Una iscrizione marwanide su stoffa del secolo XI nella Basilica di Sant'Ambrogio a Milano', Oriente Moderno, XX, 10 (October 1940), pp. 504-506.

32 - For S.10, see Sigrid Müller-Christensen, 'Die Gräber in Königschor' in Der Dom zu Speyer edit. H.E. Kubach and W. Haas (Kunstdenkmale von Rheinland-Pfalz, 5), 1972, Pl. 1455 bottom, pp. 934-5 ; for the borders of L.3, see ibid. Pls. 1580, 1582 and 1593 ; for S.11, see ibid. Pl. 1595, p. 1016. For S.2, see Sigrid Müller-Christensen, Das Grab des Papstes Clemens II im Dom zu Bamberg, Munich 1960, p. 74 ; for the main design of L.3, see ibid. Pls. 21-24, 31-38 and 90. For the weave of S.3 and incised silks in general see John Beckwith, 'Byzantine Tissues' in Actes du XIVe Congres International des Etudes Byzantines, Bucharest 1971, edit. M. Berza and E. Stanescu, I, p. 352. The embroidery S.6/4 is rather a special case and might be earlier. For its technique, see Grace Crowfoot in The Relics of St. Cuthbert, edit. C.F. Battiscombe, Durham 1956, pp. 391-394 ; for style and technique, see Dominic Tweddle and Mildred Budny, 'The Maaseik Embroideries', Anglo-Saxon England, 13 (1984), pp. 63-95. But the poor state fo S.6/4 means that an English provenance must remain unproven ; for style, compare also the borders of a South Italian manuscript, illustrated in G. Cavallo, Rotoli di Exultet dell'Italia Meridionale, Bari 1973, Pls. 36 and 39.

33 - See above, Note 18.

34 - Both illustrated in Percy Ernst Schramm and Florentine Mütherich Denkmale der deutschen Könige und Kaiser (Veröffentlichungen des Zentralinstituts für Kunstgeschichte in München, II), 1962, p. 329, Pl. 111, and p. 259, Pl. 52.

35 - Age of Spirituality, pp. 74-5, no. 64.

36 - De C. d'A., p. 38.

37 - Compare two works of art in Milan : for the soldiers and filigree background, the enamel and gold Gospels cover of Ariberto (illustrated Lombardia edit. A. Caizzi et al. (Banca Nazionale del Lavoro series), Milan 1973, p. 158, fig. 155) ; for the phoenix-like bird, a manuscript at Sant'Ambrogio, M.14, f.3 r. (illustrated in Gabriel Mandel, La miniatura romanica e gottica, 1964, fig. 35). With thanks to Mr. David Buckton, Prof. Donald Bullough, Prof. Florentine Mütherich and Miss Janet Backhouse for advice on the subject and dating of these embroideries.

38 - De C. d'A., p. 38.

39 - 'Anciens Vêtements Sacerdotaux et Anciens Tissus conservés en France' Revue de l'Art Chrétien, 1859 p. 108, given by De C. d'A., p. 84-85. De Linas did not know that a very similar textile to S.10, found in 1900 at Speyer, was used to edge Conrad's stockings (see above, Note 32).

40 - It was mistakenly stated in the résumé for the 1983 CIETA. conference that the textiles came from the tomb.

41 - De C. d'A., pp. 98-99. De Capitani d'Arzago's reference to "De veste Sancti Ambrosii" -(fragment(s) "from the clothing of St. Ambrose"- at Corbetta seems to be something of a false trail.

42 - F. Reggiori, La Basilica di Sant'Ambrogio, Milan 1966, pp. 100-101 and figs. LV and LVI.

43 - See above, Note 1.

44 - See below, the end of the section The first dalmatic : discussion.

45 - Rossi, op. cit. (Note 7), pp. 284-285, Letter CCVII

46 - ibid, pp. 259-261.

47 - De C. d'A., p. 98.

48 - See figure 13 for the pieces of L.2.

49 - De C. d'A., p. 24.

50 - But the opposite is true for wool textiles, see H. Granger-Taylor, 'Weaving Clothes to Shape in the Ancient World : the Tunic and Toga of the Arringatore', Textile History, 13, I (1982), p. 7.

51 - Krishna Riboud, 'A Closer View of Early Chinese Textiles' in Studies in Textile History in Memory of Harold H. Burnham, edit. V. Gervers, Toronto 1977, pp. 254 ff.

52 - For a comparatively late silk of this type see Vivi Sylwan, Investigation of Silk from Edsen-Gol and Lop-Nor (Reports from the Scientific Expedition to the North-Western Provinces of China under the Leadership of Dr. Sven Hedin, 32) Stockholm 1949, Plate 2, F.

53 - Early examples of embroidery are much rather than one might think, note their absence, for instance, from among the Sancta Sanctorum textiles (W.F. Volbach, op. cit. (Note 25)).

54 - De C. d'A., p. 63.

55 - For the Trier fragments - Daniel De Jonghe and Marcel Tavernier, 'Die spätantiken Köper 4-Damaste aus dem Sarg des Bischofs Paulinus in der Krypta der Paulinuskirche zu Trier', Trierer Zeitschrift, 40/41 (1977/78), pp. 145-174 ; for the Conthey silk - Emil Vogt'Ein spätantiken Gewebefund aus dem Wallis', Germania 18 (1934), pp. 198-206. For both - D. De Jonghe and M. Tavernier, 'Les Damassés de la Proche-Antiquité' and ibid. 'Les Damassés de Palmyre', Bulletin de Liaison du CIETA, 47 (1978), pp. 14-42, and 54 (1981, II), pp. 33-34 and figs. 21-23.

56 - Daniel De Jonghe, 'Quatre Types de Damas Sergé 3 lie 1 du 1er siècle au 14ème siècle après Jésus Christ', Association pour l'Etude et la Documentation des Textiles d'Asie (Paris), Rapport, 2 (1983), pp. 48-50.

57 - J.P. Wild, Textile Manufacture in the Northern Roman Provinces, Cambridge 1970, p. 77 ; Fr. Schneider, 'Die Krypta von St. Paulin zu Trier', Bonner Jahrbücher, 78 (1984), pp. 167 ff.

58 - That is, as far as the author knows.

59 - Letters, 22,9 (in J.-P. Migne edit., Patrologiae Cursus Completus, Latin series vol. 16 (1880), pp. 1064-5).

60 - The grouping of the warp is explained more fully in the Conclusion.

61 - De C. d'A., pp. 17-18.

62 - De C. d'A., pp. 18-21.

63 - Dorothy Burnham, Cut my Cote, Toronto (Royal Ontario Museum), 1973, p. 10, fig. 2.

64 - A.F. Kendrick, Victoria and Albert Museum, Catalogue of Textiles from Burying Grounds in Egypt, I, London 1920, no. 1 ; also illustrated Encyclopaedia Britannica, 11th edition, VII, opp. p. 776, 'Dalmatic'.

65 - The principle of the construction of the wool tunics is closely related to that of two wool cloaks illustrated in H. Granger-Taylor, op. cit. (Note 50), figs. 25 and 26. Dorothy Burnham's diagram (op. cit. (Note 63), fig. 2), probably ought not to show the partially woven side-sections of warp running the full length of the web, even for a linen tunic.

66 - Rudolf Pfister, Textiles de Palmyre (I), Paris 1934, T. 20, Pl. 6.

67 - At Monza cathedral, illustrated Lombardia, op. cit. (Note 37), fig. 51.

68 - See Dorothy Burnham, op. cit. (Note 63), fig. 2.

69 - ibid., p. 10 and fig. 2 ; H. Granger-Taylor, op. cit. (Note 50), p. 10 and fig. 7.

70 - L. Judica Cordiglia, op. cit. (Note 7) and C.B. Ballabio, La Malattia di S. Ambrogio, Milan 1973.

71 - H. Granger-Taylor, op. cit. (Note 50), p. 7 and passim.

72 - W.F. Volbach, op. cit. (Note 25), T.1.

73 - See, for instance, Walther Amelung, Die Sculpturen des Vaticanischen Museums (Kaiserliches Deutsches Archäologisches Institut series), I, Plates, Berlin 1903, Braccio Nuovo nos. 20, 77, 111, 117 and Museo Chiaramonti nos. 15, 62, 335, 337.

74 - De officiis ministrorum, I, 83 (or Ch. XIX, in J-P. Migne op. cit. (Note 59), p. 51).

75 - De C. d'A., p. 17 - "bave "Cinesi"".

76 - The results of De Capitani d'Arzago's dye test were negative (pp. 17-18). However, this is not without any significance since the dye made from sea-snails of the Murex family is characteristically very hard to dissolve.

77 - For a depiction of the latus clavus see H. Granger-Taylor, op. cit. (Note 50), fig. 11.

78 - L'abbé Deblaye, 'Dissertation sur un dalmatique très-ancienne conservée dans la châsse de saint Hydulphe', Journal de la Société d'Archéologie Lorraine, 1854, pp. 83 ff ; also discussed by Joseph Braun, Die Liturgische Gewandung, Freiburg 1907, p. 260 and fig. 20.

79 - An example of this type of cloak is shown in plan in H. Granger-Taylor, op. cit. (Note 50), fig. 25 -revised dating, c. 3rd- 4th century A.D.

80 - Illustrated Ernst Kitzinger, Byzantine Art in the Making, London 1977. Pl. 158.

81 - Carla Faldi Guglielmi, Roma : Santa Prassede (Tesori d'Arte Christiana series, 14), Bologna 1966, p. 373 and 375 ; for the Vercelli manuscript, Carlo Bertelli, Miniatura medievale, I (I Maestri del Colore series, 202), Milan 1966, Pl. VIII ; also illustrated John Beckwith, Early Christian and Byzantine Art, Harmondsworth 1979, fig. 136.

82 - Not given in the Thesaurus Linguae Latinae, but see Paulys Real -Encyclopädie der classischen Altertumswissenschaft, edit. G. Wissowa, Stuttgart 1894, "dalmatica".

83 - While we can be sure that the wide-sleeved tunic was a dalmatica, it is not quite certain whether or not the term also covered narrow-sleeved tunics.

84 - Acta proconsularia S. Cypriani, V (in J-P. Migne edit. Patrologiae Cursus Completus, Latin series vol. 3 (1883), pp. 1563-4).

85 - Etymologiarum sive Originum, XIX, 22,9.

86 - De excessu fratris, I, 38 (in Otto Faller edit. Corpus Scriptorum Ecclesiasticorum Latinorum, vol. LXXIII, Part VII (1955), p. 230).

87 - The dalmatic was in the cathedral at St. Dié when the building was bombed and caught fire ; it has not been seen since. With thanks to M. Cuny, curé at Moyenmoutier, for this information.

88 - Deblaye, op. cit. (Note 78), pp. 85-86 - "broderie en soie rouge... qui parait avoir été la même de chaque côté de l'étoffe". The form of the crosses was "une sorte de quatrefeuilles, ou plutôt de croix pommetée, circonscrite dans un cercle d'un diamètre de 16 mm". In addition to the crosses between the sleeve stripes drawn by Braun (op. cit. (Note 78), fig. 120), there were others "en haut de la tunique, à environ un travers de main de l'ouverture du cou".

89 - Cf. Brigitta Schmedding, Mittelalterliche Textilien in Kirchen und Klöstern der Schweiz, Bern 1978, no. 223 and her commentary on this piece and references.

90 - See above, Note 64. For interlaced decoration, see James Trilling, 'The Roman Heritage', Textile Museum Journal, 21 (1982), pp. 104-108. But, n.b., while the destruction of Palmyra gives a terminus ante quem, some of the textiles may be considerably earlier.

91 - R. Pfister, op. cit. (Note 66), T. 13 and T. 15, Pls. IV and V.

92 - 19, 15 (in R. Lauffer, Diokletians Preisedikt, Berlin 1971, p. 152).

93 - 19, 4 (in ibid., p. 150).

94 - The loom is discussed in the Conclusion. For the technique, see H. Granger-Taylor, op. cit. (Note 50), passim.

95 - Richard Delbrueck, Die Consulardiptychen, Berlin 1929, pp. 72-73.

96 - The author hopes to publish some earlier finds of silk from Italy shortly.

97 - J.P. Wild, 'Early Finds of Chinese Silk in North-West Europe', Association pour l'Etude et la Documentation des Textiles d'Asie, Rapport, 2 (1983), p. 33. See also Dr. Wild's forthcoming article on the same theme in the Textile Museum Journal.

98 - 22, 12 (in R. Lauffer, op. cit. (Note 92), p. 164).

99 - ibid., Chapter 22 'de fullonibus', (in Lauffer, op. cit. (Note 92) pp. 162-7).

100 - J.P. Wild, 'Textiles' in Roman Crafts edit. D. Strong and D. Brown, London 1976, p. 176.

101 - Illustrated by Walter O. Moeller, The Wool Trade of Ancient Pompeii, Leiden 1976, Pl. II ; n.b. Moeller is not sufficiently conscious of the differences between "fulling" and "fullonia".

102 - H. Granger-Taylor, op. cit. (Note 50), p. 19 and Note 53.

103 - Opinion expressed by Mr. De Jonghe to H.G-T. by letter ; see also op. cit. (Note 56), p. 50.

104 - The author thanks Dr. Robin Cormack and Dr. Katherine Dunbabin for advice on this subject.

105 - Age of Spirituality, no. 85 ; E. Kitzinger (op. cit. (Note 80), Pl. 71) dates the diptych to c. 400.

106 - Age of Spirituality fig. 87, p. 597 ; for a discussion, see W.F. Volbach, Elfenbeinarbeiten der Spätantike und des frühen Mittelalters, vol. 7, 3rd edition Mainz 1976, 'Kataloge', no. 107.

107 - Doro Levi, Antioch Mosaic Pavements, Princeton 1947, pp. 323 ff. and 363 ff., Pls. 77-78, 86a and 172 ff.

108 - E. Nash, Pictorial History of Ancient Rome, I, London 1961, p. 194, Pls. 217-218.

109 - W. Amelung, op. cit. (Note 73), pp. 569-570 and 601-2, Pls. 59 and 62.

110 - 'Early Textiles with Hunting Subjects in the Keir Collection', in Documenta Textilia : Festschrift fur Sigrid Müller-Christensen edit. M. Flury-Lemberg and K. Stolleis, Munich 1981, pp. 96-98.

111 - H. Stuart Jones, The Sculptures of the Museo Capitolino (series - A Catalogue of the Ancient Sculptures preserved in the Municipal Collections of Rome, by Members of the British School at Rome) Oxford 1912, pp. 77-81, Pl. 16. Also illustrated in E. Kitzinger, op. cit. (Note 80), Pl. 25.

112 - The large scale of the design and the absence of exact repeats tell against compound tabby (tapestry is a more likely alternative). However, M. King (op. cit. (Note 110)) argues very convincingly that there were mattress-covers in this weave by this date ; was one factor that weft-faced compound tabby was comparatively feather-proof ?

113 - D. De Jonghe, op. cit. (Note 56), pp. 48-49.

114 - Anna Muthesius 'De zijden Stoffen in de Schatkamer van de Sint Servaaskerk te Maastricht', Publications de la Société Historique et Archéologique dans le Limbourg, 1974, Pl. 17.

115 - W.F. Volbach, 1942 (op. cit. Note 25), T. 128.

116 - C.J. Lamm and R.J. Charleston, 'Some Early Egyptian Draw-loom Weavings', Bulletin de la Société d'Archéologie Copte, V (1939), Pls. I-V.

117 - See above, Note 57.

118 - For instance, Agnes Geijer, A History of Textile Art, London 1979, Pl. 21 - "Syria".

119 - J.F. Flanagan, 'Textiles from Palmyra', Burlington Magazine, 84 (1944), pp. 179-181.

120 - For the Chinese textiles see Rudolf Pfister, Textiles de Palmyre (I), Paris 1934, pp. 39-60, Nouveaux Textiles de Palmyre (II), 1937, pp. 34-38 and Textiles de Palmyre, III, 1940, pp. 39-63.

121 - D. De Jonghe, op. cit. (Note 56), pp. 48-49. John Beckwith, 1971 (op. cit. Note 32), pp. 345-6. The Vatican pieces are T. 128 and T. 143 (both figured) and T. 175 (geometric with weft pile), W.F. Volbach, 1942 (op. cit. Note 25).

122 - Rudolf Pfister and Louisa Bellinger, The Textiles (The Excavations at Dura-Europos, Final Report, no. 4, Pt. 2, edit. M.I. Rostovtzeff et al). New Haven 1945, no. 36 ; R. Pfister, Nouveaux Textiles de Palmyre (II), Paris 1937, nos. 43 and 44.

123 - Yigael Yadin, The Finds from the Bar Kokhba Period in the Cave of Letters (Judaean Desert Studies), Jerusalem 1963.

