UNIVERSITY OF SOUTHAMPTON

FACULTY OF BUSINESS AND LAW

Winchester School of Art

Volume 1 of 1

Clothes and Domestic Textiles in the Community of Staple and its Environs: Constructing the Forgotten Fabrics of the Sixteenth Century Yeoman

by

Tamsyn Young

Thesis for the degree of Doctor of Philosophy

March 2013

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

FACULTY OF BUSINESS AND LAW

Textiles

Doctor of Philosophy

CLOTHES AND DOMESTIC TEXTILES IN THE COMMUNITY OF STAPLE AND ITS ENVIRONS: CONSTRUCTING THE FORGOTTEN FABRICS OF THE SIXTEENTH CENTURY YEOMAN

Tamsyn Young

The clothes and domestic textiles of the sixteenth century were, next to food, one of the absolute necessities for humankind to survive. This study examines the different types and constructions of textiles closely, using an historical approach, reading original documentation and viewing the scarce fragments of remaining examples. Due to the class of society being considered and the fragility of the textiles, other rare samples, from beyond the sixteenth century needed to be considered to try and assemble a true picture of the textiles available. Agriculture, demography, geography and history have all been drawn upon. The lack of actual samples and the chasm in information regarding these forgotten items of daily living have been continually assessed and evaluated. Other themes addressed include: the relationship of the yeoman in society through sumptuary law; their respect for and association with nature for raw materials; and innovation in improving their skills. Practical attempts to reveal an authentic colour palette of the yeoman world, although not conclusive, have permitted a fresh approach for further enquiry. This research includes detailed worksheets and various hand woven samples which support the practical element of this study, giving a valuable foundation for further investigation. This original work will be of educational value in portraying this sector of society, so easily overlooked because of the grandeur of the sixteenth century nobility. The samples provide tactile experiences reinforcing, the need of textiles to be 'fit for purpose'. Many skills from this period have been lost to future generations, only recreations based on balanced and empiric judgements will help evaluate the of these forgotten fabrics.

Contents

List of tables

List of figures

List of accompanying materials

The practical element of this submission will comprise of the following which will be available to view at the viva.

A portfolio containing drawings and visual imagery.

A selection of weave samples and drafts created from the drawings.

A collection of personal work based on ‘green’ fibres.

Worksheets for the experimental samples.

Experimental samples.

Collection of dyed experimental samples with accompanying working material.

DECLARATION OF AUTHORSHIP

I, Tamsyn Young

declare that the thesis entitled

Clothes and Domestic Textiles in the Community of Staple and its Environs: Constructing the forgotten Fabrics of the Sixteenth Century Yeoman

and the work presented in the thesis are both my own, and have been generated by me as the result of my own original research. I confirm that:

- this work was done wholly or mainly while in candidature for a research degree at this University;
- where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
- where I have consulted the published work of others, this is always clearly attributed;
- where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
- I have acknowledged all main sources of help;
- where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
- none of this work has been published before submission,

Signed: ……

Date:……

Acknowledgements

There are a great number of people to whom I owe a huge debt, some unfortunately have passed away. Yet, without their support in my early years, I would never have become so involved in the wonderful world of textiles. To Jean Saunders who will never know this work has been completed but believed in me; I have finished.

Firstly I must thank my parents Karen and Peter and brother Symon for their continued support; I hope I have not let them down. To my husband Stephen and daughters, Hannah and Sadie, for allowing me to indulge in 'my world' and proving to them, 'you are never too old to study'.

My gratitude goes to all my tutors and technicians at Winchester school of Art who during my early degree years allowed me to experience many aspects of textiles. Returning to Winchester many years later, I encountered further support from my supervisors through out my years of research. Maria Hayward has stood by me and was there right to the end. Rob Huddleston and Emma Neuberg gave different objective view points and input throughout their involvement for which I am grateful. I send my gratitude to Jonathan Faiers for his enthusiastic support especially since his engagement as my supervisor was towards the end of my research. To the numerous people I have met along the way at the University of Kent at Canterbury where I would be found every Tuesday and Thursday evening requesting many books; the long suffering staff the Canterbury Cathedral Archives, who always dealt with my requests so politely. To James Hanna who has so meticulously proofread this thesis during his spare time. Penultimately to Andrew Elkerton at the Mary Rose Trust in Portsmouth for his invaluable time when I encroached into his space to view the fragments retrieved from the Mary Rose. Finally I acknowledge the work undertaken by all those who have sanctioned the reproduction of images.

Definitions and Abbreviations

C.C.A	Canterbury Cathedral Archives.
PRC	Ecclesiastical Records for the Canterbury Dioceses deposited at the Kent Archives Office.
MR	Mary Rose
epi	Ends per inch.
ppi	Picks per inch.
tpi	Twists per inch.

Words which appear for the first time in italics are included in the glossary.

This study focuses on the sixteenth century which was dominated by masculinity. It is therefore important to clarify the use of gender. Women are not included in the sumptuary legislation during this period due to their lower social standing compared with men. Social categorisation was founded on the male's social position and his wife and daughters would conform correspondingly. Therefore when the word yeoman is used, masculine gender will automatically refer to the head of the family. It must also be appreciated that jobs were allocated by gender and women were frequently not able to participate in particular occupations. For example, a woman might dye yarn at home but if she were to put the work out, the dyer would be male. The weaver was always a man and the females in the house were the spinners, hence the word 'spinster'. Therefore the terms 'she or her' will be used when the situation is specifically female-gender-related.

1. Introduction.

1. 1 Context

Having grown up, in Staple, rural East Kent, in a house reputed to have been built circa 1528, with a mother who wove constantly and where a floor loom and spinning wheel were major pieces of furniture. Consequently, textiles had a strong influence, from childhood samples for the cat bed, to pursuing a degree in textiles.[1] This ultimately led to a job in the textile printing industry, transforming remnants of old fabrics into viable commercial copies for the antiques trade.[2] During the restoration of this dilapidated property, a piece of cloth was found wedged between the ceiling joists and the deeds came to light relating to past owners; yeomen signing their names and owning large, though not vast, acreage of land.[3] All of whom were indigenous to East Kent particularly in the area around the village of Staple.[4] These deeds kindled the personal desire to know more about the textiles pertaining to this house and the people using and wearing them. Clothes of the nobility are well recorded both pictorially and in literature.[5] Paintings of the time very seldom featured the yeomen; sometimes a servant might have been portrayed.[6] The style of the drape for those who could afford the best fabrics indicated the importance of their position in society.[7] Between the diversity of clothing available to the ostentatious rich and the surviving poor was the bulk of the population, the great middle class. [8] This 'middling sort' had a variety of clothing at its disposal, all of which had to be home grown and produced. The practical and theoretical exploration of this agrarian production forms the essence of this research.

Kent being a peninsula, situated in the south eastern extremity of England, commands a unique proximity to the Continent. Much invaded and many times divided by rulers, it remained virtually unchanged from the times of King Alfred to the sixteenth century and beyond. The major boundaries of the north, east and south are coastlines. One tenth of the whole county's area consists of marshland, the most famous being Romney Marsh.[9] The extremely varied geographical formations and the temperate climate, rainfall being lighter than

in other parts of the realm, all contribute to the variety of vegetation and breeds of sheep which thrive.[10] The North Downs, referred to as The Downlands, are an extension of a vast formation of chalk, which begins in Wiltshire and ends with the white cliffs of Dover; a ridge which naturally divides the county into east and west.[11] The soil across the centre, The Weald, is mostly fertile clay.[12] This 'Garden of England' encouraged an agrarian population who, through their own devices and skills were able to maintain a comfortable living. Later, due to the arrival of immigrant weavers from the continent, the area became a woollen cloth producing centre.[13]

Between the Downlands and the western inland boundary lies the village of Staple, eight miles east of the City of Canterbury, in the Downhamford hundred created by the Jutes.[14] Although adjacent to Canterbury it is separated, historically, by the hundred of Wingham. There has been much speculation regarding the origin of the name Staple and the size of the community. Many long established family names remain to the present day but there has never been an abundance of great landowners; indeed the total area only amounted to 1,000 acres.[15] In fact only two manors can be considered, the judicial seat of Crixhall and the Grove, belonging to the family of Lynch.[16] Researching the historical records of these houses and men of the indigenous rural population revealed much evidence of a rural cloth industry which forms the basis of the research question.

1. 2 Research questions and purpose of study

What were the yeomen occupants of this house wearing, using, desiring to own and bequeathing? Why does modern opinion incline to the view that cloth of the sixteenth century, in general, was thick, coarse and drab in colour?

These questions create three aims of study; the first is to enquire into the social status of a yeoman in East Kent.[17] What type of person was he and what did he own? All classes of the population were constricted by sumptuary laws

which aimed to support a class structure, giving stricter restrictions to personal conduct and eliminating the discrepancies between the outward show of wealth and interior poverty. The end result intended to curb extravagance which was destroying the people of England, in the eyes of the clergy and parliament, by wastefulness and poor economy. The English woollen industry was protected by such legislation. Indeed there are varied sources from which to develop a picture of the lives of the yeomen or the 'middling sort', although he is documented less than the elite and noble sorts.[18] The yeoman was a 'freeman' with fewer constraints than the other 'sorts' of society, being free from the feudal obligations to the King. He appears not a tenant husbandman beholden to a landlord but a land-owning farmer whose whole family were involved in daily tasks.[19] Yet the laws of food and clothing by which he had to live are intriguing and fascinating. Was there an element of aspiration to have red petticoats? Would no other colour suffice and why were netherstocks yellow? [20]

The second aim is to concentrate on finding evidence of the fabrics used to clothe the yeomen.[21] There is, however very limited written evidence with regard to cloth and fibres of these times, giving the impression that cloth construction, like cooking, was learnt through empiric knowledge as an apprentice or servant needing no written data. [22] Certainly the 'middling sort' was not going to benefit from the printing of early books until the first quarter of the seventeenth century when this empiric knowledge was actually beginning to be recorded.[23]

Cloths and clothes were made out of necessity and function; and the components to make them, they are demanded by climate. By the same principles, they are finite and therefore pieces to handle and evaluate are almost nil.[24] Searching museums and large country houses produced limited samples of fabric, so what was worn and used in the home could only be assumed and not fully assessed.[25] Some heritage properties' displays have made an attempt to portray such cloths but with twenty first century materials, none of which had been invented for the 'middling sorts' of the sixteenth

century; therefore the true nature of these fabrics has not been achieved..[26] An attempt to create fabrics and embroideries within modern limitations has been undertaken locally.[27] Re-enactments provide a living portrayal with a focus on design and effect, predominantly portraying one ‘type' of cloth for the ‘middling sort’.[28]

This quest for finding tactile evidence of what the ‘middling sort’ were using and wearing was, as many eminent people have found before, nigh impossible.[29] The excavation and final raising of the Mary Rose in 1982, the flagship and pride of Henry VIII’s navy, was invaluable to historians, being ‘the largest, securely dated, sixteenth century clothing assemblage in the United Kingdom’. (Gardiner 2005 pp18) This ship sank, to rest in the waters off the Portsmouth coast, in July 1545, in an area of silt. Tidal patterns allowed silt to cover a majority of the hold, preserving a large portion of the contents for many years, finally revealing the working life of the different ‘sorts’ of the sixteenth century in this time capsule. [30] The wool fabric fragments in the hold were few but gave evidence of fibre content and weave structure of the time.[31] These were limited, their size and condition depended on the position within the ship when it rested. It appears the orlop deck, a stowage area, provided the best conditions for preserving the protein fibres. Much has been published about the Mary Rose’s cache, but were any yeomen on board? [32]