124 - J.P. Wild, 1970 (op. cit. Note 57), p. 47. For some finds from further north of the Roman period, see Lise Bender Jørgensen, 'New Textile Material from Danish Iron Age Graves' in Textilsymposium Neumünster : Archäologische Textilfunde, edit. L.B. Jorgensen and Klaus Tidow, Neumünster 1982, pp. 25-41.

125 - J.P. Wild, 'Some New Light on Roman Textiles', in Textilsymposium Neumünster (as above, Note 124), p. 15 ; Margrethe Hald, Ancient Textiles from Bogs and Burials, Copenhagen, English edition 1980, p. 137 and figs. 68 and 73. ff.

126 - J.P. Wild, 'The textile term scutulatus', Classical Quarterly, N.S. XIV (1964), pp. 263 ff.

127 - Joseph Braun, 'Die spätrömische Stoffe aus dem Sarkophag des hl. Paulinus zu Trier', Zeitschrift für Christliche Kunst, XXXIII, 9 (1910), pp. 279-283 ; J.P. Wild, 1970 (op. cit. Note 57) p. 51.

128 - See J.P. Wild on the new evidence for the loom used for weaving geometric damasks ('Some New Light on Roman Textiles', as above (Note 125), p. 21 ; also M. Crawford and J. Reynolds, 'The Aezani Copy of the Prices Edict', Zeitschrift für Papyrologie und Epigraphik, 21 (1977), p. 135 (12, 32a) and pp. 147-8).

129 - De C. d'A., p. 62 -"la colorazione purpurea e ottenuta con colorante vegetale : la reazione della porpora sul nitrobenzene e negativa", but see above, Note 76. In Antiquity, purpura was, of course, a dye not a colour, and it is likely that a range of shades could be made from the varieties of Murex, all these shades probably having their own imitations. Although dark violet was more common, that a dark red was also possible is clear from the colours reproduced by Lilian Wilson (The Clothing of the Ancient Romans, Baltimore 1938, Pl. 1) ; the colour of S.8 is close to her no. 4.

130 - See above, Note 18.

131 - John Beckwith, 1971 (op. cit., Note 32), p. 344 and fig. 1 ; E. Chartraire, 'Les Tissus Anciens du Trésor de la Cathédrale de Sens', Revue de l'Art Chrétien, LX1 (1911), pp. 261-280, nos. 1 (16) and 5 (55AD).

132 - Both systems are spun - R. Pfister and L. Bellinger, op. cit. (Note 122), no. 263. Compare Vivi Sylwan, op. cit. (Note 52), Pl. 2A and p. 154.

133 - Musée Historique des Tissus no. 28. 519/2. Note paired main warp.

134 - J.P. Wild, 1970 (op. cit. Note 57), pp. 118-9 (B. 88) and fig. 46. For a colour photo see Frühchristliche Zeugnisse im Einzugsgebiet von Rhein und Mosel, edit. T.K. Kempf and W. Reusch, Trier 1965, opp. p. 178.

135 - See above, Note 55.

136 - Donald King, op. cit. (Note 110), p. 99. If licium means heddle (see below, Note 145), the Pliny reference (Natural History, VIII, 196) taken together with the Martial reference (Epigrams, CL), provides good evidence for this.

137 - The Sens Joseph silk (E. Chartraire, op. cit. (Note 131), no. 5) and a fragment at Chur (B. Schmedding, op. cit. (Note 89), no. 45 - see also her nos. 44, 56 121 and 187).

138 - De C. d'A., p. 80.

139 - See below, Conclusion.

140 - For instance, there is a chi-rho inside the capsella of San Nazaro (P. L. Zovatto, op. cit. (Note 5), fig. 2). For crosses with seriphs as here but combined as chi-rhos, see G.B. De Rossi, Inscriptiones Christianae Urbis Romae Septimo Saeculo Antiquores, I, Rome 1861, for example nos. 270, 325, 378 and 411 (378-392 A.D.). For simple crosses, see, for instance, those in the mosaics of the tomb of Galla Placidia, 2nd quarter of 5th century (illustrated E. Kitzinger, op. cit. (Note 105), Pls 93, 94, 95 and 98).

141 - See above, Note 129.

142 - J.P. Wild, 1970 (op. cit., Note 57), p. 55, B. 90 and fig. 47. E. Vogt, op. cit. (Note 55).

143 - As above, Note 67.

144 - Res Gestae, XIV, 6,9.

145 - J.P. Wild, 'Two Technical Terms used by Roman Tapestry Weavers', Philologus, 111 (1967), p. 151 ff.

146 - Although sleeved tunics do not seem to have become common before about the mid-2nd century A.D., the principle of weaving to shape is much older, H. Granger-Taylor, op. cit. (Note 50).

147 - For the warp-weighted loom in general see Marta Hoffmann, The Warp-Weighted Loom, Oslo 1964, and for its width W. Haio Zimmermann, 'Archäologische Befunde frühmittelalterlicher Webhäuser' in Textilsymposium Neumünster (as Note 124), p. 123. For the two-beam loom in the Altlas mountains, where weaving to shape is still practised, see John Picton and John Mack, African Textiles, London (British Museum) 1979, pp. 62-67 ; for its width, see Encyclopédie edit. Diderot and d'Alembert (1754-65). Plates vol. 9, 'Tapisserie de Haute-Lisse des Gobelins', Pls. I and II;

148 - J.P. Wild, 1970 (op. cit. Note 57) p. 67.

149 - Grouping the warp with crossed threads is not impossible but is more difficult on the warp-weighted loom. The type of grouping where, instead of crossing threads, one drops some out, may, with more study, emerge as a characteristic of this loom as opposed to the two-beam loom.

150 - One hopes that this is something Mr. De Jonghe will be able to do.

151 - This effect, however, is over-exaggerated in figure 15.

152 - In a manner related to that still used on some of the Far-Eastern looms described by Mr. De Jonghe and Mr. Tavernier (Bulletin de Liaison du CIETA, 49 (1979, I), p. 41, for instance).

153 - Donald King, op. cit. (Note III), p. 96. Mr. De Jonghe writes of the figured damasks "Le système de façonnage était indépendant du système de liage", and of the loom, "il est fort probable que ce métier n'était pas encore équipé des lisses de rabat", op. cit. (Note 56), p. 49.

154 - For instance, British Museum M+LA OA 1442 (illustrated C.J. Lamm and R.J. Charleston, op. cit. (Note 116), Pls I and II), a single cord, and Musée Historique des Tissus, Lyon, unregistered fragment from Antinoë (in flat red box), double twisted cords.

155 - Again, as far as the author knows.

156 - On the vertical looms (see above, Note 147), where the warp is made from a continous thread, the heddles are knotted anew for each new warp ; this method may have continued for some time on the horizontal looms.

157 - D. De Jonghe and M. Tavernier, 1981 (op. cit. Note 55), fig. 19.

158 - A.F. Kendrick, op. cit. (Note 64), II no. 537.

159 - For example, H. Granger-Taylor, op. cit. (Note 50), figs 18, 19 and 25.

160 - There are, of course, many "Coptic" woven-to-shape tunics of this date or even later, though they often differ from earlier examples in having applied decoration, such as brocaded ribbons (for example, Early Islamic Textiles, edit. Clive Rogers, Brighton 1983, Pl. II).

161 - The most reliably dated early Western examples of this construction are from Halebiye, destroyed 610 (R. Pfister, Textiles de Halabiyeh, Paris 1951, no. 10 etc.).

162 - See K. Schlabow, Textilfunde der Eisenzeit in Norddeutschland (series Göttinger Schriften für Vor- u. Frühgeschichte 15), Göttingen 1976, especially figs. 165-167.

Résumé

Le présent article concerne un ensemble de tissus conservés en l'église Sant'Ambrogio à Milan. Ce sont les "Reliques des Dalmatiques de Saint Ambroise". L'auteur présente deux thèses : a) les tissus se divisent en deux groupes clairement définis : d'une part des tissus de la Basse Antiquité, qui constituent les reliques elles-mêmes ; d'autre part ceux employés au XIème siècle pour recouvrir les tissus antérieurs. b) Il est possible de reconstruire à l'aide des fragments de la Basse Antiquité deux tuniques du type dalmatique. L'article commence avec un historique de l'ensemble des tissus, y compris une brève étude des pièces médiévales. La section principale est consacrée aux tissus de la Basse Antiquité et à leur reconstruction comme dalmatiques. En conclusion, l'auteur discute la différence entre les deux tuniques. La première dalmatique, tissée en forme sur un simple métier vertical, est considérée comme archaïque et participant des mêmes principes de construction que les vêtements du Bassin Méditerranéen datant d'époques beaucoup plus reculées. Au contraire, la seconde dalmatique, faite de plusieurs morceaux joints par des coutures, doublée d'un autre tissu, et ornée d'une décoration surimposée, fait figure de précurseur du Moyen Age, époque où les vêtements taillés et cousus seront de règle. Le fait que le tissu principal de la seconde dalmatique, le fameux damas figurant une chasse au lion, a été tissé sur un métier horizontal d'un type avancé est considéré comme la raison principale pour l'abandon de la méthode classique de construction du vêtement.

Le système de numérotage employé suit exactement le catalogue des tissus de Sant'Ambrogio publié par Alberto de Capitani d'Arzago en 1941. La liste des tissus suit. (S = soie ; L = lin)

Tissus employés par l'Archevêque Ariberto (1018-1045) pour couvrir la première dalmatique.
L. 1-Toile de lin, blanche, sans dessin.
S. 2-Soie double-face, sergé 2 lie 1, jaune et rouge, sans dessin.
L. 4 A & B-Toile de lin, brodée de soie et de filé d'or.
S. 10-"Drap d'or façonné, soie avec trame lancée de baudruche dorée.

Tissus employés par l'Archevêque Ariberto pour couvrir la seconde dalmatique.
L. 3-Toile de lin, façonnée par chaîne poil trainant, blanche ou grise.
S. 3-Samit de soie, incisé, bleu foncé avec inscription arabe.
S. 4/6-Samit de soie en deux tons de pourpre, brodé en filé d'or.
S. 11-Soie, tissage aux cartons, bleue et blanche avec inscription - pallium.

Tissus ajoutés à la seconde dalmatique avant l'époque d'Ariberto.
Sans numéro. -Toile de lin, blanche, sans dessin - "poches".
Sans numéro. -Soie monochrome façonnée, sergé 3 lie 1 et taffetas, vieux-rose - très petits fragments.
S. 9-Soie damassée, sergé 3 lie 1/1 lie 3, pourpre foncée, très fragmentaire.

Première dalmatique
S. 1-Taffetas de soie, blanc, rayures sens trame.

Tissus de la seconde dalmatique
S. 7 A & B. -Damas de soie, sergé 3 lie 1 / 1 lie 3, blanc.
S. 8-Soie, taqueté façonné, rouge foncé.
L. 2-Toile de lin, blanche, rayures dans la chaîne par opposition des torsions.

Figure 1 - Detail of the embroidered panel L.4-B. The left side of the fragment now in the Castello Sforzesco - the queen and king.

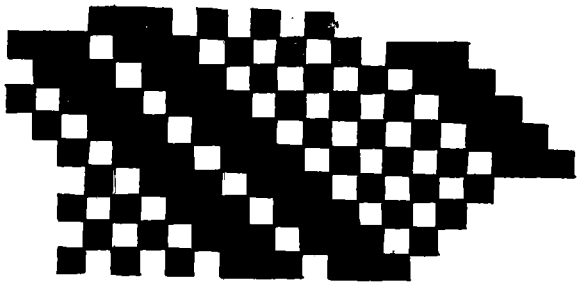


Figure 2 - The largest surviving fragment of the Chinese silk associated with the linen "pockets" sewn to the second dalmatic. Draft corresponding to c.4 x 4 mms.

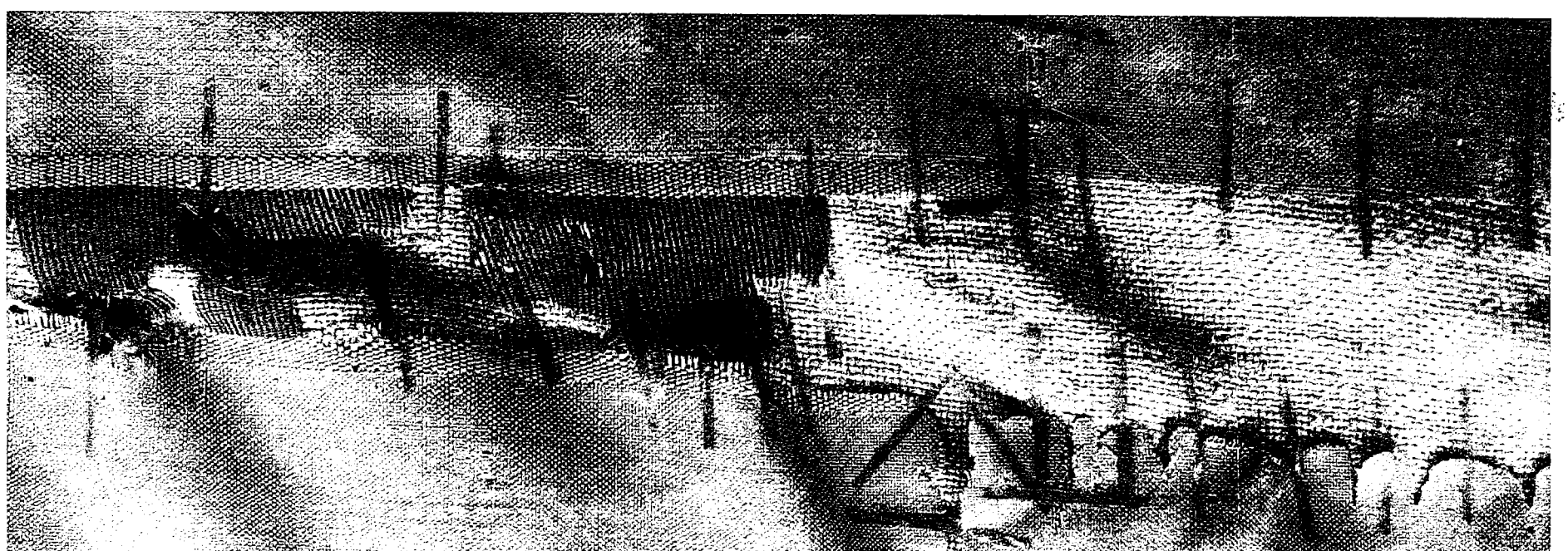


Figure 3 - Detail of the first dalmatic, S.1. Part of a shoulder stripe with, below, the beginning of the neck opening. Width of stripe, excluding white borders, 1.4 cms.