The importance of this ship is put into perspective when ascertaining other collections pertaining to the sixteenth century. These are rare, even at the Museum of London, Costume Museum in Bath and Manchester City Galleries. The pieces offered to view were all belonging to the ‘upper sorts’ and had appeared in Arnold’s publications on patterns. An email to Norfolk Museum and Archaeology Service resulted in a reply: ‘I am sorry to say that we have no samples of textile of locally produced sixteenth century textiles in our collections and we would love to know more about them ourselves.’ [33] They continue to explain: ‘Archaeological textiles from Norwich sites typically have poor survival.’ A dye recipe book is held at The National Archives but it relates to the eighteenth century and according to The Clothworkers’ Company they are not aware of anything of an earlier date.[34] The Victoria and Albert Museum

does hold items of the period but these are generally reflective of the 'upper sort' and nobility.[35] Focusing within Kent, the Deputy Head Steward at Hever Castle, the home of the Boleyn family, states, 'I am afraid we do not have any textiles that are native to Kent'.[36]

The final area of study is to research the feasibility of producing tactile samples, something the written word cannot achieve. Makers learn through practice developing the perfection of the article over a period of continual evaluation and development. The samples created for this study have followed this action research theory. The highest level of perfection is maintained from understanding the behaviour of the materials used. This approach was initiated by Kerridge's work in conjunction with the relevant finds on the Mary Rose. Analysing the latter, these pieces were mostly in plain weave save for a few simple *twills*. Kerridge covers a wide area of weave but considering the position of the yeoman in society, the study does concentrate on the cloths which were deemed to be produced in the home. Not only were these cloths executed in the domestic setting using only natural light, but by all members of the family, the professionals were working for the elite and far from the financial reach of the yeoman. Yet this 'middling sort' was being empowered by the constant response to the materials being used. The mother taught her daughter, the father taught his son, who would instinctively learn the gender related traditional approaches gained through repetition over generations. These simple *setts* were open for experimentation by the yeoman craftsman, using remembered knowledge or reworking successful empiric drafts already established. The physical interest came personally in the choice of local fibre, hemp, linen or wool and the locally produced dyestuff. Left-over yarns from a previous project could or would be used to add interest to a simple yet functional piece of cloth. Likewise, pattern could be made through 'mistakes'; for example reversal of colour in warp and weft is one of the oldest variants of pattern. It is imperative that these samples be handled to appreciate their quality both in a tactile and visual sense.

1. 3 Literature review

The long sixteenth century social structure in East Kent and the yeoman's position were considered by Anderews (1991) and in the authorative work of Campbell (1945). Anderews, (period of research, 1450 -1640) does not concentrate on the yeoman in Staple but considers an adjacent farming community, looking at properties, agricultural products and contents peculiar to the local area. The contents include domestic items, sheets, bed hangings, spinning equipment and fibres, demonstrating that textiles were constructed within the home. Smith, a much quoted contemporary political writer, classified the four sorts which made up the social structure of the period.[37] However the classification of 'sorts' is discussed in depth by Campbell (1945) in her extensive works. She studies Elizabethans and early Stuarts, addressing completely the Yeoman in the whole of England, his daily work, lifestyles and activities. The agrarian situation becomes more substantiated within the collective works of Kerridge (1967), Thirsk (1984) and Zell (2000). Thirsk considers the rural economy of England, where Zell, and occasionally Kerridge, concentrate on the Kent agriculture.

Analysing all areas of their writings and extrapolating facts pertaining to the yeoman and East Kent has produced a structure for the study in preparation for attempting the construction of the yeoman's forgotten fabrics.

1. 3. 1 Dress history

Clothing and domestic textiles available to the yeoman and his family were considered by de Marly (1986), although she approached the subject through general daily living covering a wide time span. The results of her writings forge a link between social history and dress requirements. Initial readings of Ewing (1984) inspired a similar theoretical approach; however on further study this starting point did not contribute to the understanding of the issue; the points appeared too general and there were only occasional referrals to the period in question. A complication in this study is the importance which is bestowed upon the dress of the elite to the detriment of all other clothing. The most

crucial issue in finding evidence of cloth in the yeoman household is the meagreness of such information, almost to the point where some historians have neglected the subject. A different approach taken by Cunnington and Lucas (1967), which they consider has been previously overlooked, addresses occupational costume across the social sphere, although covering eight centuries. A more effective study focusing on a shorter time-scale would have produced more defined information. In a later publication (1972), costumes for births, marriages and deaths are discussed: a valuable study, however little is mentioned of the sixteenth century, leading to supposition. The authors C Willett Cunnington and P Cunnington (1954), have produced an essential text regarding the vast dress terminology during the sixteenth century, linking use of dress with the evidence recorded in wills and inventories. There are excellent descriptions of each piece, detailing chronological adaptations but unfortunately they devote only eleven pages to actual working dress. One of the first studies to concentrate on the practical construction and application of cloth is Arnold (1985) (2008), albeit focusing on the elite once again. She considers how the cloth is produced and subsequently cut to enable fashion drape to be achieved. Her theoretical approach was the inspiration which formed the foundation of the practical studies to reinforce these theories and provide valuable evidence.

1. 3. 2 Textile history

The successful yet turbulent wool trade has been considered by Lloyd (1977) to have laid the foundation for an expanding textile industry from the Middle Ages. Concurring with this view, the collective essays of Jenkins (1972) continues into the Early Modern Age. Here Kerridge's view encompasses the effect agriculture has on wool growing. Taking a similar approach is Ponting (1961), subdividing from the processing of wool through to cloth production. One of the first researchers to investigate the changes regarding the fineness of the sheep *fleece* due to enclosures is Trow- Smith (1959); in agreement are Ponting (1961) and Ryder (1983). Another researcher, Bowden (1971), who initially disagrees, implies enclosures were favourable, arguing for their benefits. In discussion he expands his statement and questions the quality of the fine *staple* wool. However a crucial issue which has not been discussed by

these authors is how this has a practical effect on the fabric. Scientific figures used by Ryder (1983), clarifying fibre thickness are used to justify the apparent change; yet this does not assist in understanding tactile qualities. Although Ryder (1983), has a different approach looking from the scientific angle rather than that of the historian, he still does not clarify what effect these changes in thickness will have on the handle of the cloth. When another author, Wild (2003), in the collective works of Jenkins (2003), uses some mathematical data along with historical and archaeological knowledge, these issues become more complex and the theories used in conjunction with Ryder's deems the process practically impossible. In the same publication (Jenkins 2003) Van de Wee in collaboration with Munroe states he could not investigate the 'subsistence economy' within the woollen industry survey he was undertaking. Why was this? Was there no evidence, or was it purely too demanding on his time?

An analytical approach is taken by Gardiner (2005), Ryder and Mrs Garba-Sanders (1984) (1992), each giving an academic view of the cloths of the era, such as those found on the Mary Rose. The data is sparse due to the fragile nature of the samples. Using such an exact discipline does not however produce a tactual answer. Some of the archaeological approaches have considered the fabrics in a scientific way which is problematic because the handle and texture are not described. An assumption regarding a technical error may be a mistake, as discussed by Pritchard (1995), and cannot be a certainty but possibly an attempt at a design.

Markham's (1625) instructions for the dyeing procedure in the domestic setting, when put into practice, can be compared with those of Fereday (2003), as a point of reference. One who combines chemistry with history is Hofenk de Graaff (2004). A different approach by Channing Linthicum (1963) uses Shakespeare's literature to analyse the naming of colours and so assists in the understanding of the sixteenth century palette.

All approaches regarding cloth are those of the academic and historian, there is a lack of evidence that any actual cloth has been achieved practically, thus

questioning their validity. This is a study which adds new knowledge regarding the practical aspects of the forgotten cloth through the eyes and hands of the practitioner. The original research method approaches this practical work by creating actual cloth of the time. As these cannot be viewed, they do not exist, due to their fragile nature; this study will provide tactile evidence to support the findings of the academic research. This new knowledge will enable more accurate reproductions of garments of the 'middling sort'.

1. 3. 3 Transposing the written word into practice

Academic literature was the only way to begin investigating the theory of cloth production most likely to be available to the East Kent yeoman. Determining the quality of fibres required, predominately wool and linen, and obtaining suitable raw material, were initial considerations. With the lapse of time much had changed in the world of agriculture which undoubtedly had an influence be it positive or negative, on the quality of raw material. The fibres were sourced with this in mind; therefore fleeces were obtained from breeders who were able to trace flock pedigrees. Hand-spun yarns were executed as near as possible to those described by Kerridge (1985) and mathematically correct compared with those in Ryder (1983). Each experimental attempt of yarn construction was compared with the finds of these authors and re-evaluated. The significance of spinning wheel development and the influence this may have had on yarn production needed to be considered. Turner (1980) discusses the great wheel through history to present day. Linen wheels are researched by Baines (1989), who explains wheel terminology. Munro (2003) makes a very valid point; carding had been banned as a method of preparing fleece for the warp. Although it is not clear why this preparatory method would render the *woollen* yarn unsuitable for the warp, he does state 'carding may not have permitted sufficient twist' [Jenkins 2003 pp200], which implies that a woollen yarn cannot provide the strength for a warp. [38] It is the spinner who controls the twist when spinning and therefore controls the strength of the yarn required.

The hand-spun yarn had proved suitable for hand-weaving but would it stand up to the stress this process would demand? To create and produce elementary

cloth it was necessary to consult literature regarding basic fabric construction. Black (1945) wrote instructions in a manner ensuring simple understanding. In a similar vein, Mariet (1942) included many learning aspects. Contrarily Kerridge takes a more complex viewpoint being less practical, requiring the reader to have considerable knowledge in order to understand drafts as easily repeatable blocks, he does not illustrated these as such, which could inadvertently contribute to a 'mistake'. Atwater (1928 /1966) also covers the learning aspect, primarily in America, making interesting reading with anecdotes of sixteenth century cloth making in England; unfortunately, she does not substantiate these. Although Fannin (1979), wrote for the handloom weaver his interest in technical knowledge goes beyond that of the sixteenth century but clarifies draft construction and basic preparation of cloth weight. Further valuable technical information by Groziki (1913/ 1977) and Hall (1946/1978) is suited to industry. Their foundation references are pertinent to historical cloths such as fustian and their origins, which helped to guide the weights and qualities being sought. This literature, in conjunction with instruction at Winchester School of Art, secured empiric knowledge. Practical experimentation and understanding of design theory, together with foundation knowledge acquired in childhood, mirrored the empiric learning in the domestic situation of the sixteenth century yeoman household.

Finding Black's (1945) samples of fundamental 50/50 weaving and the experimental '*gamp*' idea by Tidball (1961), generated the enthusiasm to reveal the individual tactile qualities of a number of forgotten, simple cloths.