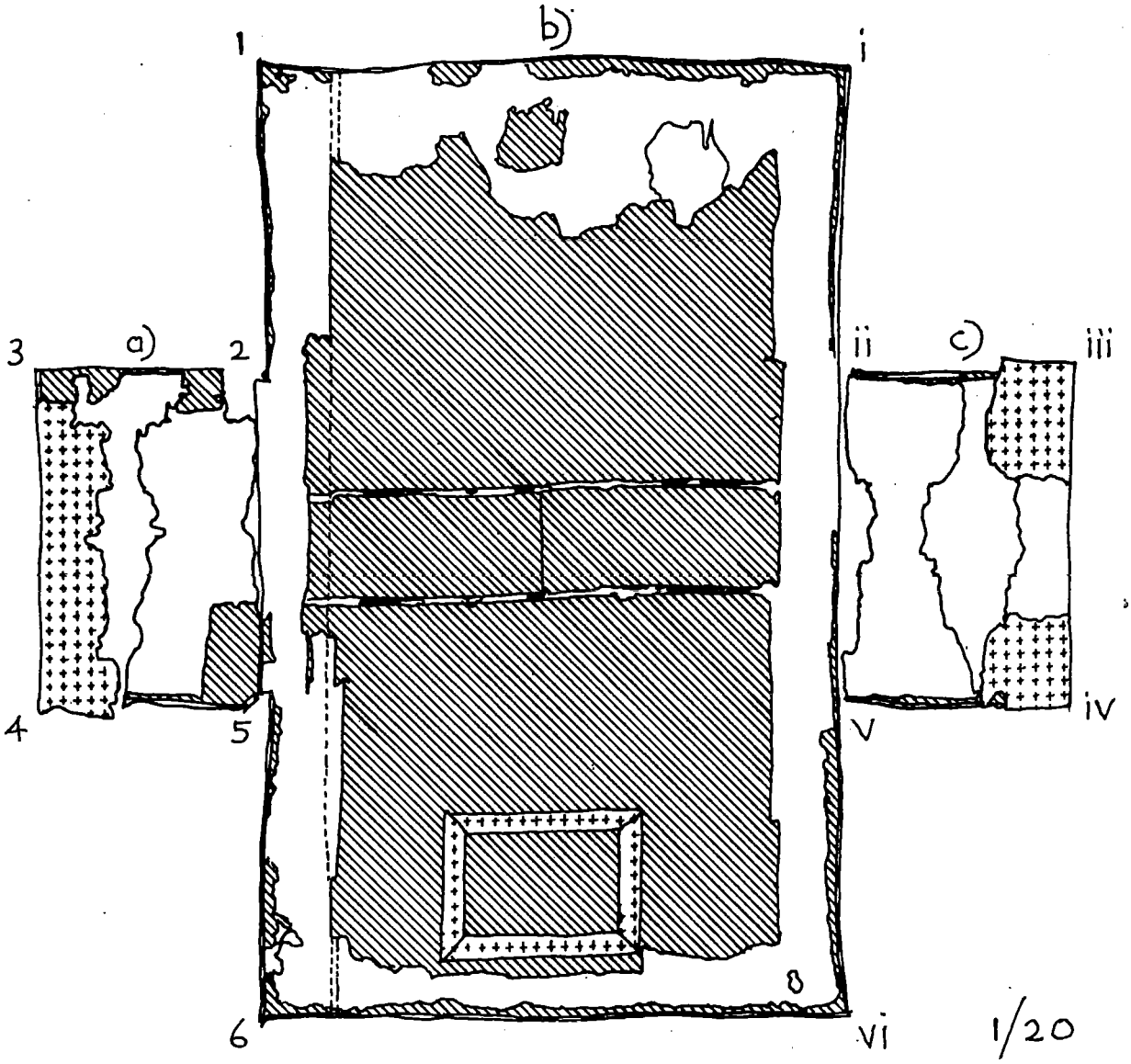


Figure 4 - Plan of the surviving fragments of the first dalmatic (based on De Capitani d'Arzago's Figure 3, photographs taken before the 1940 restoration). Hatched areas - the silk of the dalmatic, S.1. ; areas with crosses - the medieval embellishments, L.4 A and B and S.10 ; plain areas - the medieval linen backing, L.1.

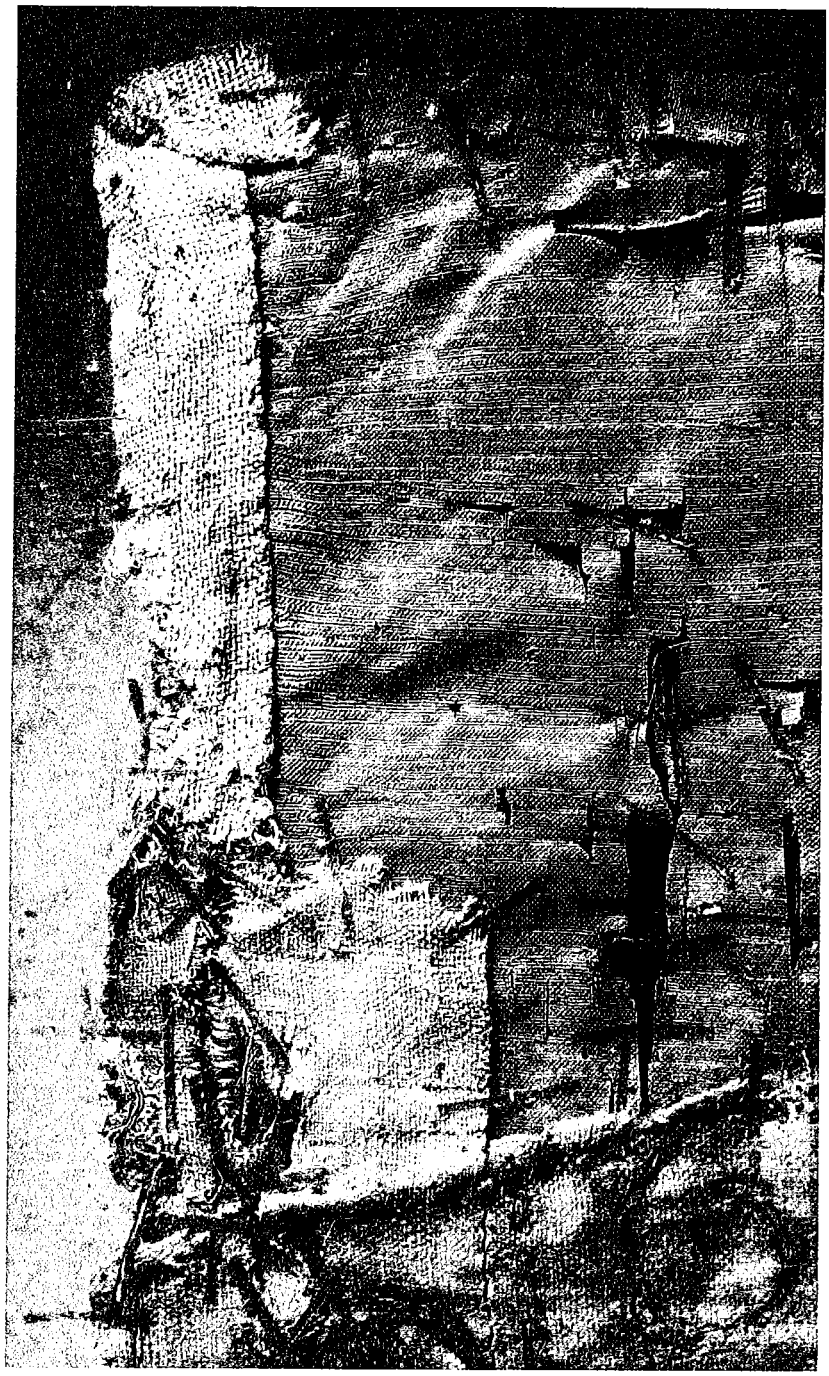


Figure 5 - Detail of the first dalmatic near corner 3 (see Figure 4). The original silk, S.1. showing the weft grouping itself into sixes as it nears the selvedge and, through holes in the linen, the selvedge itself ; left - hem of the medieval linen backing, L.1 ; bottom left - part of the embroidered linen panel, L.4 A.

Figure 6 - The method of folding the silk hems along the horizontal edges of the outer parts of S.1. (see figure 4).

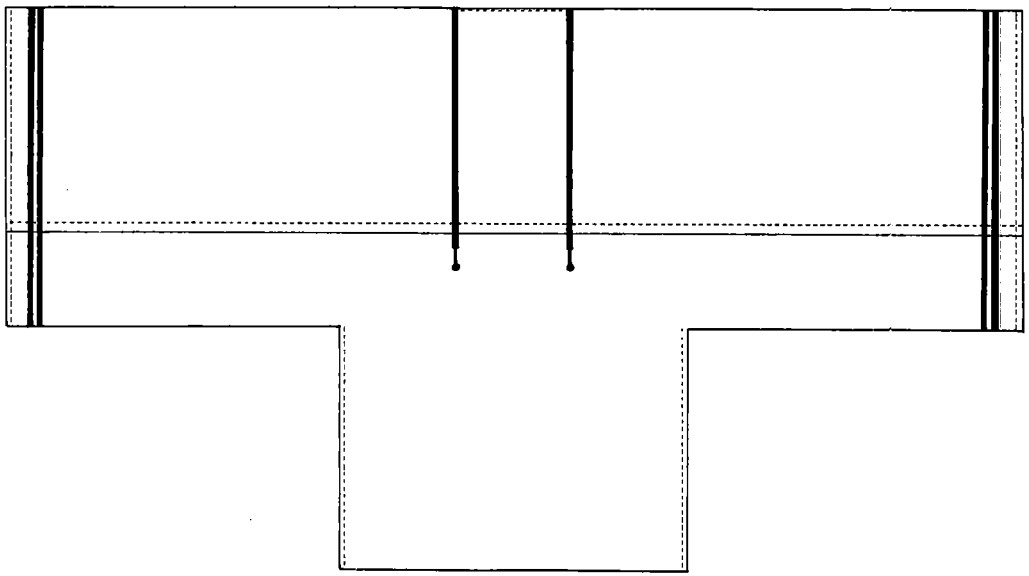


Figure 7 - The first dalmatic as worn. The depth of the waist tuck and the form of the ends of the shoulder stripes hypothetical.

Figure 8 - St. Ambrose. Mosaics of the first half of the 5th century in the sacellum of San Vittore, Sant'Ambrogio, Milan (photograph Basilica di Sant'Ambrogio).

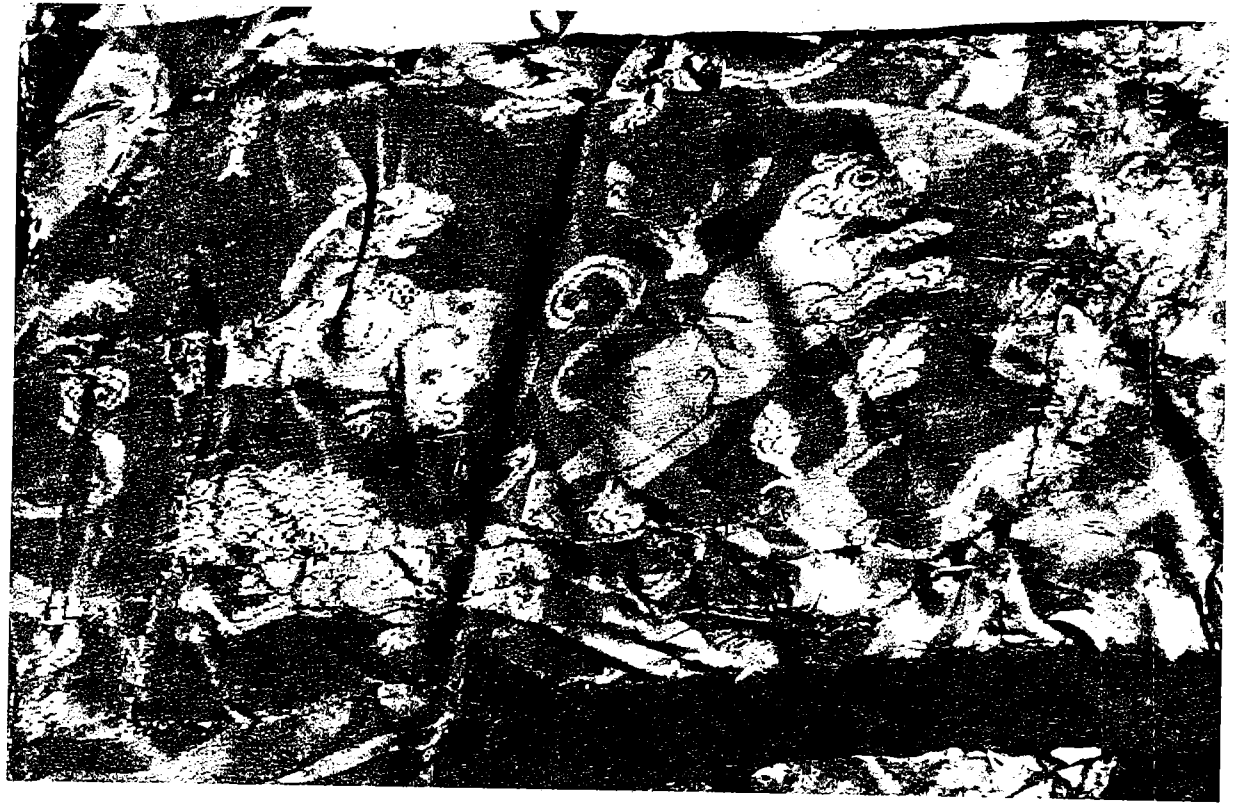


Figure 9 - Detail of fragment c) of the second dalmatic before the 1940 restoration. The lion-hunt damask, S.7, version A and B ; below - one bar of the cross made from the compound tabby silk, S.8 (photograph : after De Capitani d'Arzago, Figure 9).

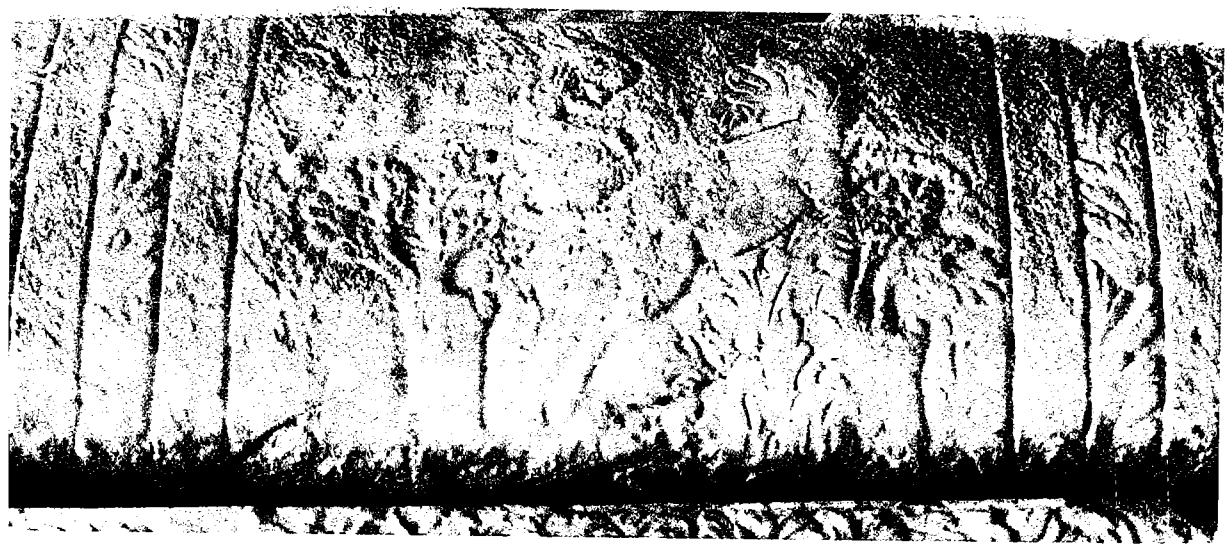


Figure 10 - Detail of the carved mattress cover on a stone sarcophagus. Second half of the 3rd century A.D., probably Attic (Museo Capitolino, Rome).

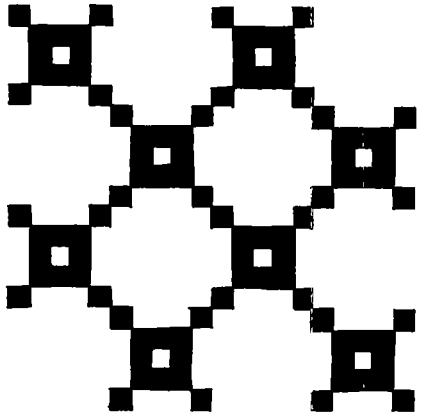


Figure 11 - Mise-en-carte for the weft-faced compound tabby silk, S.8. Each small square corresponds to 4 main warp threads and to 6 passes. Vertical repeat, c.1.8 cm. widtways repeat, c.1.9 cm.

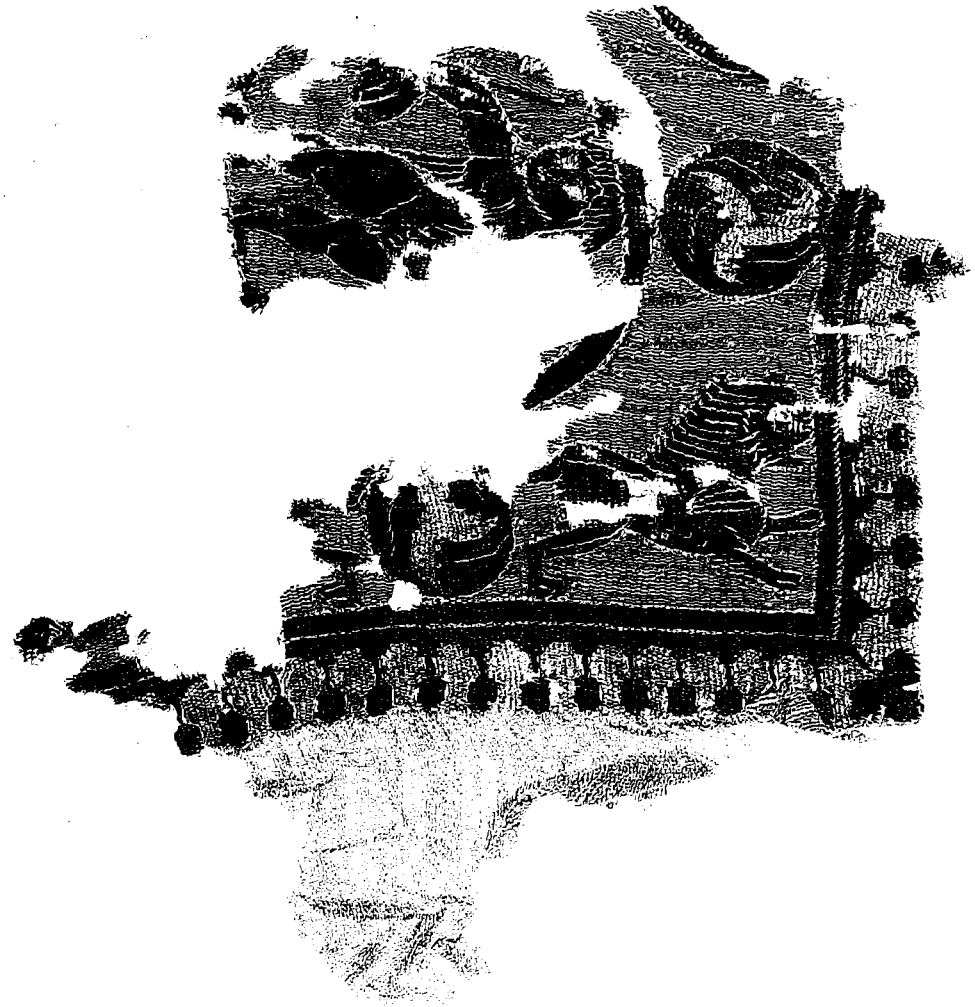


Figure 12 - Linen and wool fragment from Egypt, c. 5th century A.D. The linen warp, which lies on the surface in the plain areas outside the tapestry, is organised with two S-spun threads alternating with two S-spun threads (collection : Rogers and Podmore, Brighton and Newcastle.