1. 4 Methodology

Being a thesis based on practice, this study requires different research methods. An initial approach began with studying the primary sources of local wills and inventories, which proved sparse and all enquires have been conducted with great difficulties.[39] These primary sources gave a limited idea of clothes and in some cases the cloth of which they were made. Local Assize records showed the value placed upon stolen items of differing qualities. Interesting pieces of evidence, mainly regarding yarn, various types of spinning

wheels, yarn making accessories, raw materials such as *tow*, flax, hemp and wool, indicated home yarn production in Staple. However there are only a few documents in which the situation of the yeoman is recorded.[40]

These inventories and assizes have been used quantitatively to produce a data base which classifies types of fabrics and their popularity.[41] Crafts have limitations set by tools and raw materials; a craftsman uses these to his advantage. For the practical results an attempt was made to spin a yarn of a certain count from the two natural fibres available in Staple. A notion to include some exotics, silk and cotton, was established due to the availability of these as embellishments to the yeoman's household through the Chapman.[42] The first yarns were not as fine as some researchers predicted. Repeated attempts have questioned the validity of previously published twentieth century mathematical data, which in turn renders the practical processes impossible to achieve. Although this will be continually mentioned through this study, the focus is of a practical nature and not purely academic. It is not surprising terminology written by previous researchers caused confusion, when one considers that there were no contemporary notes documented and that word of mouth instructions, with innovations, can end like a game of whispers. This confirms the need to produce this expressively authentic practical evidence.[43]

The production of the yarns, from fibre preparation to continuous yarn, followed an action research approach. This evidence has been recorded on the worksheets which accompany the woven samples, providing tactile proof of the feasibility of certain fibres and weaves. Through this course of experimentation, doubts have arisen regarding certain written evidence of cloth analysis and its construction, mainly in connection with yarn thickness. Has previous research being extrapolated uniformly or does it contain a bias?

A two colour wool fragment from the Mary Rose was painstakingly analysed and produced empirically without any written descriptions.[44] Although not completely successful, the processes undertaken to produce this sample have

been evaluated and the reasons for defeat were noted. Why Mikhaila, 'could not find a perfect match' (Mikhaila 2011, p58) of cloth when working to create a doublet of 1620 is not clear, as there was a fragment of the original for a hand weaver to analyse. [45] Particular restraints upon this project were not given, but it would be interesting to know what type of fustian was required.

Knowledge was gained from primary sources of cloths, domestic textiles and wearing apparel, but even this demonstrates a vagueness of quality. These are documented with descriptions such as 'fyne', 'corse', 'newe' and 'ould'.[46] But what do these terms constitute in relationship to the twentieth century mathematical data?[47] If an historian had recorded a piece of cloth with a very high number of threads per given measurement, was it possible to construct such a cloth, on home produced equipment requiring only the power and ability of human expertise?

This study follows a similar approach to that of Arnold, who detailed garments available, considered pattern construction and the usage of the cloth. Mention was given in some places to the quality of the linen but, again, this was sparse and only the occasional thread counts helped to put these descriptions into perspective.[48]

Having produced the yarn it was time to justify if it would stand the rigours of weaving. An experimental warp was made of the four natural fibres with emphasis on wool and linen. By carefully recording the weave structure and fibre content of this experiment, one cloth composed of 25 individual examples was produced (Figure 24). Knowledge gained from this resulted in subsequent pieces being prepared for the dyeing process.

Examples of different types of cloth, interesting as they are in themselves, presented a need to establish what colours were available to the yeoman household. Returning once again to the primary sources, notes on colour were inconsistent. Was this due to sumptuary law or an established acceptance of

their 'sort' by the yeomen themselves? Historically and geographically the three main dyestuffs, madder, weld and woad, were all available in the area. Indeed madder and woad have been successfully grown for this study.[49] Adding colour, to the *grey* state cloth of varied weaves, was going to produce an assortment of hues.[50] However, this method would follow a strict scientific approach, with only one variable changing at a time.[51] There has been extensive work completed on natural dyeing each study taking a different approach.[52] By its very dependence on natural habitat; climate and soil, a colour once procured could not always be repeated.[53] The dyeing was, in all probability, undertaken by the housewife, with the 'best' yarn being sent to the local dyer, a male, accompanied with the housewife's instructive tallies.[54] A decision was made to adhere to these conditions as correctly as the twenty-first century would allow. So preparation for a slow process was planned, knowing these might not produce original colouring but would confirm the knowledge that other studies could be drawn on with certainty for further experimentation.

The entire study revealed the emphasis placed on the practices and requirements for the home production of cloths, to suit the particular lifestyle and financial restraints of the sixteenth century yeoman household. Conclusions follow the yeoman's specific needs which were to equip himself and his family to cope with the diverse Kent climate, geographically situated as it is and to be economic with natural produce; for the income gained was of their own toil, not from royal or monastic favour.[55] Life was hard, frugal; household linen and wearing apparel had to be sought from basic materials, yet there was room for the 'best' coat or 'best wearing apparel'.[56] Every part of the sheep was valuable, its meat of great importance, though no more so than the wool obtained from its yearly fleece, which gave warmth and protection for all seasons.[57] However, linen was just as important for both undergarments and domestic textiles.[58] All raw materials available had to be selectively used and there could be no wastage.

1. 5 Synopsis

This study attempts to create the everyday cloth of the sixteenth century yeomanry environs in East Kent which, of necessity, stemmed from the parish. Cloth was required for survival and had to be produced or partly produced in the home using man and woman's ingenuity and hand skills. To achieve the practical part of this work the samples included are paramount, along with supportive photographs clarifying the processes involved in their construction. Combining this tactile information with academic scrutiny will inspire further research into the production of other authentic fabrics which have been forgotten. It is hoped that future historians, designers of historic displays and other interested parties will benefit from this research and its results, building upon the conceptualisation of how fabric of the period handled.

The following chapters discover and explore the fibres and preparations used to create yarns for the domestic production of cloths and clothing. Through research and practical experimentation many interesting features have been brought to the fore and questioned. Being constructed in this manner, the work intends to emulate the practical production as it would have taken place: from the preparation of fibres, construction of yarn, dye and the plants available to produce the colour palette, through to the final cloth, which had to be fit for the purpose intended.

Originally conceived of one thought, this study straddles many divisions of society: it has combined geography, demography, social history and archaeology. All available material of differing kinds has been sourced culminating in a practical methodology. It must be noted that there are some matters which through lack of written records will be lost for ever and they will remain unknown.

[1] Winchester School of Art, 1987
[2] IVO Prints Ltd, a commission printer in west London.
[3] Both Hasted and Bagshaw consider the land to be of good arable quality and discuss this in depth.
HASTED, E. (1972) *The History and Topographical Survey of the County of Kent* Vol 1 (reprint).Wakefield, England: E.P. Publishing Ltd. p 185
Hasted, (1732-1812) a well-educated student at Lincoln's Inn, researched history as a hobby and was encouraged to publish his research. Hasted researched the county tirelessly, yet the truth of the work is disputed mainly due to Kent's structure being somewhat different to others. THIRSK J. [2004] 'Hasted, Edward (1732–1812)', *Oxford Dictionary of National Biography*, Oxford University Press; www.oxforddnb.com/view/article/12558, [accessed 8 August 2012]
BAGSHAW, S. (1849) *History Gazetteer and Directory of the County of Kent Volume I* Sheffield: G Ridge. p 26
[4] Personal deeds and indentures pertaining to the property name John Cartwright and Stephen Church, both yeomen. Further inventories held in local archives also record these families.
[5] HAYWARD, M. (2007) *Dress at the Court of King Henry VIII.* Leeds: Maney.
ARNOLD, J. (1988) *Queen Elizabeth's Wardrobe Unlock'd*. Leeds: Maney.
[6] *The Field of the Cloth Gold* 1520 c 1545 executed by a number of British painters, housed in The Royal Collection, was painted to illustrate the meeting of Henry VIII and Francis I near Calais and uses the servants and lesser sorts to complete the canvas. Supposedly the only large scale painting Joris Hoefnagel painted during his travel in England was *The Marriage Feast of Bermondsey* in circa 1569, a panoramic scene of English life incorporating the peasants and the gentry; some say even Elizabeth I is depicted. Strong suggests it may well have been an attempt at producing a visual microcosm of the society in the late 1560's. Whereas, *La Vecchia (The Old Woman*) circa 1508 by Giorgione, Gallerie dell'Accademia, Venice, Italy, although not English, is a rare example of a portrait 'sitting' , a pose mainly used by noble personage.
STRONG, R. (1969) *The Elizabethan Icon; Elizabethan and Jacobean Portraiture* London: Routledge and Kegan Paul Ltd. pp 147-9
[7] Elaborate fabrics both of colour and quality are excellently depicted in works such as; *Sir Thomas More* by Hans Holbein the younger 1527 Frick Collection New York and *The Portrait of Sir Henry Guilford* by Hans Holbein the younger 1527 The Royal Collection.
[8]SALZMAN, L. (1933) *England In Tudor Times* (1st Published 1926) London: Batsford. pp 9-10
[9] ZELL, M. (2000) *Early Modern Kent 1540-1640 (Kent History Project)* The Boydell Press and Kent County Council. p 110
[10] MOUNTFORD, H. (1995) *Understanding Kent.* Canterbury: Foreland Publications.
[11] ZELL, *Early Modern Kent*. p 75
[12] BAGSHAW, *History Gazetteer*. p 26
[13] PAGE, W. (Ed) (1932) *The Victoria History of the County of Kent Volume Three* London: The St. Catherine Press. p 403
[14] JESSUP, F.W. (1958) *A History of Kent with Maps and Pictures.* London, Darwen Finlayson. p 59
[15] BAGSHAW, *History Gazetteer*. p 26
[16] HASTED, *The History of the County of Kent*. pp 185-189
[17] ZELL, M. (2000) *Early Modern Kent 1540-1640 (Kent History Project)* The Boydell Press and Kent County Council. p 47
LAMBARDE, W. (1826) *A Perambulation of Kent.* London: Baldwin, Cradock and Joy. p 7
CAMBELL, M. (1945) *The English Yeoman under Elizabeth and the early Stuarts.* New Haven: Yale University Press. p 36
[18] BARRY, J. and BROOKS, C. (Ed) (1994) *The Middling Sort of People: Culture, Society and Politics in England, 1550 – 1800.* The Macmillan Press: Hampshire. pp14, 17

FULLER, T. (1648) *The Holy State.* (2nd Edition) Cambridge: Roger D[aniel] for John Williams p 105. Fuller considers the yeoman as 'a Gentleman in Ore' recognising the English yeoman as having 'a fortunate condition'.
CAMBELL, *The English Yeoman.* pp 50, 61-3, 72
YOUINGS, J. (1984) *Sixteenth Century England.* Middlesex: Penguin Books. pp121-122
Youings (pp171) presents an argument against upward mobility by the yeomen, stating there is little evidence of yeomen progressing to gentlemen status only evidence that it was possible, which is a contradiction of Campbell (pp 40-50) who suggests there is evidence of this move. Campbell even states, 'The rise of the yeomen into the ranks of the gentry is a distinctive feature of the age of Elizabeth and the Stuarts.' p 50
[19] ZELL, *Early Modern Kent.* p 63
WILLIAMS, P. (1964) *Life in Tudor England.* London: Batsford Ltd: pp 63-4
MARKHAM, G. (1625) *A Way to get Wealth: by Approved Rules of Practice in Good Husbandry and Huswifrie.* London: for Roger Jackson.
CAMBELL, *The English Yeoman.* p 32
RYDER, M. (1983) *Sheep and Man.* London: Gerald Duckworth and Co. p 478
[20] COCKBURN J S (Ed) (1979) *Calendar of Assize Records; Kent Indictments Elizabeth I.* London: HMSO. Ref 601 December 1571: a pair of yellow netherstocks valued at 2s 8d were stolen.
Ref 1737 December 1588: a pair of yellow netherstocks were stolen, valued at 2s.
A blue pair are recorded as being stolen ref 1440 May 1585 from a servant valued at 3s.There are 75 records of stolen petticoats of which 4were stammel, 5 russet and 14 red; no other colour has been recorded.
[21] This was rather a difficult task due to the lack of information, For example some information was assembled form CUNNINGTON, P. and LUCAS, C. (1967) *Occupational Costume in England from the Eleventh Century to 1914.* London: Adam Charles Black.
HUGGETT, J. (1999) Rural Costume in Elizabethan Essex: a Study Based on the Evidence from Wills. *Costume* (No 33) pp74-88
MEE, S. (2004) The Clothing of Margaret, Parnell and Millicent Crayforde, 1569 to 1575. *Costume* (No 38) pp 26-40
TANKARD, D. (2012) 'A Pair of Grass Green Woollen Stockings': The Clothing of the Rural Poor in Seventeenth-Century Sussex. *Textile History* (Vol 43 No 1) pp 5 -22: although Tankard is discussing clothing of the seventeenth century in Sussex, she is dealing with a poorer element of society.
[22]The parameters set for this study start with 1485, the beginning of the Tudor Dynasty and end in 1603, with the death of Elizabeth I. During this period there was a great advancement in Education, but how literate was the population? Cressy considers the definition and requirements of literature during the sixteenth century.
CRESSY, D. (2003) *Society and Culture in Early Modern England.* Aldershot: Ashgate. pp 1- 23
NICHOLLS, M. (1999) *A History of the Modern British Isles. 1529-1603 The Two Kingdoms.* Oxford: Blackwell Publications. p 10
[23] FULLER, *The Holy State.*
MARKHAM, *A Way to get Wealth.*
BEST, H (1641) *Rural Ecomony in Yorkshire in 1641: being the Farming and Account Books of Henry Best of Elmswell.* (1857) London: George Andrews.
[24] A local example can be found at Knole, Kent, where a chair of 1680 has been repaired using fabric found underneath the seat, where it had been protected from light, wear and dirt, and now illustrates the colours of the original fabric.
[25] Visits to Chastleton house, Oxfordshire and to Knole, and Hever, in Kent permitted the viewing of a range of everyday objects and textiles collected from the sixteenth century onwards.
[26] A display of Bargello work at Helmsley Castle, Yorkshire was provided for the public to feel. This example portrays the three primary colours: however these are not of a natural hue. Socks in a tableau at Dover Castle, although visually acceptable, did not represent the tactile experience of wool: they were too soft.