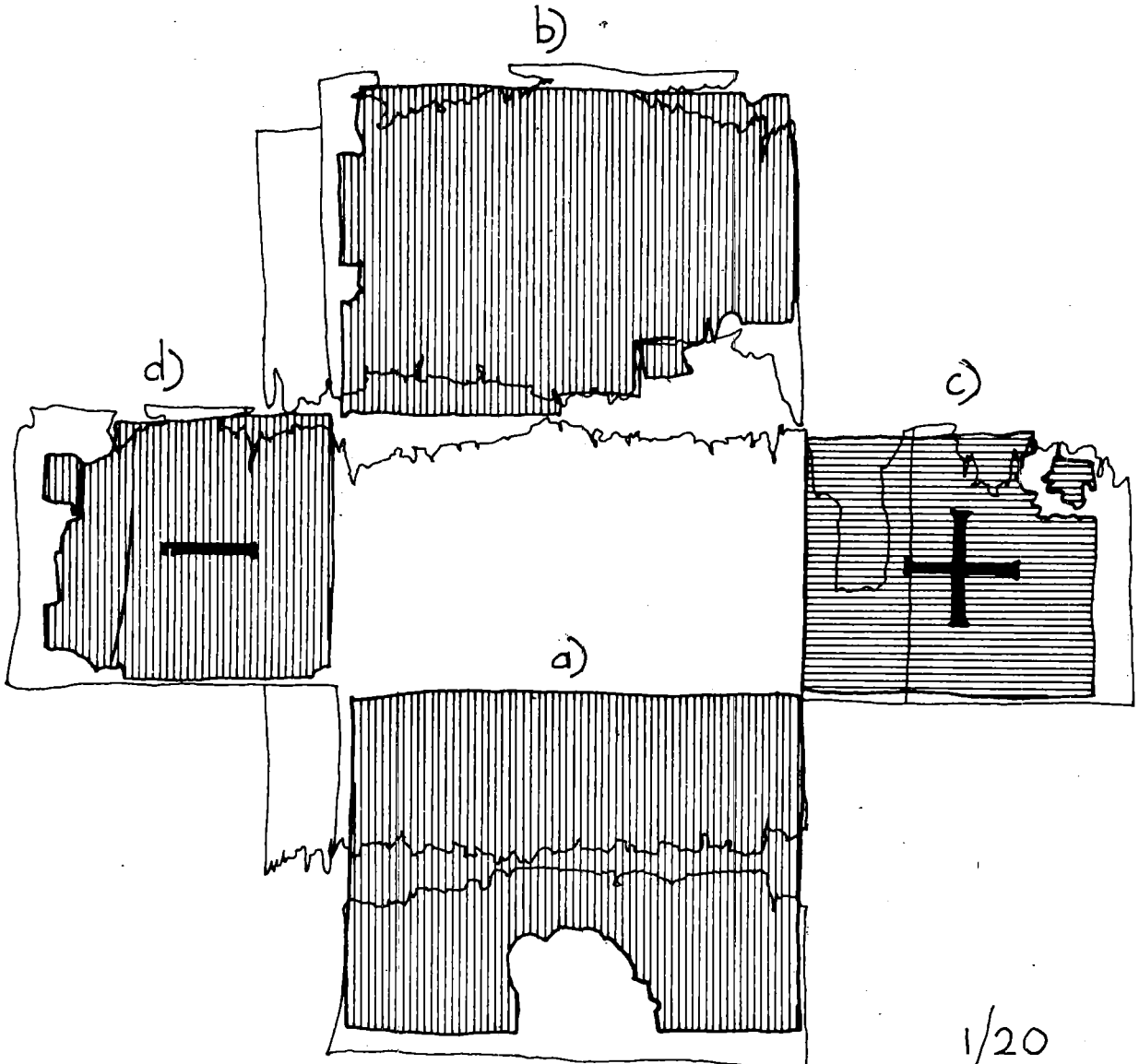


Figure 13 - Plan of the surviving fragments of the second dalmatic. Hatched areas - the four pieces of the original linen lining, L.2, the lines showing the direction of the warp ; plain areas - the medieval linen backing, L.3.

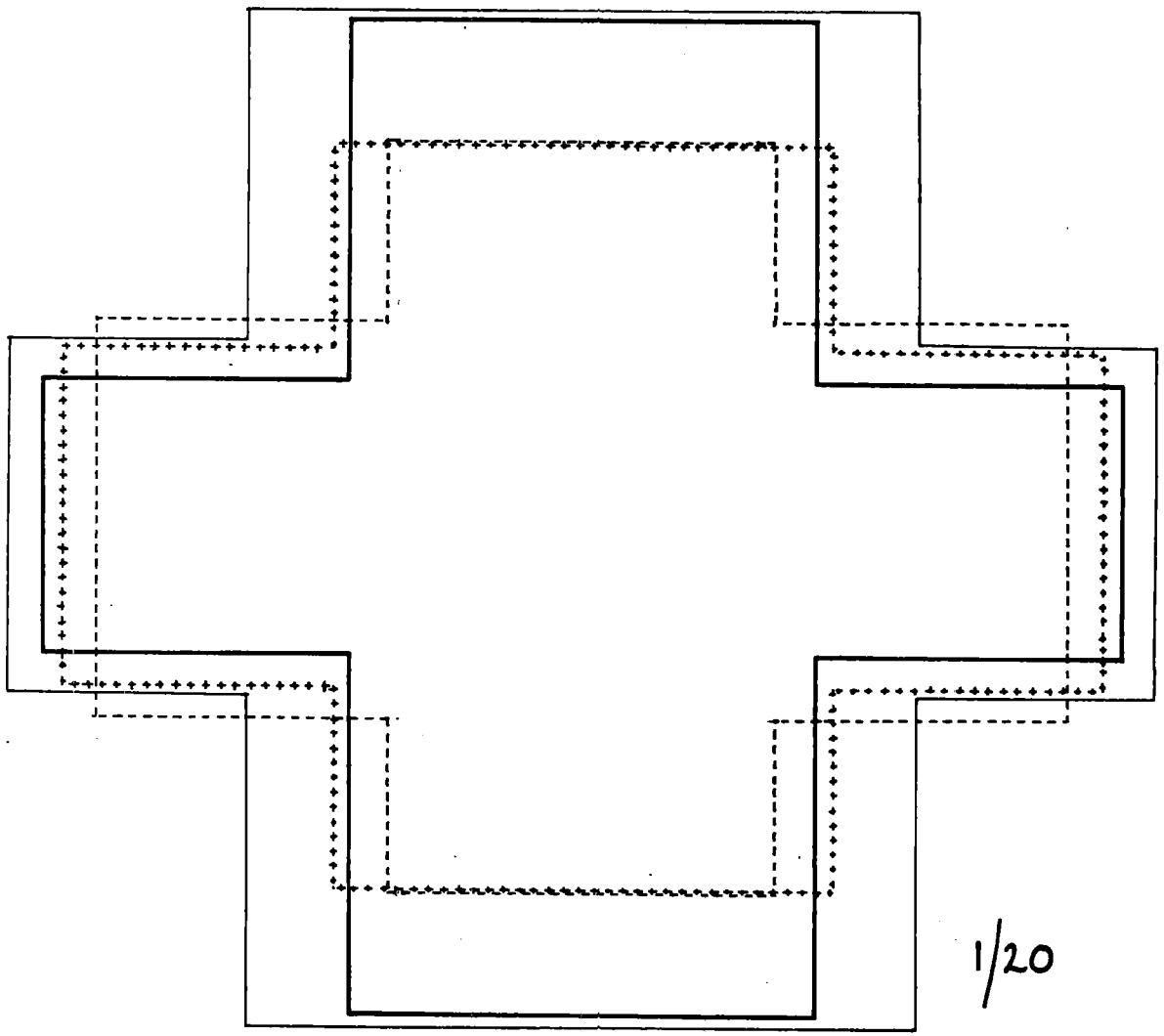


Figure 14 - Four dalmatics, unfolded outlines. Thick line - the second Sant'Ambrogio dalmatic ; thin line - the first Sant'Ambrogio dalmatic ; dotted line - the Victoria and Albert Akhmim dalmatic ; line of crosses - the Moyenmoutier dalmatic.

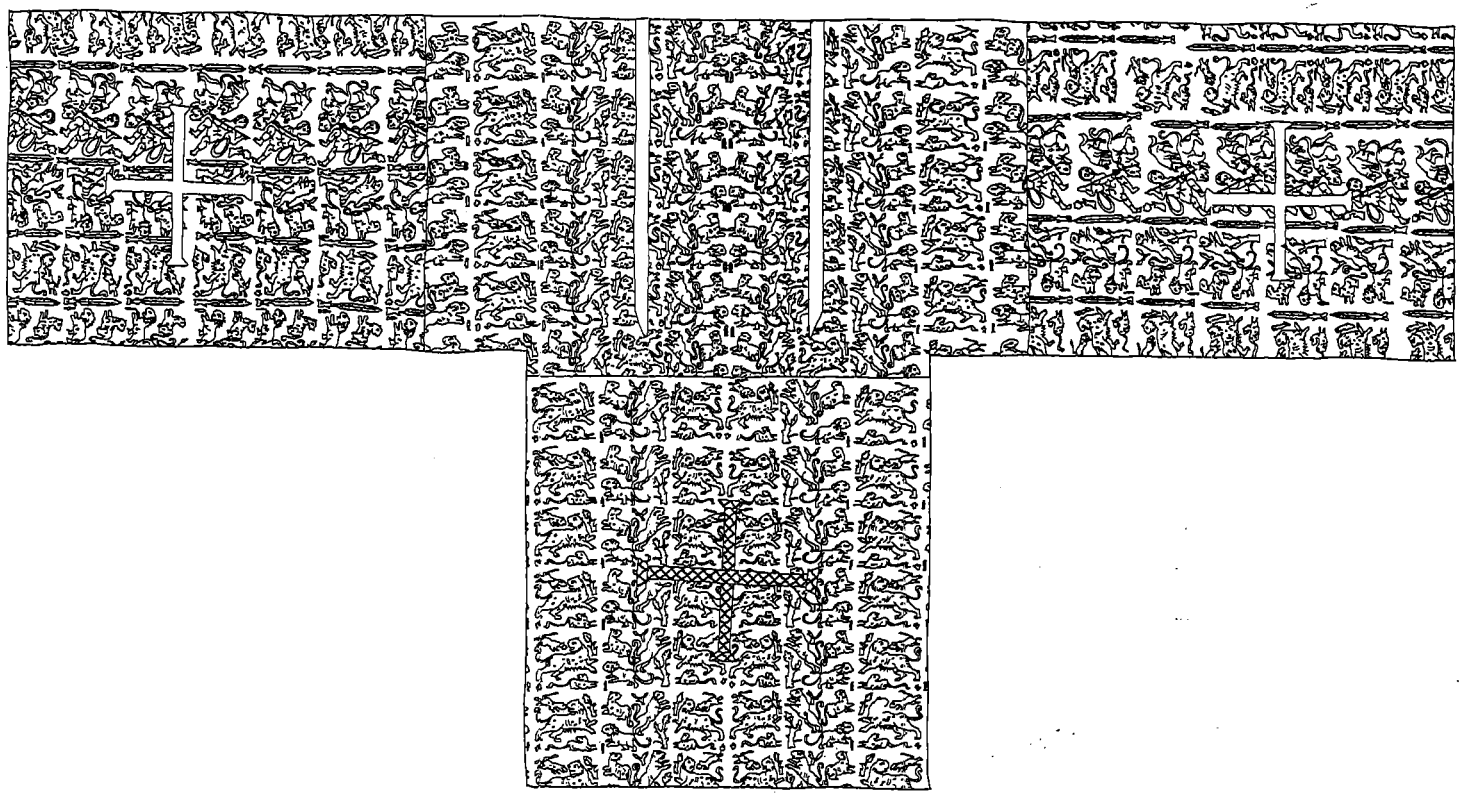


Figure 15 - The second Sant'Ambrogio dalmatic as worn. Placing of the lion-hunt damask, as well as of the upper applied decoration, hypothetical.

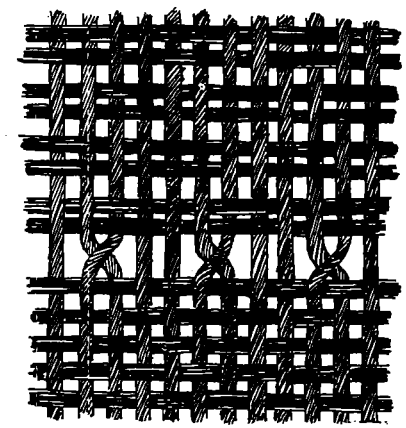


Figure 16 - System of grouping the warp threads for the weft-faced stripes of the first dalmatic, S.1.

LE PHENOMENE DU CROISAGE DES FILS DE CHAINE DANS LES TAPISSERIES COPTES (1)

par Daniël DE JONGHE et Marcel TAVERNIER
avec la collaboration de Liban POLLET

Les tapisseries coptes se divisent en trois groupes selon la technologie, l'emploi ou l'absence d'une chaîne de lin. Il existe :

- les tissus avec chaîne de laine
- les tissus avec chaîne de lin, fils retors
- les tissus avec chaîne de lin, fils simples

Les deux premiers groupes ont une réduction chaîne assez faible et une forte réduction trame.

Le dernier groupe a une réduction chaîne plus grande que la réduction de la trame du fond.

C'est ce dernier groupe qui nous intéresse ici, puisque tous ces tissus montrent la particularité du croisage des fils de chaîne entre le fond en armure toile et les parties en tapisserie (armure louisine), (fig. 1).

Puisque nous étions convaincus que le croisage des fils de chaîne n'était pas voulu mais imposé par la technologie selon laquelle ces tissus ont été confectionnés, nous nous sommes mis à la recherche de cette technologie.

Dans les paragraphes qui suivent, nous donnons un aperçu général d'une technologie simulant la technologie recherchée.

Le procédé.

Nous partons d'un métier vertical à rouleau et baguette à boucles fixe avec chaîne circulaire. Dans un tel métier, les organes pour la formation des foules sont fort simples. Il s'agit seulement d'une baguette à boucles, qui est fixée au métier d'une manière immobile, et d'un rouleau mobile qui sépare les fils de chaîne impairs des fils de chaîne pairs (c'est le rouleau toile Rt). Pour former les deux foules de l'armure toile, on procède comme suit (fig. 2).

- première foule : foule du rouleau. Le rouleau est tiré vers le bas contre les boucles de la baguette fixe (fig. 2b) ;
- seconde foule : foule de baguette. Le rouleau est poussé vers le haut (fig. 2a, c et d).

De cette manière, on tisse le fond en lin, en croisure toile.

Quand le tisserand copte veut tisser une partie en tapisserie, vu la forte réduction chaîne, il est obligé ou bien de réduire la réduction chaîne (ce qui est possible en laissant flotter certains fils de chaîne à l'envers du tissu) ou bien de construire la partie tapisserie en louisine. On verra que le tisserand copte choisit toujours l'emploi de la louisine, mais il obtient en même temps, s'il le souhaite, une diminution de la réduction chaîne.

Pour produire la louisine avec des moyens fort simples, il suffit d'introduire dans la chaîne un deuxième rouleau (le rouleau louisine RL). Pour une louisine 2/2, on introduit le rouleau louisine comme indiqué par la ligne pointillée de la fig. 2d et par la fig. 3c. Pour la louisine 2/3, on entre RL comme indiqué par la ligne pointillée de la fig. 4a, pour la louisine 3/3, comme indiqué sur la fig. 4b, et ainsi de suite. Si on introduit le rouleau louisine en 2/3, un sixième des fils de chaîne réalisera des flottés de chaîne à l'envers du tissu.

Aussi longtemps qu'on tisse la louisine, la première foule est réalisée en tirant le rouleau RL en bas contre les boucles de la baguette qui reste invariablement à sa place (fig. 3b et d). La deuxième foule est réalisée en poussant le rouleau RL en haut (fig. 3a, c et e). Donc, les deux foules de n'importe quelle louisine sont réalisées en procédant comme pour l'armure toile, mais avec le rouleau RL au lieu du rouleau RT, qui néanmoins est maintenu dans la chaîne (fig. 3).

Il n'est pas nécessaire d'introduire le rouleau RL sur toute la largeur du tissu, c'est même plus avantageux de l'introduire seulement sur la largeur du décor ou même seulement sur une partie de cette largeur.

Ainsi, on évite le frottement inutile des fils de chaîne inactifs pendant le changement de pas. Il est d'ailleurs facile de constater que les tisserands coptes ont procédé par parties bien délimitées, même parfois pour tisser une bande unie (bleu ou pourpre) en louisine. Au lieu d'introduire la trame bleue d'un côté à l'autre de la partie en louisine, ils limitent parfois le travail à quelques centimètres de largeur.

La confection des tissus(2).

Revenons sur la confection d'un tissu en toile avec des parties en tapisserie. Il y a deux modes opératoires selon la forme des parties en tapisserie.

1 - Rectangles et carrés (fig. 5).

Le fond est tissé entièrement en lin armure toile en procédant comme indiqué plus haut avec le rouleau toile RT (fig. 2). Quand doit débuter la partie en tapisserie, le tisserand arrête le tissage du fond sur toute la largeur du tissu (fig. 5 ligne A-B).

On entre le rouleau louisine RL sur l'endroit voulu comme dans la figure 3 et on procède à la confection de la partie en tapisserie CDEF en employant le rouleau louisine RL comme expliqué plus haut.

Une fois que la partie en tapisserie est finie, on retire le rouleau louisine RL de la chaîne et on reprend le tissage du fond en armure toile à côté de la partie en tapisserie sur les lignes A-C et D-B. Si la largeur de la partie en tapisserie est assez grande, le tisserand retourne la trame de lin à la limite de cette partie. Si cette largeur est petite, le tisserand laisse flotter la trame de lin à l'envers de la partie en tapisserie. La reprise du fond sur les lignes imaginaires A-C et D-B est presque toujours visible dans le tissu comme une ligne horizontale due au fait que le tassement de la trame à cet endroit est ou bien trop faible ou bien trop serré.

Pour éviter que les fils de chaîne de la partie en tapisserie réalisent vainement le croisement pendant le changement des foules, le tisserand entre un second rouleau toile qui ne prend pas ces fils de chaîne. Tous les fils de chaîne de la partie en tapisserie passent au-dessus de ce second rouleau toile. Une fois que le fond est avancé jusqu'au niveau supérieur de la partie en tapisserie -ligne G-H- le second rouleau toile est retiré de la chaîne ou passé au-dessus du premier rouleau toile et on reprend le tissage du fond sur toute la largeur du tissu avec le premier rouleau toile RT.

2 - Partie d'une forme quelconque (fig. 6).

Au moment où doit commencer la partie en tapisserie, le tisserand n'arrête pas le tissage du fond. Il continue à tisser le fond mais il interrompt l'armure toile progressivement, respectant la courbe imaginaire ACB de la partie en tapisserie. Quand il atteint cette courbe, le tisserand passe la trame derrière tous les fils de chaîne sur toute la largeur de la partie en tapisserie, ou bien il retourne la trame aux deux limites de cet endroit (selon la largeur de la partie en tapisserie). De cette façon, il continue le tissage du fond jusqu'à l'endroit où le motif atteint la largeur la plus grande (ligne D-A et B-E). A remarquer que dans ce genre de dessins les pointes A et B se trouvent toujours sur la même hauteur.

Le tisserand ou le maître tapissier (?) procède maintenant à la confection de la partie en tapisserie. Il entre le rouleau louisine RL sur la largeur M-N et tisse d'abord quelques coups louisine le long de la courbe ACB. La raison de ces quelques coups en lin écru le long de la courbe est multiple. D'abord, ces coups effectuent une action consolidant la courbe. Ensuite, le tisserand en profite pour ajuster, où cela est nécessaire, la courbe provisoire. Et finalement, en limitant le fond à une certaine distance du motif (voir le cas du cercle, fig. 6), ils créent la possibilité de réaliser des perfilages entre le coin et la partie en tapisserie (3).

Après ces quelques coups en lin écru, le tisserand procède à la confection de la partie en tapisserie tout entière en formant les deux foules d'une part avec le rouleau louisine RL et d'autre part avec la baguette à boucles. Si, pendant le tissage du fond jusqu'à la ligne C-D, le tisserand a laissé flotter la trame de lin en-dessous des fils de chaîne sur la largeur de la partie en tapisserie, il coupe ces flottés par le milieu (4).

Une fois que la partie en tapisserie est finie, le tisserand reprend le tissage du fond. Il retire de la chaîne le rouleau louisine RL et recommence le travail avec le rouleau toile RT. Travailler avec un second rouleau toile, comme pour les rectangles ou les carrés, n'aurait pas de sens puisque la limite de la partie en tapisserie n'est pas rectiligne.

Comme précédemment, si la partie en tapisserie est assez large, le tisserand retourne la trame à la limite de cette partie. Au moment où la largeur n'est plus trop grande, il passe la trame de lin derrière la partie en tapisserie. Dans bon nombre de tissus coptes, ces flottés intacts sont toujours présents. Dans ces cas, la moitié du motif avec les flottés intacts est la partie supérieure. Cette moitié a été tissée après la moitié sans flottés ou avec des flottés coupés par le milieu.

Une fois que le fond est avancé jusqu'au niveau supérieur de la partie en tapisserie, la trame est introduite normalement sur toute la largeur du tissu, pour continuer la confection du fond.

Argumentation

Par la technologie proposée on arrive à reproduire tous les effets et toutes les particularités qu'on rencontre dans les tapisseries coptes du troisième groupe. Cette technologie a le mérite d'être fort simple. Le métier est un des plus simples et le procédé à tisser la louisine ne demande qu'un rouleau supplémentaire. Cette simplicité est un premier argument important.

Mais dans certains tissus coptes des Musées Royaux d'Art et d'Histoire de Bruxelles nous avons trouvé des phénomènes qui plaident pour l'emploi d'un rouleau louisine (5).

- Il y a d'abord le tissu Tx 614. Il y a deux bandes pourpres qui se trouvent l'une au dessus de l'autre, séparées entre elles par quelques cm de tissu de fond. Seulement cette bande de tissu de fond n'a pas été tissée en armure toile mais comme les bandes pourpres en louisine 3/3. Donc à la fin du tissage de la première bande pourpre le tisserand n'a pas écarté le rouleau louisine. Il l'a employé pour tisser la bande intermédiaire de fond. Pour gagner du temps, il a préféré continuer en armure louisine. Seulement il a doublé la trame de lin écru afin de diminuer le nombre de coups entre les deux bandes pourpres.

  Si la confection de la louisine 3/3 était faite à la main, la conservation de l'armure louisine entre les deux bandes pourpres ne pourrait pas s'expliquer.

- Puis il y a le tissu Tx 357. C'est le seul tissu où l'on trouve des ornements exécutés en louisine certainement tissée à la main. Le tissu montre trois ornements différents. Il y a de petits anneaux disposés en losanges et il y a des feuilles et des rosaces.

  L'armure du fond est la toile, tandis que l'armure des ornements est la louisine 2/2. Seulement, la louisine des feuilles et des rosaces est exécutée par l'emploi d'un rouleau louisine (les fils de chaîne impairs se trouvent dans les côtes impaires et les fils de chaîne pairs se trouvent dans les côtes paires) tandis que les petits anneaux sont entièrement tissés à la main puisque, dans chaque côte il se trouve un fil de chaîne impair et un fil de chaîne pair. Les deux foules de cette louisine 2/2 ont été formées à la main. Dans chaque anneau il y a seulement 3 côtes, donc la largeur sur laquelle le tisserand copte a du introduire la trame est très restreinte. Il n'a pas employé un rouleau louisine pour cette seule raison. Quand les ornements sont plus grands, les tisserands ont eu recours au procédé proposé.

- Le tissu Tx 295 est un autre exemple de l'emploi d'un rouleau louisine. Le tissu serait un fragment d'un rideau. Il montre une ornementation de petites rosaces disposées une nouvelle fois en losanges. A l'intérieur de certains losanges il se trouve un arbre (fig. 7). La présence à l'envers du tissu des flottés de trame témoigne de la manière dont l'ornement a été exécuté. L'erreur que le tisserand a commise pendant le tissage de cet arbre démontre encore une fois l'application du procédé. Suivons l'exécution de l'ornement.

  Le tisserand a arrêté le tissage du fond en armure toile à la ligne A-B (fig. 8) au pied de l'arbre. Puis il a introduit le rouleau louisine 2/2 sur la largeur M-N, égale à la largeur la plus grande du pied de l'arbre.

Ensuite il tisse en louisine 2/2 le pied de l'arbre jusqu'à la ligne C-D. Il est obligé d'arrêter le tissage de l'arbre environ à cet endroit puisqu'il doit d'abord continuer à tisser le fond en armure toile jusqu'à la ligne E-F. Ce qu'il fait après avoir éloigné de la chaîne le rouleau louisine. Il doit éloigner le rouleau louisine puisque le fond doit être tissé en armure toile avec le rouleau toile. Le tissage du fond est exécuté en laissant flotter la trame à l'envers de la partie en tapisserie. Quand le fond a été exécuté jusqu'à la ligne E-F, il arrête le tissage du fond pour continuer et terminer le tissage de l'arbre en louisine. A cette fin, de la ligne E-F jusqu'à la ligne C-D il coupe les flottés de trame par le milieu. Puis il réintroduit le rouleau louisine sur la largeur P-Q, égale à la plus grande largeur de l'arbre. C'est dans cette manipulation que résidera l'erreur.

Après avoir réintroduit le rouleau louisine le tisserand continue le tissage de l'arbre de la ligne C-D jusqu'au sommet. Arrivé au sommet le tissage de la louisine est terminé et il retire le rouleau louisine de la chaîne. Enfin il reprend le tissage du fond de la ligne E-F jusqu'au sommet de l'arbre en laissant flotter la trame à l'envers de la partie en tapisserie. Ces flottés de trame sont toujours là, mais ils ont été coupés de la ligne E-F jusqu'à la ligne C-D.

C'est sur la ligne C-D que se trouve le défaut (fig. 8). Pour reprendre le tissage de la louisine le tisserand a du réintroduire le rouleau louisine. Puisqu'il peut accomplir cette manipulation de 4 manières différentes (fig. 9) il y a 75 % de chance qu'il le fasse d'une manière différente de celle dont il a usé pour introduire le rouleau louisine quant au tissage de la partie inférieure du pied de l'arbre. Les figures 10 et 12 présentent ce défaut. Il est clair que pour la louisine de la partie inférieure du pied, le tisserand a procédé selon la figure 9b, tandis qu'il a procédé selon la figure 9c au moment de la réintroduction du rouleau louisine. Par suite de cette erreur, les 2 fils de chaîne des côtes impaires se divisent et se juxtaposent le long des deux fils de chaîne des côtes paires pour former des côtes paires, tandis que les 2 fils de chaîne des côtes paires forment des côtes impaires (fig. 12).

Le défaut démontre que le tisserand n'a pas réalisé à la main l'armure louisine. Reprenons le tissage de la louisine : une des deux foules, supposons la foule impaire, est obtenue par la baguette à boucles et l'autre foule, la foule paire, doit être faite à la main ou, comme nous le proposons, en employant le rouleau louisine. Si on admet que le tisserand exécute à la main les foules paires, logiquement on admet que le tisserand ne se trompe pas et qu'il saisit dans la succession des foules paires toujours les mêmes fils de chaîne, puisque les tapisseries ne présentent pas d'erreurs. Dans ce cas là le défaut à la ligne C-D n'est pas explicable. Au contraire si on admet que les foules paires de la louisine ont été formées par l'emploi du rouleau louisine, la probabilité de commettre une erreur est, comme cela est expliqué plus haut, de 75 %. Quand le tisserand réintroduit le rouleau louisine il n'a plus de contrôle sur la manière dont le rouleau louisine a été introduit pour le tissage du pied de l'arbre. Il commence à entrer le rouleau louisine à un endroit qui se trouve beaucoup plus à gauche (ou à droite) du pied de l'arbre. Il n'est pas possible d'éviter l'erreur et c'est seulement par hasard que la réintroduction du rouleau sera exécutée d'une façon identique à celle du tissage du pied (6).

- Enfin un dernier argument peut être trouvé dans les tissus à bandes horizontales formées en louisine 1/2, ou 1/3 ou 1/4.
  Quand on introduit le rouleau louisine 1/2 (fig. 11a) ou 1/3 (fig. 11b) ou 1/4 (fig. 11c), il n'ya pas de croisage des fils de chaîne. Dans ces cas, le nombre des fils de chaîne flottant à l'envers est respectivement : 1/4ème, 2/6ème et 3/8ème. De plus, dans les côtes impaires il ne se trouve qu'un seul fil de chaîne, tandis que les côtes paires 2, 3 ou 4 fils de chaîne se présentent.

  Dans les bandes superposées de ces tapisseries on constate que ce sont toujours les mêmes fils de chaîne qui flottent à l'envers et les mêmes fils de chaîne qu'on retrouve dans les côtes impaires et paires.

  Ce phénomène prouve que les foules paires de la louisine ont été exécutées à l'aide d'un rouleau louisine. Puisque le rouleau louisine, dans ces cas là, ne doit pas être retiré de la chaine pour reprendre le tissage en armure toile de la partie intermédiaire (le rouleau toile peut passer le rouleau louisine), la sélection des fils de chaîne sur le rouleau louisine est retenue.

Origine du procédé.

Il n'est pas facile de contrôler l'origine du procédé.
Nous avons examiné sur place les tissus tapisserie des tombes de Toutmosis IV et de Touthankhamon (Le Caire) et de l'architecte Kha (Turin), tous de la XVIIIème Dynastie. Aucun de ces tissus ne montre le phénomène du croisage des fils de chaîne. Ces tissus sont exécutés entièrement en armure toile avec une grande réduction trame. Ce n'est donc certainement pas de ces ancêtres dynastiques que les tisserands coptes ont hérité cette technologie.

Puisque les tissus coptes sont si difficilement datables, il reste dangereux de supposer que les tisserands égyptiens connaissaient le procédé avant le IIIème siècle de notre ère.

Les tissus les plus anciens, qui présentent l'effet des fils croisés sont les tissus T1 à T20 (7) de Palmyre et quelques tissus de Doura-Europos (8).

Remarquons qu'aussi bien à Palmyre qu'à Doura-Europos, on a trouvé des tissus entièrement en laine présentant le même phénomène. Par exemple, le tissu L19 (Pfister) et le tissu 16558 du Kunstmuseum, Düsseldorf, également d'origine palmyréenne.

En Grèce nous avons eu l'occasion de voir les tissus trouvés dans les tombes de Vergina et d'avoir un entretien avec M. Margaritov, le restaurateur de ces pièces. Bien que ces tissus soient exécutés en tapisserie, ils sont réalisés en armure toile avec une faible réduction chaîne et une forte réduction trame. Ils ne montrent pas le phénomène du croisage des fils de chaîne (9).

Reste à signaler que bon nombre de tissus précolombiens à chaîne de coton, fond armure toile, avec des parties en tapisserie montrent le phénomène du croisage des fils de chaîne. Malheureusement, ces tissus sont également difficilement datables. Les tissus précolombiens des Musées Royaux d'Art et d'Histoire de Bruxelles qui montrent le phénomène, seraient de la période intermédiaire récente (900 - environ 1450). Au Métropolitan Museum de New York il y a un tissu précolombien de la période Horizon moyen (550-900), qui montre le même phénomène (10).