[27] IMPEY, E. (2009) 'Made in England'. *Heritage Today* English Heritage. p 17
[28] There are often financial or time restraints placed on re-enactment groups and the effect for film or the media is of greater importance than the tactile quality.
[29] HAYWARD, *Dress at Court.* p 37: 'The simple truth is that there are no known surviving garments from Henry VIII's wardrobe.'
JENKINS, D. (Ed) (2003) *The Cambridge History of Western Textiles I.* Cambridge: Cambridge University Press. p 395
[30] GARDINER, J. (2005) *Before the Mast; Life and Death aboard the Mary Rose.* Portsmouth: Mary Rose Trust. pp 11-17
[31] GARDINER, *Before the Mast*. Appendix 2 p 671
[32] RYDER, M. (1984) Wools from Textiles in the Mary Rose, a Sixteenth Century English Warship, Journal of Archaeological Sciences II pp 337-343
GARDINER, *Before the Mast.*
MARSDEN, P. (2003) Sealed by Time: The Loss and Recovery of the Mary Rose (Archaeology of the Mary Rose Vol I) Portsmouth: Mary Rose Trust.
RULE, M. (1982) Mary Rose: The Excavation and Rising of Henry VIII's Flagship. London: Conway Maritime Press.
[33] An excerpt of an email from a Curator at Stranger's Hall, specialising in Textiles. January 2011
[34] Extract from a correspondence: The Clothworkers' Company, March 2012
[35] The Victoria and Albert Museum – Item T.87 – 1917 a woman's apron of linen 1580-1600 depicting cutwork. This finely worked linen apron was part of the 'upper' and 'middle sorts' of informal dress and was normally a symbol of the accomplishments and capabilities of the wife. There are other items, but again they fall out of the remit of this study.
[36] Extract from a correspondence; Deputy Head Steward April 2008.
[37] PROTHERO, G. W. (1913) *Select Statues and other Constitutional Documents Elizabeth and James I* (4th Ed 1963) Oxford: Clarendon Press. pp 176-177
[38]JENKINS, *Western Textiles I.* p 200
[39] Canterbury Cathedral Archives and occasionally the East Kent Archives (now part of the Kent Archives in Maidstone), are wher the parish records for Staple are kept. Staple is a very rural area: the information was limited, although the documentation for Birth, Marriages and Burials was recorded surprisingly earlier than the surrounding villages.
[40] C.C.A. PRC 21/16/225 (1601); PRC 21/16/234 (1601); PRC 32/34/220 (1581); PRC 32/35/84a (1583/4).
[41] Chapter on Fabrics includes a table with some of this information
[42] SPUFFORD, M. (1984) *The Great Re-clothing of Rural England.* London: The Hambledon Press.
[43] "Expressive authenticity": being faithful to the original purpose of the art, keeping the same audience, using one's artistic values to be faithful in the production.
DUTTON, D. 2005 *Authenticity in Art* in *The Oxford Handbook of Aesthetics* Ed by Jerrold Levinson New York: Oxford university Press. pp 259-267
[44] Mary Rose Sample number MR 81 A 4693
[45] PAYNE, S. WILCOX, D. PARDOE, T. and MIKHAILA, N. (2011) A Seventeenth-Century Doublet from Scotland. *Costume* (No 45) p58
[46] Inventories and wills from Staple and COCKBURN, *Calendar of Assizes.* entry 213 and 293
CHANNING LINTHICUM, M. (1963) *Costume in the Drama of Shakespeare and his Contemporaries.* New York: Russell and Russell
[47]RYDER, Wools. pp 337-343
RYDER, M. and GABRA-SANDERS, T. (1992) Textiles from Fast Castle, Berwickshire, Scotland, *Textile History*. (Vol 23) pp 5-22
[48] ARNOLD, J. (2008) *Patterns of Fashion 4: The cut and construction of linen shirts, smocks, neckwear, headwear and accessories for men and women c. 1540-1660.* London: Pan Macmillan

ARNOLD, J. (1985) *Patterns of Fashion: The cut and construction of clothes for men and women c. 1560-1620.* London: Pan Macmillan.
[49] An experiment took place to establish if these dye plants could be grown successfully in Staple, they germinated well the first year and have continued to grow naturally where the previous year's seeds had fallen. They also have produced a good dye.
[50] The dyed cloth, being made of the four natural fibres, would be dyed, but the take up of the dye would be dependent on the structure and porosity of the fibre.
[51] Further details can be read in Chapter 5 Colour Palette in this thesis.
[52] PONTING, K. (1981) *A Dictionary Of Dyes and Dyeing* London: Bell and Hyman.
GOODWIN, J. (1982) *A Dyer's Manual.* London: Pelham Press.
WICKENS, H. (1986) *Natural Dyes for Spinners and Weavers.* (reprint) London: Batsford.
[53] FEREDAY, G. (2003) *Natural Dyes* London: The British Museum Press.
[54]MARKHAM, *A Way to get Wealth*. p 155
[55] CAMBELL, *The English Yeoman*.
YOUINGS, *Sixteenth Century England.*
[56] PRC 32/34/220
HUGGETT, Rural Costume. p 75
[57] RYDER, *Sheep and Man.* p 714
A poem by Leonard Mascall (1591) (enlarged by Richard Ruscam Gent)

Praise of Sheep

These cattle [sheep] among the rest,
Is counted for man one of the best,
No harmful beast, nor hurt at all,
His fleece of wool doth cloath us all,
Which keeps us all from extreme cold,
His flesh doth feed both young and old,
His tallow makes the candles white,
To burn and serve us day and night;
His skin doth pleasure divers ways,
To write [parchment], to wear at all assaies;
His guts, thereof we make [spinning] wheel strings;
They use his bones for other things;
His horns some shepherds will not lose,
Because therewith they patch their shoes;
His dung is chief, I understand,
To help and dung the Plowman's land;
Therefore the sheep among the rest,
He is for man a worthy beast.

[58] ARNOLD, *Patterns of Fashion 4*. p 5
Inventories, wills and Assizes.

2. Yeomen and their Place within the Social Structure.

'A knight of Calas,
A nobleman of Wales
And a laird of the North Countree;
A yeoman of Kent
With his yearly rent,
Will buy the out all three.'[1]

[Traditional Nursery Rhyme]

2. 1 Introduction

This study considers an 'average' person of the sixteenth century, not the elite nor the poor; in fact the 'middling sort'.[2] To clarify: a person 'average' in all senses, not necessarily of any profession or particular ability. The interest focuses on; the title given to this 'average' person, whether he is able to procure a higher position in the social scale, and if so, how this progression is achieved.

Harrison refers to four divisions of social England, those of the 'gentlemen, citizens or burgesses, yeoman and artificers or labourers.' [Harrison 1968 p 94][3] The yeomen appear as the third 'sort' with an increasingly large fourth 'sort' following. Harrison continues to state that the yeomen are by the law called *legales hominess,* 'freemen born English' [Harrison 1968, p 117], and they may have possessed land which produced a yearly revenue of 40 shillings sterling. This land was not necessarily owned by the yeoman; some rented but still managed handsome revenue.

Barry and Brookes, along with the historian Harrison and political writer Sir Thomas Smith, address the social structure by dividing the 'middling sorts' into two, both of which had to work for their living. The yeomen, husbandmen

farmers and artisans worked by means of trading their produce and the merchants, attorneys and apothecaries by using their acquired skills for trading and business.[4]

2. 2 What constitutes a Yeoman?

There is much division regarding the definition of Yeoman. The Concise Oxford Dictionary has four, of which two are relevant, that of possessing 'free land' and the value of 40s which are synonymous with 'yeoman'.[5] The Murray English Dictionary describes the yeoman in greater depth, again referring to the free land.[6] References to commodities such as 'Yeoman bread' and 'Yeoman ale', infer a moderate quality.[7] Much of this can be confirmed by a 1685 publication by Cowel, who also refers to a yeoman as a Saxon derivative.[8] It would be fair to assume the yeoman was classed as second rate compared to the gentleman or, as Hayward states 'a serving man under the degree of gentleman'. [Hayward 2009, p 215][9] It is important to clarify the distinction between the husbandman and the yeoman. The former ran a small family farm, as a tenant, possibly a petty freeholder, with the major difference being, that the husbandman used family labour and had very little excess produce to sell. His was more of a hand to mouth existence.[10] Whereas according to Harrison the yeoman is;

> *a settled or staid man such I mean as, being married and of some years, betaketh himself to stay in the place of his abode for the better maintenance of himself and his family*.[11]
>
> [Harrison 1968, p117]

To conclude, the yeoman was able to live in a good house and lead a good wealthy life as a farmer, possibly housing a servant or two. He would also have the opportunity to travel to markets and broaden his knowledge. Research leads us to deduce that gentlemen appear not to have been as thrifty as the yeoman. This led to the merging of the 'sorts' when a thrifty yeoman was able to purchase pieces of land from a bankrupt gentleman, thus saving the gentleman's grace.[12] This union accomplished social progression, allowing the yeoman to have greater wealth of land, producing larger revenue, which in turn allowed the yeoman to have his sons educated, even to the extent of sending them to university, or to the Inns of Court. At this juncture we note the

Figure 1: [Left] A Merchant's Wife from the sepulchral brass to Ann Rede in St. Margaret's, Norwich, 1577 and [Right] a Prosperous Yeoman, from sepulchral brass to Anthony Cooke in Yoxford Church, Suffolk, 1613.
© Batsford, London, *Life in Tudor England.* Williams, P. 1964.

encroachment of the yeomen into the gentlemen 'sort', where the sons of yeomen are living upon the lands on which they need not labour. This allows for the supposition that some yeomen working their lands could have been wealthier than the frivolous gentlemen.[13] Their status was also depicted through their clothing by sumptuary legislation. A gentleman must wear clothes fit for his station, so a yeoman must dress fit for his; it made sense that a 'working man' could not really wear the fitted padded clothes or slashed garments, which were just not suitable for everyday working wear.[14] With a salary of £10 per annum, purchasing cloth at a cost of 10s.8d per yard or a damask garment at £81.00 was totally out of their financial reach.[15]

2. 3 Evidence of yeomen in East Kent

Details of goods, chattels, the land owned or rented, the monies owed or the debts they possessed were established through the use of wills and inventories. In fact these give a plentiful viewpoint of contemporary life and the personal perceptions individuals had of themselves within the local social structure.[16] These wills and inventories enabled, to some degree, the wealth of the yeoman to be ascertained.

Local material revealed that a sixteenth century yeoman, one Simon Gason of Ash, held the lease on the northern part of Wingham Manor before 1528. We assume his father, a John Gason, held the lease of Wingham Barton in 1502 for a rent of £50.[17] Another, John Parrott [yeoman], rented a 70 acre farm for a rent of £8 per annum.[18]

The will of Edmonde Amye [yeoman] dated 2nd October 1542, bequeathed to his maid servant a cow called Joan, six ewes and a quarter of wheat and barley at her marriage. To 'his boy', on reaching the age of 21, he gave six ewes. Also in this will there is reference to his tenement, 'wherin Stephen Parre, baker dwelleth with a garden in the parish of St Mary's Sandwich' [Amye 1542]: it seems this is bequeathed to his wife for the rest of her days.[19]

Although slightly further afield the will of Thomas Halle of the parish of Wye left twelve pence to the poor people and three shillings four pence to the high altar for his neglect to the church. 'Also I bequeathe to Thomas Fullers wyffe my daughter ten score and two shillings specye' [Halle 1555]. This amount is bequeathed on two more occasions, obviously to other daughters. There are six shillings and eight pence for highway repairs. His two godsons receive twenty shilling on their twentieth birthday, and twenty shillings and a cupboard are received by the maid servant. To end, there is a mention of lands and tenements:

> *First I wylle and give unto George Halle my sonne all my lands and tenements situate lyinge and beyinge in the parish of Wye aforesayd and also all my lands and tenements situate lyinge and beyinge in the parishes of Snave and Rokynge in Romney Mershe or elsewhere within the countie of Kent to be had to hym his heyres and assignes for ever.*[20]
>
> [Halle 1555]

For the village of Staple, there are only a few documents in which actual references to yeomen exist. The inventory of Stephen Cranbroke, [yeoman] mentions the corn in the field and the total of 30 acres: there is no reference to any pasture land although he owned cattle and sheep. His estate was valued at £93 1s 4d on his inventory.[21] His will mentions lands and tenements in the parish of Staple, Woodnesborough, Goodnestone, Chillenden and elsewhere in the county of Kent. He continues to state that the house he lives in and land at Rowling, Staple, Woodnesborough and Goodnestone are bequeathed to his wife, but the house and land at Chillenden are bequeathed to his daughter.[22]

Steven Dade made a will in February 1583 referring to himself as a yeoman of the parish of Staple: he bequeaths to his wife his 'dwelling house with one kitchen and one stable and all my landes thereunto belonging'. [Dade 1583] [23] He continues to bequeath money and land to his children, referring particularly to a parcel of 'two acres of lande called Hentowne which I purchased'. [Dade 1583] [24] This confirms that small sales of land had taken place in this village at this time. In his inventory, made in April of the same year showing a total sum of £8 6s 3d, the acreage listed is very minimal: only one acre of pother and two acres of wheat. So it would appear that Steven Dade was perhaps one of the yeomen who rented their land and was not a freeholder.

Thomas Taylor is not recorded as a yeoman, yet his wealth of £115 7s 6d far exceeded Steven Dade, and certainly puts him financially into the yeoman category. Owning six cows, four calves, fourteen ewes and ten lambs as well as seven hogs and two suckling pigs: one can assume he had some pasture for these animals be it rented or owned. He does state the ownership of 28 acres of land, 15 of which where laid down to wheat, five to tarres and eight of barley land waiting to be ploughed.[25]

These extracts exemplify that yeomen must have had funds enough to fulfil their wills and employ a maid servant or 'a boy' as well. Some referred to more than one property and a number of parcels of land. Wye, Romney Marsh and Ruckinge are of some distance apart and this would indicate either a large acreage was held or that different parcels had been acquired during the yeoman's life, building a sizable estate, as implied by Zell, Barry and Brooks.[26]

2. 4 A yeoman in summary

The most widely reported sixteenth century yeoman was Hugh Latimer's father:

> *my father was a yeoman, and had no lands of his own, only he had a farm of three or four pound by year at the uttermost, and hereupon he tilled so much as kept half -a-dozen men. He had walk for a hundred sheep and my mother milked thirty kine.*[27]
>
> [Barry and Brooks 1994, p 63]

The boundaries of the 'sorts' although appearing defined, are often hazy, with a person having the opportunity of moving from one 'sort' to another.[28] A yeoman had characteristics of both the lower gentry and the working 'sorts'. His life was one worthy of living as he had a reasonable income and many yeomen appear to have been wealthier than some of the so called landed gentlemen, but they did not have the gentry's obligations to the king to become knights and serve him in duty. The frugal yeoman was able to 'better' himself by hard work which enabled his heirs to have better education which, in turn, allowed advantages to the future generations. As Barry and Brooks remark, many of the apprentices to the gentry were from yeoman families who

had aspired to the gentry, their fathers being respected within the landed society, yet their disposable incomes were no match. Various authors continue to help us understand the importance of the yeoman outside the farming world, by stating that the professions they sought were those of constables and grand jurymen. Their 'sort' would not reach the level of those who would make the justices of the peace.[29]

Yeomen had disposable income, albeit a small amount: consequently they were able to provide a better dwelling for their family and have more items in the domestic setting, being able to afford and source better quality building materials. Surviving buildings of the 'middling sort', the cottages, smaller houses and the local small manorial estate, are examples of this. The cottage, according to Dyer, usually consisted of circa 5 acres or less of arable land which was not enough to support the family so, the occupiers became an important labour source.[30]

> *Many so-called cottages were intended for the yeoman class, just as many farmhouses were built for the lesser gentry.*
>
> [Ayres 2003, p 1][31]

Apart from the dwelling, the ultimate possession was the bed, followed by bed hangings which kept the dust and draughts from the sleeping occupant.[32] Dress was influenced by legislation, yet there was much creativity, even though each 'sort' in society was expected to dress in clothes and cloths appropriate to their 'sort'. Not only was this a matter of financial availability but one of practicality. A yeoman when working the land could not wear daily a highly decorative velvet type doublet with trunk hose. Work wear would possibly be the wool, canvas or leather jerkin and full length hose. Yet 'Sunday best' enabled the display of the most treasured garments, for each 'sort'.

This disparity was not only obvious in clothing but also domestic textiles. Within the inventories we regularly find the ownership of sheets but the quality differs within the social structures. This will be dealt with further in the following chapters.

Categorised as a freeman, the yeoman was the businessman in the farming world, having control over the soil he worked, living within the laws of nature yet having freedom, independence and a sense of worth, as his reward. With an understanding of the definition of the yeoman, a study of his belongings, both apparel and domestic cloths can be undertaken. This study will work systematically, initially considering fibre availability and requirements and following the process through to cloth production.

Figure 2: Robert Greene's A Quip for an Upstart Courtier, or a Quaint Dispute Between Velvet Breeches and Cloth Breeches (1592).

[1] PAGE, W. (Ed) (1932) *The Victoria History of the County of Kent Volume Three* London: The St. Cathrine Press. p 338
[2] 'middling', adj.1 'Of medium or moderate size, strength, quality,' 'second of three grades' and 'forming a mean between two extremes'. OED Online. June 2012. Oxford University Press. accessed 11 August 2012 www.oed.com/view/Entry/118172
FOWLER, H. W. and FOWLER, F. G. (1964) *The Concise English Dictionary of Current English.* (5th Edition) Oxford: Clarendon Press. p 766 'second of three grades' and 'fairly or moderately...'
[3] HARRISON, W. (1968) *The Description of England* (Ed by Georges Edelen) Ithaca N.Y: Cornell University Press. p 94 footnote 2
[4] BARRY, and BROOKS, *The Middling Sort.* p 2
HARRISON, *The Description of England.* Harrison states that within the artificers' category he includes the yeoman which caused him a problem. [1577and 1587] For in one instant Harrison includes artificers as yeomen [1587]; in another, he classes 'laborers and the common sort of artificers', quite separate from the yeoman which he in turn refers to as farmers. In another situation he places all artificers together in the fourth 'sort'.
P'ROTHERO, *Select Statues.* pp 176-177 Smith is recorded as defining four 'sorts': the nobilities major, including the gentleman or Baron who has an annual income of one thousand pounds; the nobilities minor, a gentleman with an income of forty pounds sterling from his own free lands, (he may be made a knight but is not born one, he also has to comply with the king's demands or pay the consequences, therefore the title comes with ties). The Esquires form the next 'sort', born into titled families and bearing arms and the gentleman who is born of noble blood. These people are not likely to become knights or Barons as they are not noble enough but they have studied and made good of themselves and they live well, without labouring.

The following 'sort', the yeoman: 'next unto the nobility, knights and squires, have the greatest charge and doings in the commonwealth.... I call him a yeoman whom our laws do call legalem hominem... which is a freeman born English, and may dispend of his own free land in yearly revenue to the sum of 40 shillings sterling... This sort of people confess themselves to be no gentlemen... and yet they have a certain pre-eminence and more estimation than labourers and artificers, and commonly live wealthily. ... These be (for the most part) farmers unto gentlemen,... and by these means do come to such wealth, that they are able and daily do buy the lands of unthrifty gentlemen, and after setting their sons to the school at the universities, to the laws of the realm, or otherwise leaving them sufficient lands whereon they may live without labour, do make their said sons by those means gentlemen.'