Une conclusion provisoire peut être formulée comme suit : le procédé de l'emploi d'un rouleau louisine était connu et appliqué d'une part dans la région du Proche-Orient au moins à partir du IIIème siècle après J.C. et d'autre part dans la région de la côte (sud) péruvienne au moins à partir de la période Horizon moyen.

Le procédé a été appliqué aussi bien sur une chaîne de lin que sur une chaîne de laine ou de coton. Il a été pratiqué sur des métiers verticaux à deux ensouples, mais aussi sur des métiers horizontaux à ceinture (body tension loom ; back strap loom).

NOTES

1 - Nous remercions vivement Frieda Sorber, conservatrice adjoint, au Musée d'Anvers et Liban Pollet, professeur de tissage. Pendant la session 1983 du CIETA à Lyon, ils ont bien voulu démontrer, à notre place, le procédé du rouleau louisine.

2 - C'est grâce aux essais effectués par Liban Pollet que nous avons pu stipuler plus exactement l'application pratique du procédé.

3 - Nous rejetons la supposition d'Ingrid Bergman, Late Nubian Textiles ; Stockholm, 1975, p. 45 : "... The sections were probably to lessen the tension between the ground fabric and the tapestry figure and prevent the cloth from tearing".

4 - Sur certaines pièces coptes, ces flottés coupés sont encore très visibles à l'envers du tissu. Voir aussi les photographies n° 1 p. 20, in Textiles from Egypt. Tel Aviv, 1981, d'Elisa Baginski.

5 - Nous remercions M. A. De Roo et Mme J. Lafontaine-Dosogne. Ils nous ont procuré toutes les facilités pour examiner les tissus proposés.

6 - Nous avons contrôlé les 8 arbres qui figurent sur le fragment du rideau et un seul de ces dessins ne présente pas de défaut à la ligne C-D.

7 - R. Pfister, Textiles de Palmyre. Paris, 1934.

8 - R. Pfister et L. Bellinger, The excavations at Doura-Europos, Final Report IV. Part II The Textiles. New Haven 1945 et L. Bellinger, Workshop Notes, April 1951 : Early Techniques in Egypt and the Near East. Washington D.C.

9 - J.P. Wild nous a signalé un tissu trouvé dans les réserves du British Museum qui serait d'Enkomi (Chypre) et qui montre dans les parties en tapisserie la louisine 1/2. Il serait possible qu'il date du IVème siècle avant J.C., mais cela reste à l'état d'hypothèse. Il faut attendre l'examen et l'étude plus approfondis de cette pièce.

10 - Nous remercions Nobuko Kajitani pour cette information.

Summary

The crossing of the warp threads in Coptic textiles

By analysing a considerable number of Coptic textiles, the authors discovered the technology of the crossing of the warp threads in certain Coptic tapestries, notably those with a warp of simple linen threads. They have tested this technology by practical experiments.

The loom employed to produce Coptic tapestries is very simple, with a shedding apparatus consisting only of a heddle rod and a shed rod (rouleau toile, Rt) for the tabby weave. When the Coptic weaver wished to weave an area of tapestry, he inserted a second shed rod (rouleau louisine, RL) in such a way that the sequence of the warp threads 1,2 ; 3,4 ; 5,6 ; 7,8 was changed, for example, into 1,3 ; 2,4 ; 5,7 ; 6,8. Using the original heddle rod and the second shed rod the Coptic weaver could then open the two sheds for the louisine.

The authors have examined tapestry weaves from Dynastic tombs in Egypt and from Vergina in Greece, but have found no examples of this crossing of the warp threads between the ground and the louisine earlier than those found at Palmyra.

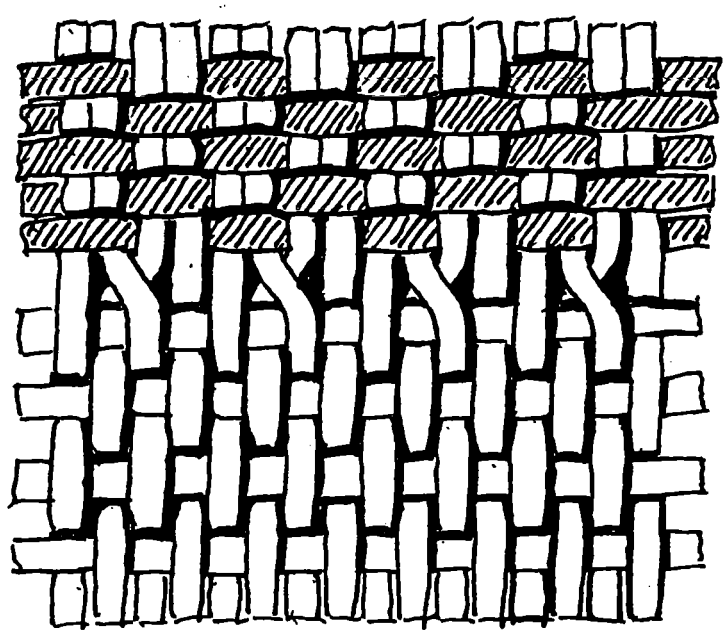


Figure 1 - Représentation graphique de la croisure toile suivie de la croisure louisine 2/2 avec croisage des fils de chaîne.

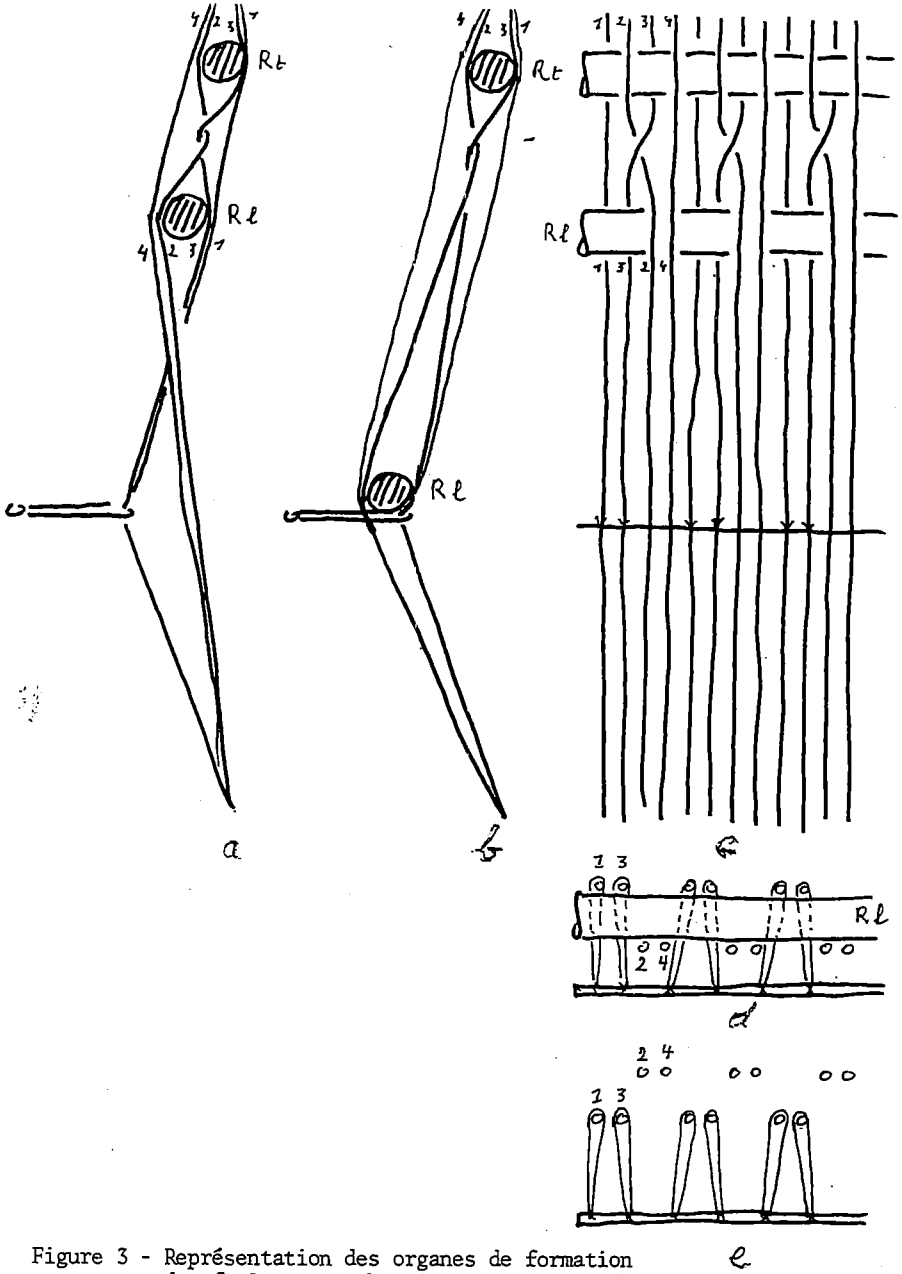


Figure 3 - Représentation des organes de formation des foules pour obtenir la louisine 2/2.
a. Foule de la baguette
b. Foule du rouleau louisine RL
c. Foule de la baguette
d. Foule du rouleau louisine RL
e. Foule de la baguette

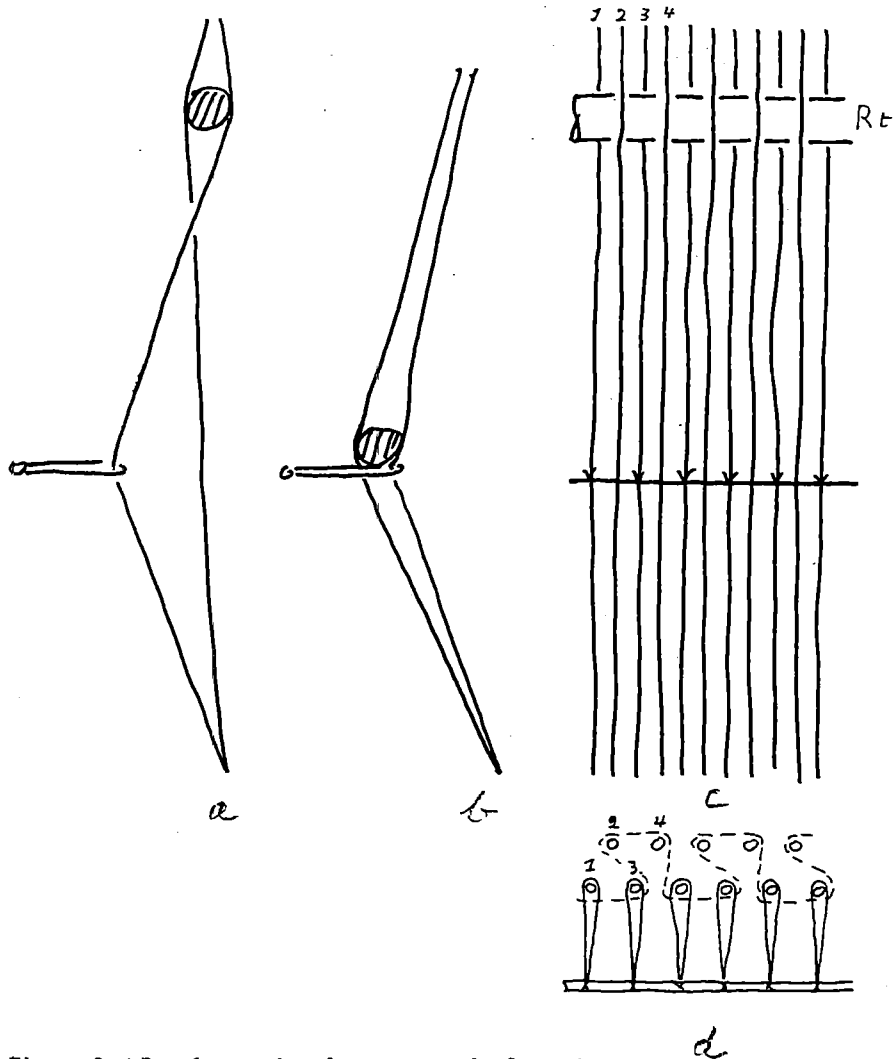


Figure 2 - Représentation des organes de formation des foules d'un métier à rouleau et baguette fixe à boucles.
a. Foule de baguette
b. Foule du rouleau toile Rt
c. Foule de la baguette
d. Foule de la baguette. La ligne pointillée indique le chemin qui est à suivre pour l'introduction du rouleau RL quand la louisine 2/2 est à obtenir.

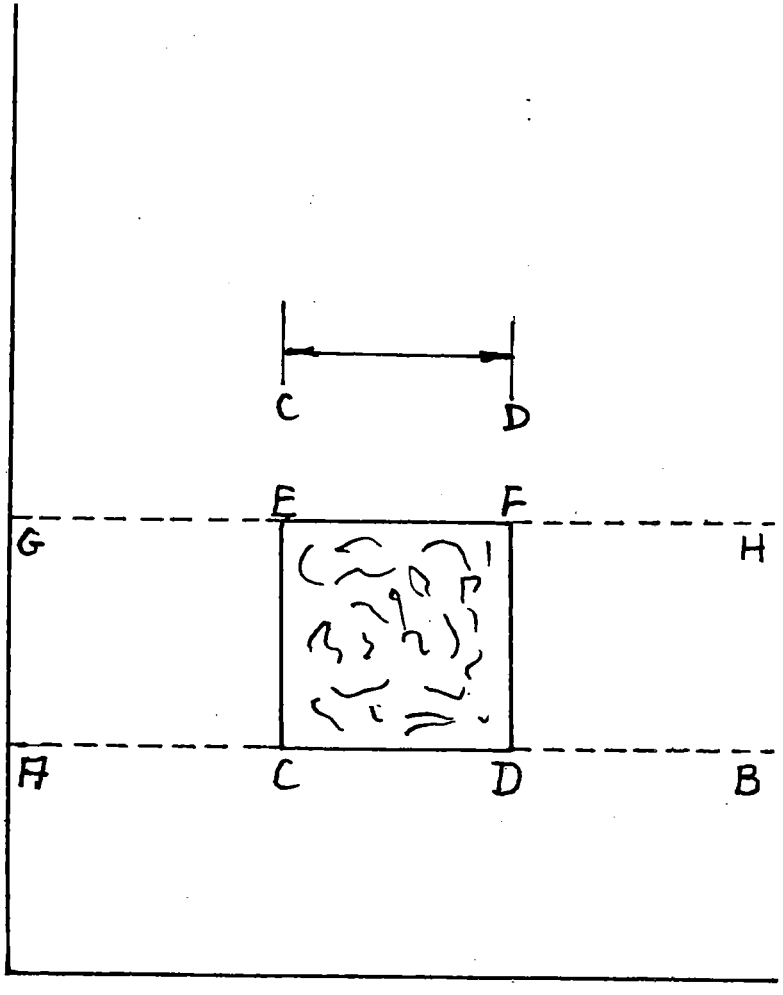


Figure 5 - Schéma d'un tissu, fond en armure toile avec carré CEDF en tapisserie.

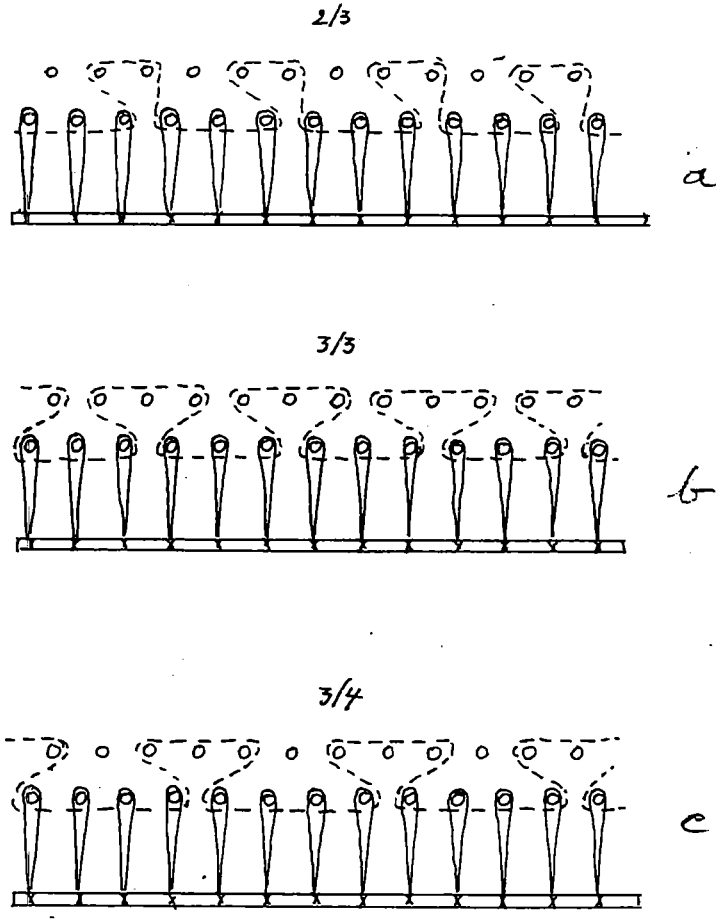


Figure 4 - Indication de l'introduction du rouleau louisine RL ;
a. pour la louisine 2/3.
b. pour la louisine 3/3.
c. pour la louisine 3/4.

Figure 7 - Détail du tissu inv. Tx N° 295. Côté envers.

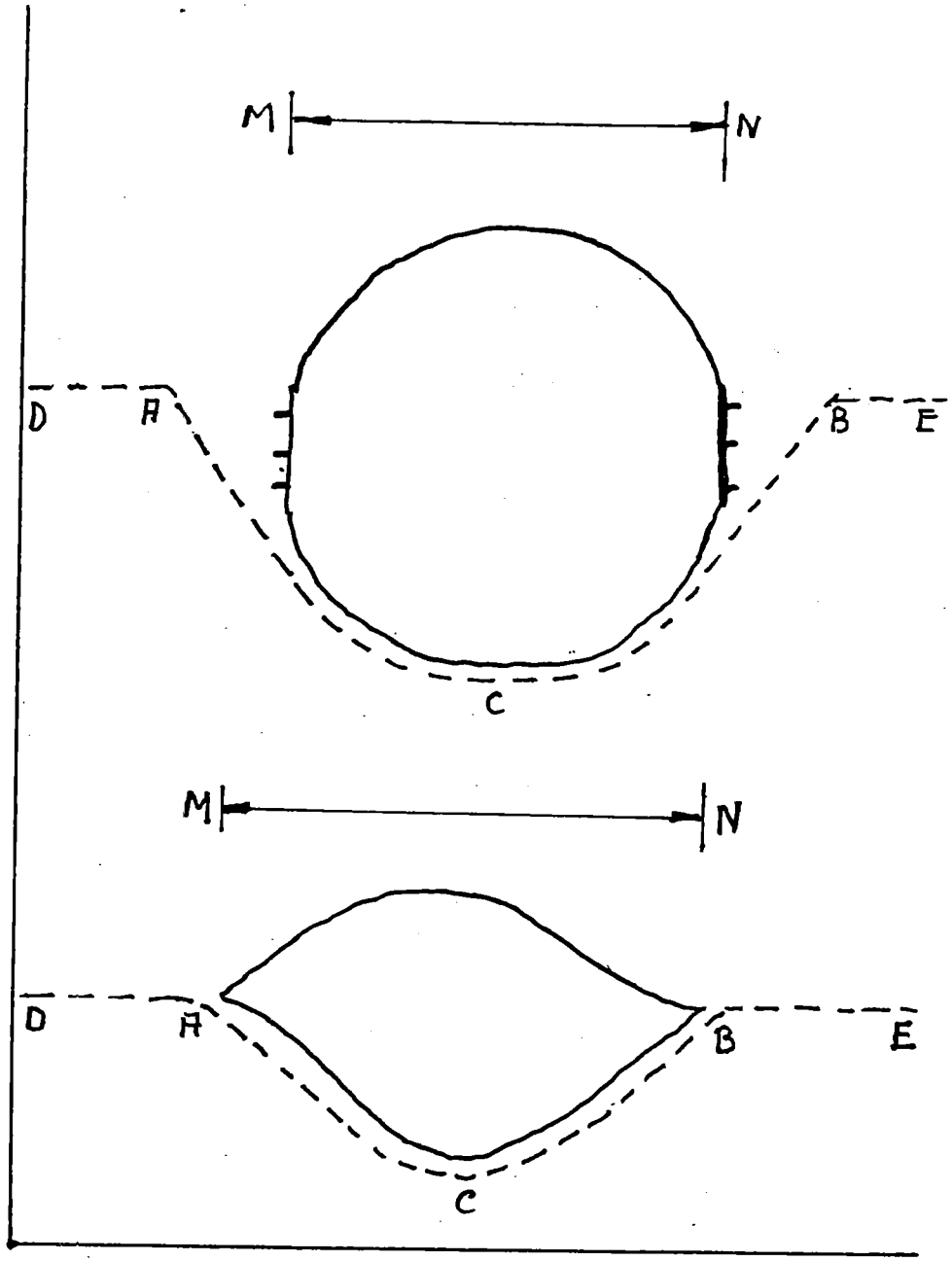


Figure 6 - Schéma d'un tissu, fond en armure roile avec des motifs en tapisserie.

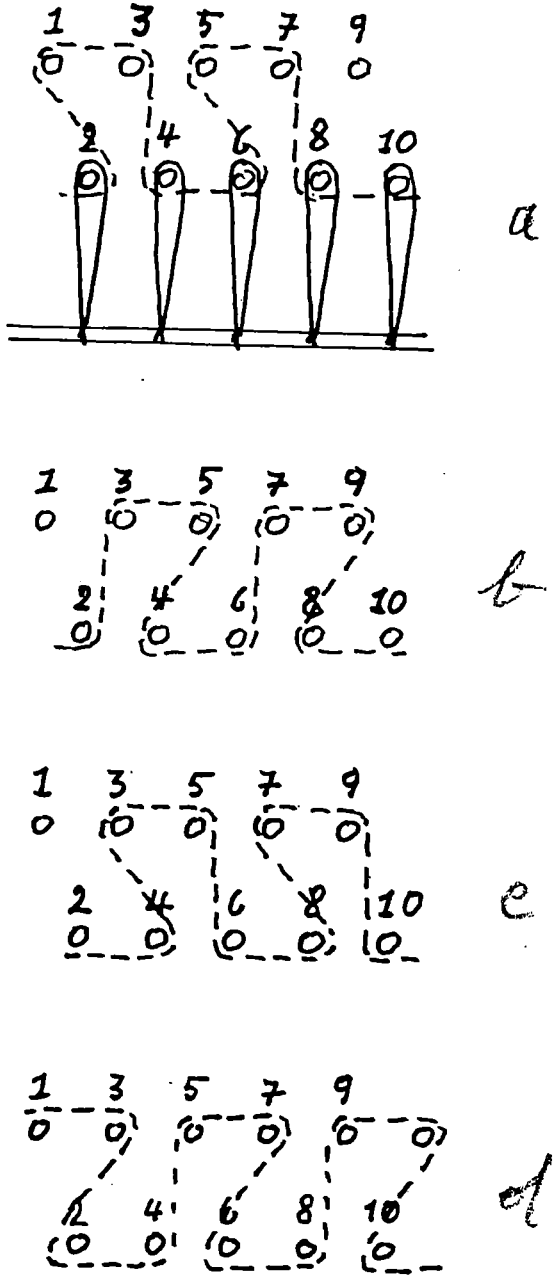


Figure 9 - Indication des quatres manières différentes (a, b, c et d) selon lesquelles le rouleau RL peut être introduit pour la louisine 2/2.

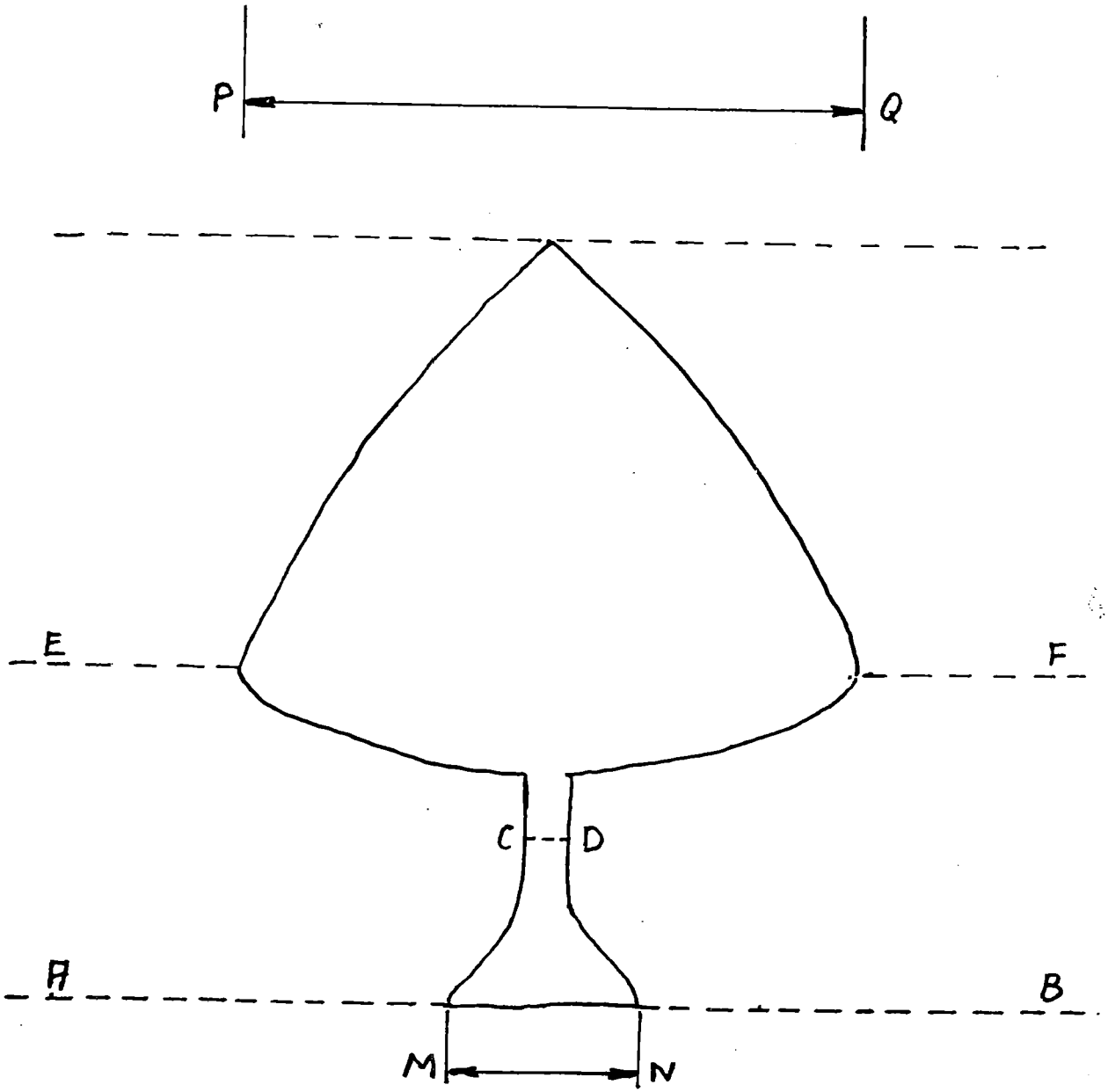


Figure 8 - Schéma du détail de la figure 7.

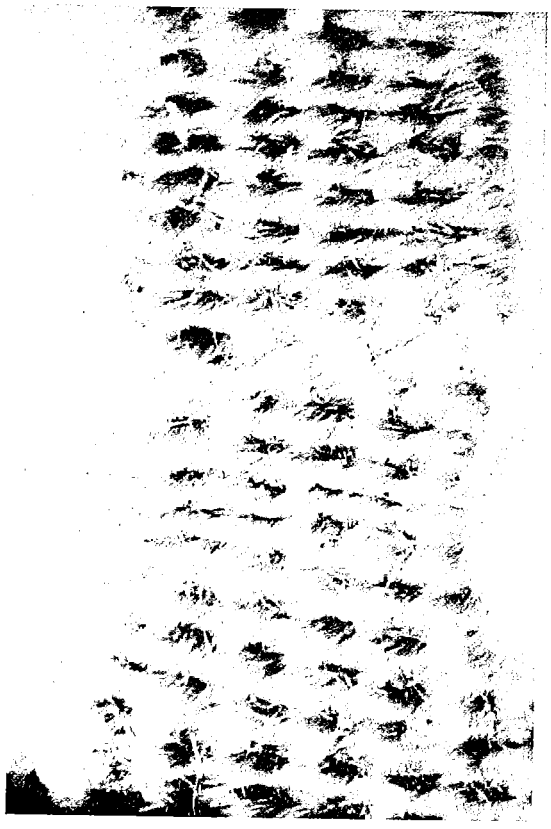


Figure 10 - Macro-photographie du pied de l'arbre, tissu inv. Tx N° 295.

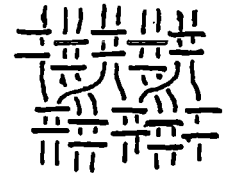


Figure 11 - Schéma de la croisure sur l'endroit C-D du schéma de la figure 8.

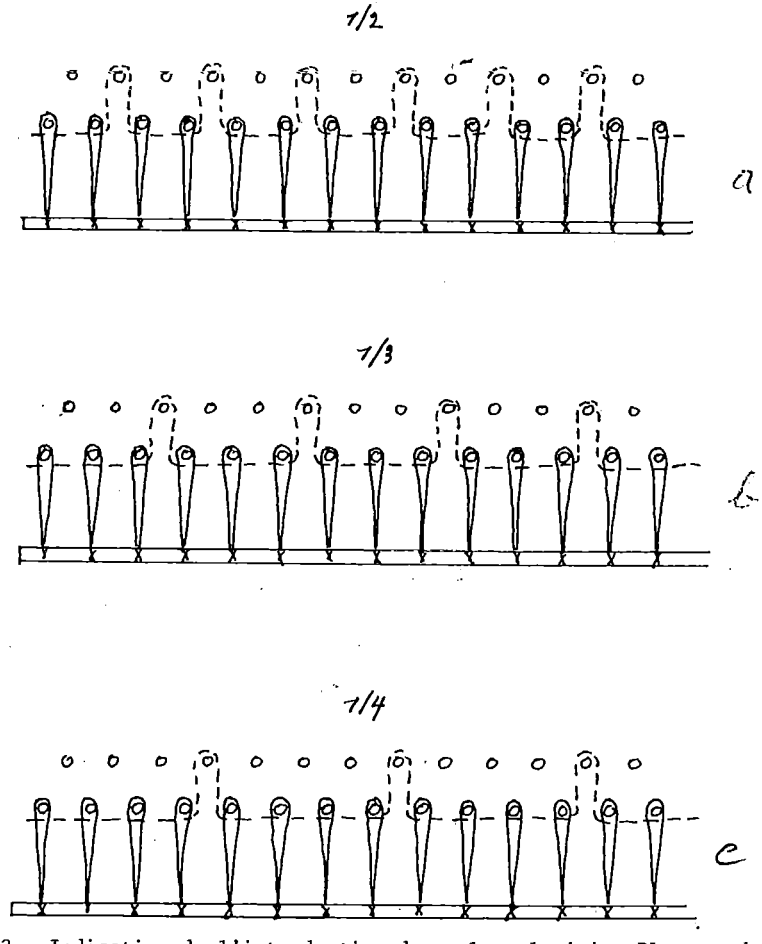


Figure 12 - Indication de l'introduction du rouleau louisien RL pour obtenir :
a. la louisine 1/2.
b. la louisine 1/3.
c. la louisine 1/4.

DESSINS DE TISSUS DANS LES FRESQUES DE DOMENICO DELLA MARCA DI ANCONA

par Carlo CARAMELLINO

Peu d'auteurs, parmi ceux qui ont travaillé sur le sujet de la peinture piémontaise de caractère populaire au quinzième siècle, se sont intéressés au personnage de Domenico della Marca di Ancona, actif dans le Canavese (1). A vrai dire on a aussi avancé l'hypothèse que le nom de Magistro dominicus de la marcha da Ancona écrit sous le personnage, habillé d'une sombre esclavine et représenté dans le cul-de-four de Santa Maria de Spinerano, près de Ciriè, doit se référer plutôt au donateur qu'à l'exécuteur de la fresque. Tandis qu'encore récemment on disputait ce point, et on essayait une reconstruction de l'activité de l'artiste, on n'a pas prêté l'attention que méritait, par ailleurs, une singulière caractéristique de sa production.