The final 'sort', according to Sir Thomas Smith is 'the fourth sort of men'. These consist of day labourers, husbandmen, merchants and retailers who have no free land or copyhold and therefore no voice.
[5] FOWLER, and FOWLER, *The Concise English.* p 1516 Refers to the yeoman as **1**. Person qualified by possessing free land of 40 shillings sterling annual value to serve on juries, vote for knight of shire, etc. **2**. Small landowner, farmer, person of middle class engaged in agriculture; || member of the yeomanry force.
'yeoman', n. 'A man holding a small landed estate; a freeholder under the rank of a gentleman; hence *vaguely*, a commoner or countryman of respectable standing, *esp.* one who cultivates his own land.'. OED Online. June 2012. Oxford University Press. accessed 11 August 2012 ww.oed.com/view/Entry/231598?
[6] MURRAY, J. A., CRAIGE, W. A., ONIONS, C. T. and BRADLEY, H. (1928) *A New English Dictionary on Historical Principles; founded mainly on the materials collected by The Philological Society.* Vol X part II. Oxford: Clarendon Press. Section X,Y,Z, pp 40-42 **I.1** A servant or attendant in a royal or noble household, usually of a superior grade, ranking between a sergeant and a groom, or between a squire and a page. **II.4** A man holding a small landed estate: a free holder under the rank of gentleman; hence vaguely, a commoner or countryman of respectable standing, especially one who cultivates his own land. **III.6**. Attrib as yeoman class, rank, throng as yeoman farmer,

gentleman proprietor. Within Murray's publication there are references to the usage of the word during the sixteenth century. These have been included here.
1500 - 20 DUNBAR Poems xxxix. 25: Honest yemen in every toun war wont to weir baith reid and broun.
1549 LATIMER. 1st Serm. Bef. Edward VI (Arb) 40: My father was a yeoman, and had no landes of his owne, onlye he had a farme of iii or iiii pound by yere at the uttermost… He had walke for a hundred shepe, and my mother milked xxx kyne.
1577 Sir T Smith. Commw Eng 1. Xxiii (1584) 30, I call him a yeoman whom our lawes doe call legalem bominem,… which is a freeman born English, and may depend on his owne free lande in yerely revenue to the summe of xi.s.sterling. Ibid 32: Yeoman: which worde now signifieth among vs., a man well at ease and hauing honestlie to live, and yet not a gentleman.
[7] MURRAY, CRAIGE, ONIONS, and BRADLEY, *A New English Dictionary*. pp 40-42 III.6. Attrib as yeoman class, rank, throng as yeoman farmer, gentleman man proprietor, names for second qualities.
[8] COWEL, J. (1685) *The Interpreter, words and Terms used either in the common or Statue Laws of this Realm.* London: Printed by the Affigns of Richard Alkins and Sir Edward Alkins Knight for H Twyford, Tho Baffel, J. Place and H Sawbridge. (Not paginated) Yeoman a derivative of the saxon zeman, I communis these Camden in his Brit. [page 105] placeth next in order to gentlemen.... Sir Thomas Smith ...calls him a yeoman, who our law calls legalem bominem, which (says he) is in the English a free born man, that may disend of his own free land in yearly revenue to the sum of forty shillings sterling. Yeoman also signifies an officer in the King's House, in the middle place between the sergeant and the groom as yeoman of the Chandry, Yeoman of the scullery, Yeoman of the crown.
[9] HAWARD, M. (2009) *Rich Apparel; Clothing and the Law in Henry VIII's England.* Farnham: Ashgate Publishing Ltd. p 215 This is the wording used in the sumptuary llegislation.
[10] ZELL, *Early Modern Kent.* p 63
[11] HARRISON, *The Description of England*. p 117
[12]WILLIAMS, *Life in Tudor England.* p 64
[13] HARRISON, *The Description of England.* pp 117-118
[14] WILLIAMS, *Life in Tudor England.* p 73
[15] Ibid. p 73
[16] BARRY, and BROOKS, *The Middling Sort.* p 29
[17] C.C.A.L. Reg T fo 217
[18] C.C.A. PRC 21/2/128
[19] C.C.A. PRC 33/231
[20] C.C.A. PRC 17/30/172c
[21] C.C.A. PRC 21/6/98
[22] C.C.A. PRC 32/34/220
[23] C.C.A. PRC 32/35/85a
[24] C.C.A. PRC 32/35/85a
[25] C.C.A. PRC 21/2/288 (289)
[26] BARRY, and BROOKS, *The Middling Sort.* p 52
ZELL, *Early Modern Kent.* p 70
Zell suggests 'yeoman' being used as a social statement: 'At its simplest, a yeoman was a commercial farmer, someone who farmed for the market rather than merely to feed his family, and someone whose farm was large enough to require help from non-family labour.' He continues to reinforce the statement of a yeoman 'owning' his own land, finally stating 'Yeomen probably owned 10 or 20 per cent of the land of Kent.' The late sixteenth century probate records held at Canterbury hold evidence of Kentish yeomen with personal estates valued in hundreds of pounds with farms of 50-150 acres of sewn arable and grazing pasture for sheep and cattle.
[27] BARRY, and BROOKS, *The Middling Sort.* p 63
[28] HAYWARD, *Rich Apparel.* p 44

[29]BARRY, and BROOKS, *The Middling Sort.* p 62
[30] DYER, C. (1997) History and Vernacular Architecture, *Vernacular Architecture.* (Vol: 28) pp 1-7
[31]AYRES, J. (2003) *Domestic Interiors - The British Tradition 1500-1850.* New Haven, London: Yale University Press. p 1
[32] BROOKE, I. (1952) *Four Walls Adorned Interior Decoration 1485-1820.* London: Methuen and Co. p 17

3. Evaluating the Fibres used in the Sixteenth Century by the East Kent Yeoman.

'From combed wooll we draw this slender thread,
From thence the looms have dealing with the same,'
[From the speech an unknown child delivered to Elizabeth 1 at Norwich 1578][1]

3. 1 Contextual evidence

Trying to ascertain the fibre used in textiles during the sixteenth century is even more problematic when the search is restricted to the yeoman. There is very little surviving evidence concerning the dress and household textiles of this class.[2] Garments were important, but not abundant, so were worn until they disintegrated.[3] Limited images of the yeoman appear in sepulchral brasses, woodcut prints or pencil sketches all of which are well documented (Figures 1-3).[4] Costly portraiture was certainly beyond the financial constraints of the yeoman in East Kent, therefore any depiction of him was purely 'scene setting' with attention being focussed on the patron.[5]

Tailors' and merchants' documents, with snippets of samples and costs, are rare and only limited scant records have survived.[6] Therefore we can only make an assumption by using these few facts and physical evidence combined with empiric knowledge.[7] Any finds of fabrics peculiar to the lower 'sorts' appear in the form of 'rag', remnants or cuttings.[8] These have suffered damage through exposure to sunlight, human acid, excess damp, tannin and iron salts found in the soil; even moth and vermin have, in their turn, damaged these types of finds. Therefore, when a well preserved find is exposed, it usually belongs to the textiles of the 'upper sorts'.

3. 2 Mystery of cloths

In northern and central Europe the best conditions for preservation of certain textile are those which maintain a regular level of moisture, are free from air

and penetrated human acids [anaerobic]: these can be peat bogs, lakes or river beds.[9] Dwelling levels of mediaeval times are now below the water table, which has provided an anaerobic environment preserving textiles deposited or discarded between the twelfth and fifteenth centuries. These could well be lost forever unless found by future archaeologists. The Thames Waterfront is one such example, an urban area with all the requirements listed above and where important textile finds have been discovered.[10] One can assume that these finds were remnants from tailors, or perhaps a rubbish deposit, yet the precise dates and ownership remains a mystery. Due to the different nature of the natural fibres used, each one requiring a different environmental condition to be preserved, it is not surprising so few fabric samples have survived.

Wool and silk are protein fibres and generally prefer the anaerobic conditions. The same conditions would be disastrous for the cellulose fibres, hemp/linen and cotton, which need an alkaline environment. Anaerobic situations cause the cellulose fibres to break down rapidly, usually being attacked by a fungus. Cellulose fabrics survive in warm, dry, airless [alkaline] conditions, such as the tombs of Ancient Egypt, or as caches deliberately concealed in buildings.[11] Fabric constructed of cotton/ linen and wool/ silk or *mixed* fibres are consequently very rare. However a sample held at the Mary Rose Trust demonstrates the survival of the wool base cloth, yet the linen lining or trim which, due to the hostile environment, has been reduced to an accumulation of decaying fibres (Figure 16).[12]

3. 3 Fibres, fit for purpose

The choice of fibres to be used in this study has been determined through considering sumptuary legislation and its regulated usage.[13] Guided by evidence in various local documentations, four natural fibres were used: wool, linen, cotton and silk. Emphasis was placed on the use of linen and wool fibres, owing to local availability for the ‘middling sorts’ and their financial restraints.[14] Further research revealed silk was probably used in small amounts for embellishments; these were possibly bought from the Chapman. So both cotton and silk are included for comparison.

Figure 3: Man in a blue cloak. Hans Holbein the younger, circa 1540. [1890,0512.158] © Trustees of the British Museum

3. 3. 1 Wool

The mainstay of the British economy during mediaeval times was wool. The Chancellor still sits on the 'Wool Sack', a sign of Britain's prosperity through the exportation of wool, which continued until cotton became its rival. Wool has been used for centuries throughout the world, being spun on different types of spindles by nomads and peasants.

It is very difficult to summarize a life time of work, such as the detailed studies by Youat [1840], who concentrated on the zoological aspect, studying the world of sheep and their biology and by Ryder who also deals with the biological development of sheep, writing in the present day. Sheep evolved about 2.5 million years ago and in the course of their uncertain evolution, established themselves in prime areas on the globe adapting to various suitable geographic locations, one being the Romney Marsh.[15] Generally, wool breeds are divided into three different types, following geographic locations:

Down	a fine, soft lustrous, elastic short staple
Mountain	a strong half lustrous medium staple
Lustre (lowlands)	a lustrous, (with crimp) strong, long staple.

Trow-Smith quotes a theory which relates to better fed sheep producing less fine wool and questions the benefits of enclosures.[16] This theory, affirmed by Ponting, Ryder and Bowden, cannot have any bearing on the characteristics of the initial breed but would account for the fact that, after enclosures became popular, British wool may have been coarser.[17] Today, a sheep on a poor diet or subject to ill health will grow a fleece with a '*break'* in the staple and a wool sorter would dismiss a fleece with such defects. Wool in the sixteenth century may have suffered from this problem, being rejected or dealt with as another commodity, such as '*cotty'*. Perhaps a 'break' has materialised through demanding too much from the animal: good quality fibre, lean quality meat, higher rate of progeny per ewe; and to this end the fleece shows 'stress'.

Wool would have been either home or locally grown, with preparation being undertaken by the housewife. Markham states;

> *To speake then first of the making of woollen cloth, it is the office of the Husband at the sheering of his sheepe, to bestow vpon the Hous-wife such a competent proportion of wooll, as shall be conuenient for the clothing of his family.*[18]
>
> [Markham 1625, p 154]

Shearing in Kent would have taken place during June or July, when the fleece was on '*the rise*'. As the fleece falls away from the body it must be kept very clean; any debris will lessen the value. The rolled fleece would then have been delivered to the housewife. She would sort the fleece according to the quality and colour, the whitest being kept for white cloth. The remainder might then either be dyed prior to spinning or spun knowing it would be dyed in the piece later.

It has been noted by Campbell that sheep were washed between a day and two weeks prior to being shorn, which would justify the need to grease the fibres.[19] In his instructions to the housewife, Markham states;

> *you shall take of the best rape oile, or for want thereof either wel rayndred Goose grease, or Swines grease, and having melted it with your hand sprinkled it all ouer your wool, and worke it very well into the same.*[20]
>
> [Markham 1625, p 158]

He does not expand to explain whether the wool is greased for both carded and combed fibres, only referring to the use of *stock cards*. Wool, being versatile, can be prepared in two ways, depending on the length of the staple, to produce either a woollen or *worsted* yarn.

A woollen yarn uses short stapled unaligned fibres, producing a hairy and unsmooth yarn, advantages being a warm yarn trapping air in the pockets produced as the fibres were carded. In contrast, a worsted yarn is constructed from combed long stapled parallel fibres, trapping no air, making a smooth, shiny, cooler yarn.

In Markham's advice to the housewife, the oiled wool is then spun on a 'great wool wheel', and drawn according to the natural fibre and not the specific requirements of the housewife. He clarifies that a coarse staple cannot be drawn to produce a fine yarn as it will lack bulk when fulled. Likewise, a coarse thread drawn from a fine staple will result in a poor quality cloth and reflect badly on the housewife.[21]

Wool is the most elastic staple of the four natural fibres being able to stretch 30% of its original length through its telescopic structure. 20% of its weight may absorb water without the garment feeling damp and up to 50% before the absorption rate has been exhausted. What better fibre for the yeoman's wardrobe, having to resist the wet English weather?[22] Wool is naturally low in tensile strength; its natural make up and resilience make it stronger in wear than some other fibres.[23] All wool is warm and therefore a good insulator, due to its scaly characteristic which is able to trap air; being a protein fibre, it is a bad conductor of heat (Figure 7).