J'entends me référer à l'importance particulière que le pseudo "Domenico" met dans la description des motifs ornementaux des tissus. Bien sûr, en Piémont les références à ce sujet ne manquent pas dans la vaste production de fresques du quinzième siècle, mais d'habitude, le tissu représenté appartient à la série des velours à grenades. En outre ce détail occupe le centre de la composition, ou revêt le personnage principal de l'histoire avec l'intention précise de mettre en évidence une figure par rapport au reste de la composition. Dans les quelques réalisations attribuées avec certitude à "Domenico della Marca" -ce n'est pas ici le lieu pour une discussion au sujet du nom du peintre et de l'attribution de ses oeuvres- au contraire on ne trouve pas de distinction hiérarchique : tout le monde est habillé de vêtements faits de riches tissus. Cependant, si le décor est riche, il est toujours exécuté en noir sur le fond coloré du tissu, ce qui présente donc une lecture typologique difficile. L'ample drapé de la composition absidiale de Spineriano ferait plutôt penser à des tissus assez légers et donc à des brocarts ou lampas, mais c'est le dessin ornemental qui intéresse le plus. Dans cette chapelle, construite vers la fin du dixième siècle, "Domenico" a peint au chevet sur plan semi circulaire le cortège des Apôtres tandis que dans le cul-de-four triomphe la grande figure de la Vierge à l'Enfant, assise sur un trône et entourée de figures de saints. Les couleurs prédominantes sont le blanc, le jaune, le rouge et le noir, utilisé particulièrement pour dessiner les formes et, dans la variante grise, pour certains tissus. Les Apôtres, tous indentifiables par des inscriptions sur de longs phylactères, sont encadrés par de simples motifs géométriques et ils tranchent sur un fond à ramages noirs qui a été lu improprement par les chercheurs comme interprétation d'un tissu. Il s'agit en fait d'une libre transcription sur le mur, des fonds de certaines miniatures, conformément à une habitude beaucoup plus ancienne. Ce motif fut amplement diffusé en Piémont, dans la décoration par fresque de caractère populaire jusqu'au XVI siècle.

Au contraire dans la fresque de même tonalité chromatique -exécutée sur la paroi inférieure sud de la chapelle de sant'Eusebio al Masero, près de Scarmagno- et portant la date 1424, les saints aux côtés de la Vierge, groupés par deux dans un cadre géométrique analogue, tranchent sur un fond à panneaux lisses.

Mais dans les deux cas -et ce sont aussi les seuls que je considère authentiquement de "Domenico"- ressort d'une façon particulière l'attention accordée par le peintre aux motifs ornementaux des tissus. Même si réalisés au pochoir, c'est seulement au premier coup d'oeil qu'ils peuvent paraître semblables, tandis qu'en réalité ils sont tous des variantes sur au moins trois thèmes de base.

Le plus fréquent, et aussi le plus diffusé et présent dans les oeuvres d'autres peintres, est celui de la rosace. Dans l'abside de Spineriano le motif, aligné en files verticales et avec disposition alternée, y paraît en dix figures en six variantes différentes. Sous la forme de fleuron massif, avec un gros pistil et une double corolle de pétales au bord lisse, il est représenté, dans une composition compacte, dans le manteau jaune de Saint André, et il se répète dans celui de Saint Mathieu ainsi que dans le surcôt des deux saintes à droite de la Vierge. Dans le manteau de Saint Jacques le Mineur, la rosace, même en gardant le gros pistil, prend un aspect plus léger à cause de la particulière corolle à fleurs de lis stylisés alternés avec de petites feuilles lancéolées, motif qui se répète dans une forme plus sèche -ici le pistil est en étoile- et avec une composition beaucoup moins serrée dans les vêtements de Saint Jean l'Evangéliste. Je pense que de ce prototype dérive la variante du motif sur les vêtements de Saint Jacques le Majeur où la fleur s'enrichit d'un autre tour de feuilles placées en diagonale, comme une bague. Peut-être justement à cause du sens de particulière richesse qui dérive de ce dessin, on le retrouve répété aussi sur le vêtement rouge de l'enfant.

Enfin la dernière variante de la rosace consiste en une inflorescence centrale, enfermée dans une forme polygonale composée par des segments qui se poursuivent, autour de laquelle est disposée une corolle de demi-pétales accouplés, un peu comme des tulipes stylisées. C'est de ce motif qu'est orné, non seulement le manteau de Saint Simon, mais aussi le grand manteau de la Vierge, laquelle porte une robe avec un dessin plus petit et plus simple, ou mieux plus usuel, fréquent dans les représentations du quatorzième siècle. A vrai dire, même les autres motifs de rosaces ont leurs origines au quatorzième siècle mais modifiée, en en élaguant tous les attributs pour arriver, dans les derniers exemples que l'on vient d'exposer, à des anticipations sur certains motifs de tissus, exécutés en plein quinzième siècle.

Un autre thème n'est pas moins intéressant, ce sont les oiseaux. D'après la silhouette noire de ceux dont les queues se croisent, figurant sur les vêtements de Saint Pierre, on dirait des colombes. Elles sont placées, presque comme un blason, entre une espèce de mandorle composée de deux branches dont les feuilles sont retenues en haut par une couronne étoilée. Au contraire sur les vêtements de Saint Philippe les deux oiseaux, avec la queue plus longue, se placent entre le motif en V des deux petites branches à petites feuilles. On trouve une variante à ce modèle dans la chasuble de Saint Eusèbe à Scarmagno avec une plus grande fréquence du sujet et un dessin beaucoup plus raffiné. Les oiseaux, peut-être des perroquets à juger de leur bec et de leur queue frangée, sont enfermés dans un arbuste fleuri qui se plie en deux anses en forme de coeur. Ce nouveau type de cadre, plus simplifié, revient dans la décoration des vêtements de Saint Barthélémy à Spineriano, où cependant les oiseaux paraîssent affrontés. Ce n'est pas seulement une variante du thème, mais ici on remarque une substantielle réduction de l'élément ornemental, presque seulement une note, ou le désir de rajeunir avec un langage nouveau un sujet qui était en déclin. En effet il suffit de revenir à Scarmagno et d'observer le manteau de la Vierge. La petite branche avec ses trois arbrisseaux flexibles parmi lesquels se disposent les deux couples de colombes ne ressemble-t-elle peut-être

pas à un grand M majuscule gothique ? En outre le dessin, plus riche de détails et plus épaissi, se superpose -comme il a été remarqué dans le Saint Eusèbe- comme un papier peint sur la retombée du tissu, avec des analogies, par exemple, avec l'oeuvre de Agnolo Gaddi ou de Puccio di Simone (2). Passons enfin au singulier motif des cygnes, aux longs cous entrelacés, sur les vêtements du saint martyr dans la même fresque. Dans cette composition presque toute observation végétale a disparu, donc le groupe des animaux, beaucoup plus isolé, devient plus compact quoique non dépourvu d'une souple élégance. L'élément végétal tout seul paraît aussi bien dans le dessin du manteau de Saint Thomas que dans celui de Saint Mathias à Spineriano. Il s'agit du motif de la petite branche avec ses arbrisseaux, beaucoup plus schématique dans une composition symétrique dans le premier, plus enveloppante presque comme une branche de saule dans le Saint Mathieu. Avec des formes fortement stylisées ces décorations seront présentes principalement dans les tissus du seizième siècle tardif. Aucun de ces différents types d'oiseaux n'a été représenté en vol ou avec les ailes éployées comme dans la meilleure tradition du quatorzième siècle. Il n'est donc pas risqué, en tenant compte de la date 1424 peinte sur la fresque de Scarmagno, de voir dans certains de ces motifs une véritable avance sur l'époque d'exécution, ou au moins une tentative de moderniser de vieux sujets.

A tout bien considérer, était-il donc approprié de considérer "Domenico" comme un peintre médiocre (3) plutôt que comme un artiste avec des intérêts artisanaux marqués ? Peut-être "Domenico" possédait-il une riche collection d'échantillons qu'il avait dessinés lui-même pour les fournir à quelque tisserand très lié à lui. Peut-être était-il, lui aussi un "sarto recamator" comme avait l'habitude de se définir le Squarcione. Dans cette optique on pourrait donc très bien comprendre l'ample drapé des tissus et l'élégante coupe de la robe de Sainte Catherine, par exemple, ou le costume du donateur, si méticuleux dans les finissages, comme aussi les vêtements de l'Enfant, bordés de fourrure, avec de grandes manches aux manchettes étroites et la riche ceinture bien tirée sur les hanches.

NOTES

1 - A. Venturi, Storia dell'Arte italiana, vol. VII, I°, Milano 1911, p. 146 ; E. Olivero, Architettura religiosa preromanica e romanica nella archidiocesi di Torino, Torino 1941, p. 170-172 ; A. Lange, Notizie sulla vita di Giacomo da Ivrea, in "Bollettino Società Piemontese di Archeologia e Belle Arti", 1968, p. 98 ; L. Mallé, Le arti figurative in Piemonte, Torino (1962) p. 111 e Torino (1974) p. 95 ; A. Moretto, L'ultimo affresco di Giacomino da Ivrea ed altre cose, Torino 1972 ; Dizionario Enciclopedico Bolaffi dei Pittori e Incisori Italiani, ad vocem, vol. IV, Torino 1973, p. 168 ; A. Moretto, Indagine aperta sugli affreschi del Canavese, Saluzzo 1973, p. 90-99 ; G. Forneris, Romanico in terre d'Arduino, Ivrea 1978, p. 161.

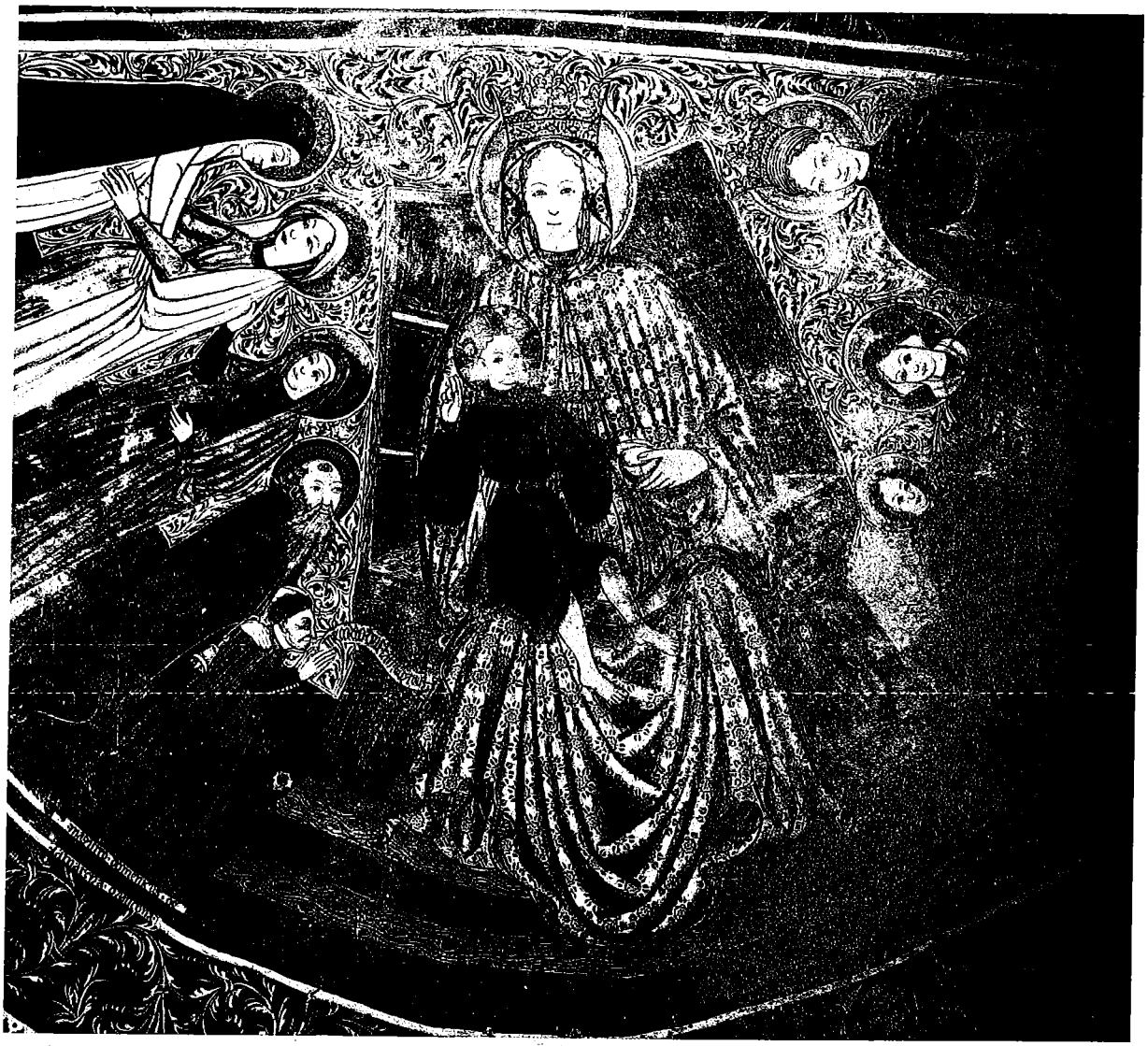
2 - Cfr. B. Klesse, Seidenstoffe in der italienischen Malerei, Bern 1967.

3 - A. Venturi, Storia dell'Arte italiana op. cit.

Summary

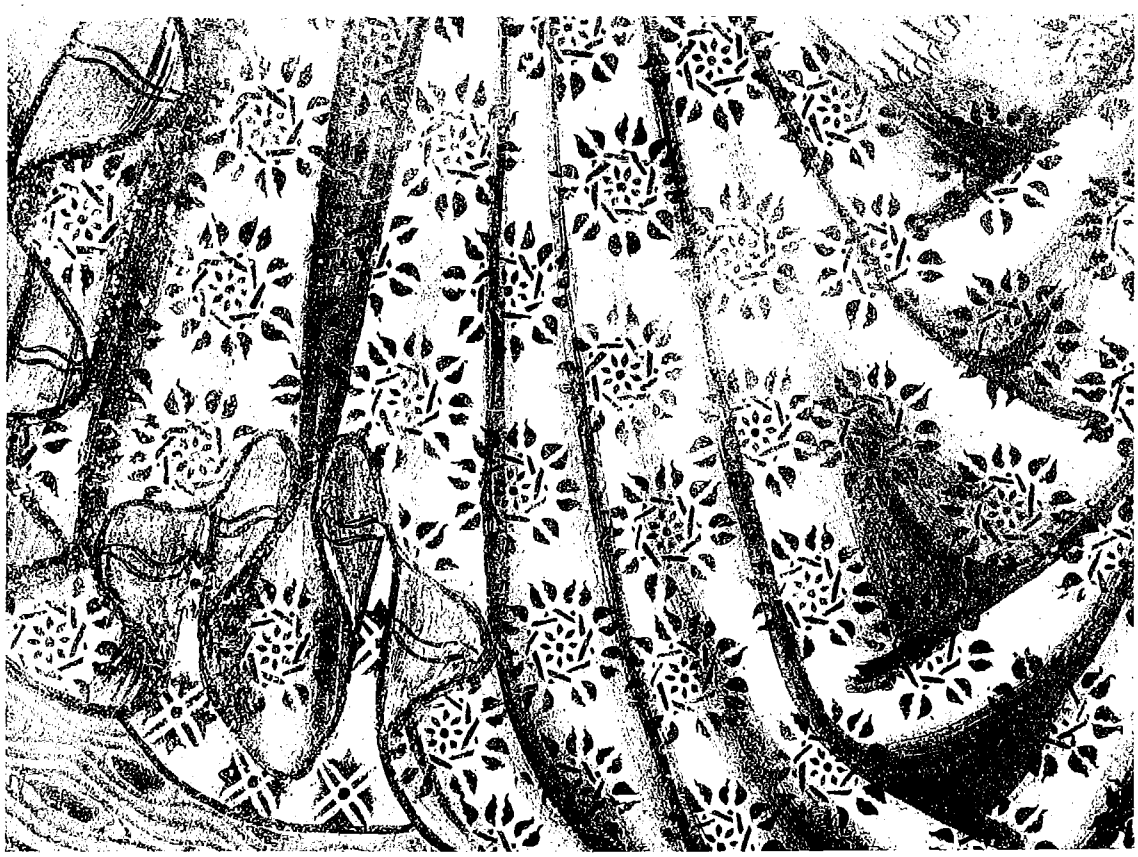
Textile designs in the frescoes of Domenico della Marca di Ancona.

The few existing studies of the frescoes of Domenico della Marca of Ancona, in Piedmont, have not dealt with one particular aspect of his production, namely the marked attention which he gives to the decorative motifs of textiles and to costumes. The garments of his saints are all made from materials with rich decorative motifs which are, however, always rendered in black, which hampers identification of the types of textiles. These motifs, which include rosettes, birds and branches in a very wide range of examples, lead me to believe that the painter's interest extended beyond the purely decorative. Domenico perhaps owned an extensive collection of designs which he had collected or -better still- had produced for weavers with whom he had close connections. This would also explain his detailed depiction of costumes and his static rendering of them as if posed on dummies. Hence the date 1424 on the frescoes in the church of sant'Eusebio al Masero provides valuable evidence for the fashion of a precise period.



Saint Thomas

Saint Pierre



La Vierge - détail