3. 3. 1. 1 Romney: The Marsh sheep

A breed referred to as the 'Canterbury wool', 'Kent sheep' and 'sheep that reside on the marshes' appear to be one and the same. This is evidence that sheep were in existence on one of the world's richest sheep pastures, Romney Marsh.[24] Ryder states, there were nearly 14,000 sheep in the Canterbury area by 1320, whose fleece produced an annual income of £350.[25] The Romney sheep of today is possibly the closest available to these albeit probably crossbred over the centuries.[26] Ryder reports Trow –Smith's comment: 'the Romney has received little or no influence from other breeds' [Ryder 1983, p 464][27]. As the stock movement of the fourteenth century gave rise to crossbreeding, it was important to source a local farmer who could trace his stock records back as far as possible. [28] Such was found: one Mr Horne, of Nash Court, Westwell, who took great pains in helping to select a suitable fleece from his flock of 'pure' Romney.[29] `

The Romney fleece has a long, lustrous, fine staple, about 4¾ – 8 inches (12 – 20 cm) in length with a good crimp and is therefore a good candidate for a worsted yarn. It is also known to felt well but the fleece is able to withstand a variety of climates (Figure 6 and appendix 3).[30] The diameter of the Romney staple used ranges from 25 – 38 microns, which confirms Ryder's theory based on a Roman find of true fine wool, circa. 17 microns, coarsens to become the primitive longwool.[31] Although this comparison is made with the Roman finds it was the closest available.

No oil was added as suggested by Markham neither was the fleece washed. These locks contained a large amount of natural lanolin and *suint*. Being a long, lustrous staple, each lock was combed to prepare a worsted yarn. This was achieved by holding the cut end of the lock and brushing out the tip [uneven end] and then repeating the process for the cut end (Figure 5). The combed locks were carefully laid in a box with each lock lying in the same direction. There was very little debris or cotty left from this process.

3. 3. 1. 2 Portland: The swimming sheep

A fleece in contrast to that of the Romney sheep was needed to be secured. Information on evolution of sheep breeds reveals the Portland or Ryeland sheep have a long history back possibly to Roman times.[32] The Portland definitely belongs to the down type, whether or not it is a descendant of the Roman sheep.[33] A folklore legend also recalls that some Portland sheep swam ashore from the Armada[34]. This may explain the Mediterranean influence in the breed, which gives the fineness and colour of fleece that is so sought after by the hand spinner.

Today, the Portland is a rare breed.[35] The fleece is close, fine, of good quality, with little *crimp*, has a creamy to pale ginger tone, with a short staple, 2¾ - 3½ inches (6-9cm): occasionally there may be some *kempy* fibres.[37] The diameter range of the Portland used was 20 – 35 microns (Figure 6 and Appendix 3).

Figure 4: A carder being prepared using Ryeland locks. Six locks were place on the cards with the clipped end towards the handle side of the cards.

Figure 5: Combing a long stapled fleece, a Romney lock, in preparation for a worsted spin.

Cards of 72 points were decided upon for carding due to the fineness of the staple. Five *prime* locks were placed on the card with all the tips facing the same direction, to accommodate the telescopic nature of the fibres (Figure 4). This fleece had been clipped on the rise, as all ends were even. Once the card was lightly covered with locks, carding commenced: this process removes debris and separates the fibres. These five locks produced one *rolag;* this empiric procedure was continued for the whole yarn production. There was very little cotty or debris from this fleece but the cards were cleaned after ten to fifteen rolags had been made.

3. 3. 1. 3 Ryeland; The champion that never was

Traced back as far as the twelfth century in Hereford the Ryeland can be associated with monks and the 'Leominter ore' of the mid fifteenth century wool trade. During mediaeval times the fleece grew coarser but Ryder still regards the Ryeland/Hereford as having a fine fleece right up until the nineteenth century.[38]

Today, this is still considered a fine white wool, rarely coarse, with a staple length of 3½ to 4½ inches (9cm - 11.5cm). The diameter range of the Ryland used was 25 – 38 microns (Figure 6 and Appendix 3). A fleece obtained from the West Country was purchased on the pretext of being a Champion of breed. On opening the roll, it was obvious that it had been washed – and not well. The staple was white, fine and contained vegetable debris, cotty, and secondary clippings, suggesting a show shearer had removed the fleece in a hurry.

The intention had been to prepare this fleece for both woollen and worsted spinning, due to the fibres being of medium length. For carding a pair of 42 point cards were used, but the whole fleece was matted and could be heard tearing when trying to extract a lock. In fact, it was impossible to distinguish locks to either dress the cards or try to comb. Therefore, a second fleece needed to be acquired. A farmer in Yorkshire was able to provide a beautiful Ryeland fleece from a sheep, which had been allowed to forage in a 'common

sort' of existence.[39] This fleece was completely different to handle, with no harshness. A fine staple permitted carding on 72 point cards, resulting easily in a well prepared rolag, with virtually no cotty. Combing the locks was just as relaxing a task.

3. 3. 1. 4 Breeds fit for any situation

Ryder states that it is 'virtually impossible to reproduce cloth from the past because it is not known what the wool was like' [Ryder 2007] a statement which could be applied to any number of situations, depending on the category of reproduction[40]. Much of Ryder's evidence is in fact very precise, recording careful detail of type of fleece, size of fibre, even skeletal evidence and analysis of the blood to establish any changes within breeds.[41] Over the centuries sheep have adapted to environmental changes, been developed for their habitat and cross-bred, thus making it difficult to establish exactly the breeds of sheep available in the sixteenth century. Changes in the climate and accessible feed, either natural or with man's interference have had a significant effect on the natural fibres.[42] Scientific information about the fibres must not be dismissed, even if pertaining to a different time period; one is able to gather enough information to speculate how the fleece may have changed.[43] So, although the fleece may not be exact, Ryder has given very supportive evidence to obtain a close match.[44]

3. 3. 2 Hemp and linen from tombs to beds and sails[45]

According to archaeologists, 10,000 years ago hemp was used in tombs; 5,000 years ago bodies of noblemen and kings from Egypt were mummified in yards of finely spun and woven linen or hemp. The use of this cloth emphasizes the durability of linen, while written Chinese evidence from 2,700 BC confirms the use of hemp.[46] The dry, alkaline conditions within the Egyptian tomb allowed these cellulose fibres to be preserved, enabling such finds to be discovered.[47] Both flax and hemp fibres are very similar; being bast fibres they are prepared using the same type of methods.

Figure 6: A: A lock of Romney fleece; B: A lock of Portland fleece C: A lock of Ryeland fleece.

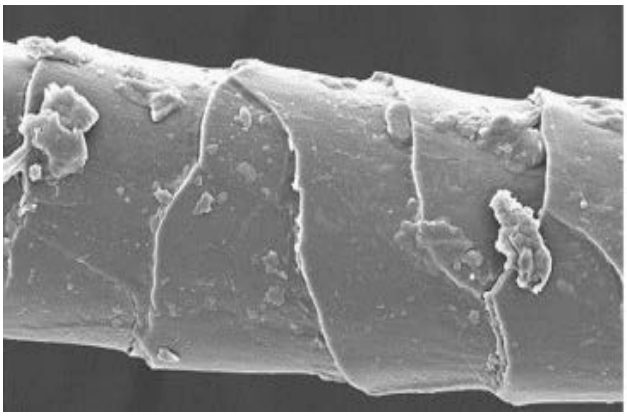


Figure 7: Microscope Image of wool fibre, showing the characteristic telescopic scales. Courtesy of Elsevier, from Ultrasonics Sonochemistry Vo 18 Issue 1 Jan 2011 pp 401-406

An act passed during Henry VIII's reign fined farmers for not growing hemp.[48] This was to encourage the industry in the production of ropes, sailcloth and sacking mainly due to the fibres being resistant to damage by water.[49] This in turn improved the country's naval resources.

3. 3. 2. 1 Henry III's invitation to Flanders

The existence of flax and hemp can be confirmed as it was grown in certain areas of England. It is commonly accepted that the linen industry commenced in 1253 due to an invitation from Henry III to the linen weavers of Flanders, a guild being formed in 1386.[50] Even the idle and poor were set to work as it was expected;

> *that in every city and town corporate within this realm a competent store and stock of wool, hemp, flax, iron, or other stuff by order of the mayor shall be provided.*
>
> [Prothero 1963, p 72]

This statement implies all towns and cities had, or were, required to have, a surplus of raw materials with which to keep the idle or poor from any wrongdoing and that everybody had the knowledge and ability to produce such products.[51]

Waterfront locations, and other urban areas where anaerobic deposits would be in evidence, were not so favourable to the preservation of linen, and therefore very few have been recovered. Small discoveries reveal pieces which have been burnt: a linen thread, when charred, will hold its form.[52] It has also been assumed these finds were of common undergarments, bed linen, head-coverings, aprons and linings. It is possible that this fabric was made into rags for sanitary and toilet use, although other fabric may also have been used for this purpose.[53]

The properties of flax and hemp fibres make them extremely adaptable and functional. Flax fibre has a lustre which can be seen in all processes and has been much utilized. They are second in strength to silk; have one of the best

conductivities of heat making it a useful cloth for warmer climates by drawing the heat away from the body into the fibre. Both flax and hemp absorb moisture, gaining strength when wet, by approximately 20%; and they dry more quickly than cotton, yet both flax and hemp will shrink and crease badly. Hemp is less flexible and coarser than flax, resulting in a slightly thicker yarn. The smoothness of the individual flax fibre means that it resists dye, bacteria and dirt, making linen ideal for undergarments (Figure 8 and Appendix 3).[54]

The preparation of these fibres for yarn production is long and time consuming, consisting of a number of processes. Flax plants require harvesting by being pulled rather than cut, whereas hemp needs to be cut as the roots system is deeper. The stems are then allowed to dry for a few weeks, after which the fibres are separated from the plant by '*retting*'. This may be achieved by either dew retting, or water retting. Once this has taken place, the flax or hemp is dried completely, ready to be prepared for spinning.

Flax and hemp can be produced to give different qualities of yarn, the finest and best yarn being obtained by using '*line*', the long fibres from the stem. 'Tow ', made up of the short fibres, is wastage from the scutching / combing, process, and produces a coarser and more hairy yarn. Research has shown that in the cultivation of flax and hemp, the process of spinning and weaving became a widespread domestic occupation. Baines mentions the problem in distinguishing flax from hemp, particularly illustrating confusion between tow flax and line hemp, relating to quality rather than length of fibre; once again she notes hemp was a common fibre available for the farming community and the poor.[55] Linen was left undyed, being whitened in the months April to May.[56] Due to complicated and time consuming processes needed to produce the fibre, a mixture of commercial spun yarn and prepared flax *tops* were used for the linen element of the experiment, because the project focus was the spinning and weaving.[57]

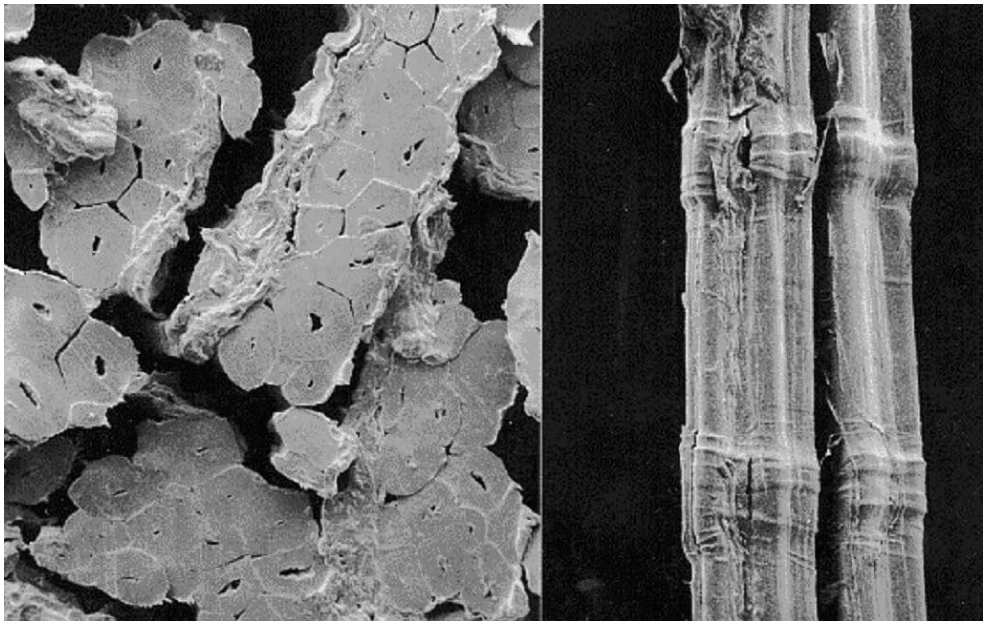


Figure 8: Microscopic images of flax fibres.
© www.swicofil.com

Figure 9: Flax flowers.
www.flaxandhemp.bangor.ac.uk, accessed 18th February 2013

3. 3. 2. 2 Archival evidence of fibres in East Kent

Archival evidence records the practice of spinning these fibres was obviously employed in the village of Staple. [58] References in inventories and surveys, regarding flax and hemp with spinning equipment, detail: Steven Dade in 1583/4 left 'Itim ould iron tow quarters of hempe and apaire of woulle cardes' Dade 1583/4].[59] The inventory of John Dubesses in 1584 mentions a number of painted cloths and an amount of tableware as well as 'all the hempe and worke' [Dubesses 1584].[60] 'Item twoo wollen wheeles and a lynen wheele' [Lott 1581], valued at 2s7d are noted for John Lott in 1581.[61] Thomas Hatcher records two 'lynnen trendles'.[62] John Crambroke, Joane Pettite and John Pettit all mention a 'woollen trendle' and 'cardes' or 'boardes', Lawrence Omer, Edward Baldock and Joan Hixe refer to 'lynen wheel'.[63]

In a chamber of Tamsyn Godden in Goodnestone, an adjoining village, there was a linen wheel, a pair of stock cards and 3½ lbs of linen work.[64] In Ash, John Wood [1611] is reputed to have had a linen loom and other weaving equipment.[65] As Andrewes continues to mention in her works, linen wheels are numerous in farmhouses of the parishes of Wingham, Ash and Goodnestone, which supports the finds in Staple, but she implies the flax is not home-grown.[66] An inventory of Nicholas Leggatt records "Itm one bushell of hempsed" valued at 3s 4d and that of Thomas May "Itm hemp on the grownd" valued at 2s.[67] From these inventories it is obvious that hemp was grown locally and hemp or flax was spun, due to the evidence of the linen wheels. In Wingham the weaver Richard Scotte has 'ij quarters of hempe [xiij d] …. and ij quarters of slecked hempe [j s xj d]' [Scotte 1582][68] The Calendar of Assize Records of Kent Indictments Elizabeth I for year 1559 - 1566 record four specific references of linen, two as aprons worth 2s, 4 pieces of linen also valued at 2s. There is a mention of 5lbs of flax worth 3s, along with 2 lbs of thread being stolen from a property in Gravesend in 1563.[69] However, there is a piece of white linen cloth valued at 40s and one can assume this must be of the better quality line flax.[70]

3. 3. 3 Silk, the luxury fibre

Silk, the secret fibre, is believed to have finally reached the shores of England in the late sixteenth or early seventeenth centuries, with the first attempt at sericulture in England believed to have taken place in 1608[71]. Bearing this in mind, silk fibres were used in the sixteenth century but in rather small quantities. Commercially prepared tussah silk tops were used for the spinning of the silk, being the median, as there are a number of different qualities available.

3. 3. 4 Cotton, 'the lamb plant'[72]

Ancient records show cotton to have been cultivated in the East about three thousand years ago. It was not until 1599, with the establishment of the British East India Company raw cotton was first supplied to England.[73] There are disputes over its arrival in England, Mairet, in a postscript, notes cotton in England was recorded for the first time in 1298.[74] Hakluyt, writing at the end of the fifteenth century, is said to have recorded ships returning to Genoa with goods from England, which included cotton.[75] Further still a claim has been made that it was the Dutch Protestant refugees who brought with them the knowledge of cotton cloth manufacture when they settled here in England towards the end of the sixteenth century.[76] This disparity between dates and accounts of when cotton was used in cloth production do not help to make the time scale conclusive. It can nevertheless be deduced that cotton fibre was beginning to be imported and used within the cloth trade towards the end of the sixteenth century. The 'middling sort' of society would have found it too expensive to use due to the cost of importation and the taxes imposed on such items.

3. 4 From fibres to yarn

With preparation of the fibres completed, spinning them to give yeoman service was the next procedure. This was a real challenge for the ordinary English housewife.

> *Although our ordinary English Housewives make none [difference]*

> *at all, but spin euery thread alike, yet the better experienst make two manner of spinnings and two sorts of thread.*[77]
>
> [Markham 1625, p 160]

Markham continues to discuss the different constructions of warp and weft threads. Munro interprets that warp threads are 'z' twist and wefts are 's' which, in turn, would have an effect on the light reflection in the weave.[78] However, Markham's focal point was not light reflection but the amount of twist required to give a serviceable yarn.

3. 4. 1 To 's' twist or not to 's' twist

Twist can be applied in two directions: clockwise giving a 'z' twist and anticlockwise giving a 's' twist. This affects, the durability of the yarn being constructed and the overall appearance by light reflection which is dependent on the twist direction either enhancing it or detracting from it. Whatever the mode of preparation, thin yarns will naturally have fewer fibres drawn into them and therefore require more twist to bind them. Thicker yarns need less twist. The spinner must always consider the end use of the yarn in their manipulation of fibres. However, the general rule, is that warp yarn has to be strong and more durable to take the rigours of the weaving process. Weft does not need as much twist being a filler yarn.

It must be considered that cloths of the sixteenth century were simple: simply constructed, yet beautiful in their simplicity. Crepe and crazed cloth may have resulted because the twist direction was not at the discretion of the weaver. As a 'singles' yarn is being used throughout, the relevance of *folded* yarn is only considered where extra strength and durability is required, for example a *selvedge.* As to which twist should be used for authenticity posed a problem. Crowfoot, Pritchard and Staniland discussed finds dated circa 1300 to 1450 which have a bias towards 'z' and a large amount of mixed 'z' / 's'.[79] Close inspection of the Mary Rose finds show predominantly 's' twist for both warp and weft, which are contrary to Munro's theory.[80] Conflictingly, Turner indicates the predominance of the 'z' twist due to empiric knowledge combined with uniformity.[81] Interestingly, one Mary Rose find that had been

viewed, possibly part of a leather bag, was constructed of a folded yarn of coarse kempy wool, sett at 9 epi on ‘z’ singles folded ‘s’.

It is believed that the Great wheel was only able to operate in one direction, which appears to be clockwise thus creating the 'z' twist.[82] Another theory of the predominance of the clockwise 'z' twist is based on the fact that the majority of people are right handed and presumably this was similar during the sixteenth century, therefore, turning the spinning wheel clockwise is more natural.[83] It is known the Saxony spinning wheel, a *double drive* wheel, had been developed, introduced and was very much in use during the sixteenth century.[84] Counter to the twist direction is the thickness of the yarn whether it be woollen or worsted. Once again this lies in the hands of the spinners. They need to assess the quantity of fibres to offer in the draw for a given measurement.

For this experiment the ‘z’ twist was used, based on empiric knowledge. Research had proved that finer yarns were spun on a rock [spindle]. Being right handed, the natural direction to twist the spindle was in a clockwise movement with the right hand, resulting in a ‘z’ twist. A left handed person would possibly have a counter approach, automatically turning the spindle in an anticlockwise direction.[85] Obviously this is not a prerequisite and may well depend on the handedness of the initial tutor, which confirms that this is a natural approach, open for further investigation of Minar’s research. Spinning on a wheel is dependent on the direction in which the wheel is initially turned before treadling and may not be dependent on hand dominance.

Local archival material has been considered, specifically relating to the quantity of wheels in the surrounding villages; although there were drop spindles, these are relatively small items and may not feature specifically mentioned in an inventory. Great wheels and other types of spinning wheels in households for the area, note the following table:

Item of Equipment	Surrounding Parishes 1560-1640		Staple Parish[86] -1600	
	Number	Percentage	Number	Percentage
Flannel Wheel	27	4%	3	8%
Flemish Wheel	-	-	1	2.7%
Jersey Wheel	19	3%	-	-
Linen Trendle	-	-	2	5.5%
Linen Wheel	225	38%	13	35%
Little Wheel	-	-	2	5.5%
Old Wheel	-	-	2	5.5%
Spindle	1	(0.16%)	-	-
Spinning Wheel	179	30%	-	-
Woollen Trendle	-	-	5	13.5%
Woollen Wheels	149	25%	9	24.3%
Totals	600	100%	37	100%

Table 1: The number of spinning items recorded in inventories for Staple compared with those recorded for the surrounding parishes.

Based on this research, a Saxony spinning wheel was chosen as it is capable of spinning all fibres required. A compact wheel of 16 inches in diameter is also easily accommodated. Certain amounts were spun on a drop spindle for comparison. The fibres have been prepared as described previously, with all relevant information recorded on the worksheets.

3. 5 Finding Forgotten Fabrics

Chastleton House in Oxfordshire, although a Jacobean country house built circa 1607 by a prosperous wool merchant, has remained virtually unaltered for 400 years with no twenty first century influence and provided an invaluable amount of items in situ. An opportunity to count the threads, albeit restrictedly, gave an indication of yarn thickness.[87] A piece of Dornix, a wall covering dating from 1625, made of linen warp and wool weft, woven in a *tabby* weave, gave a first indication of actual cloth quality. [88] The weft contained approximately 26 picks per inch [2.5cm] and the warp 20 ends. Other pieces of textiles gave a very similar amount of threads per inch [2.5cm]. A tablecloth in the Great Parlour had approx 24 picks and 28 ends per inch

[2.5cm]. The Sheldon tapestry cushion covers of the Middle Chamber, dating from circa 1595, were woven at the Sheldon family workshop, established in Sheldon manor house at Barcheston, Warwickshire; these are alleged to have 17 to 18 threads to the inch [2.5cm].[89]

A yarn giving 20 ends per inch [2.5 cm] and 20 picks per inch [2.5cm] would be comparable to those seen at Chastleton. A yarn was spun empirically and then wound parallel around a ruler to calculate the sett (Figure 11). Working to create a balanced cloth, the yarn was wrapped, leaving approximately half the diameter of the yarn between each one wrapped, to accommodate a weft. The space between each wrapped yarn would need to be adjusted for thicker or thinner weft yarns. The sett established was 20 epi, which would be feasible to weave successfully on a handloom, resulting in a finished cloth of 22 - 23 epi and 21 – 24 ppi after washing. These findings provide a good starting point for a yarn thickness.

Figure 10: Spinning and carding, Peniarth. MS 381 fol 70
By permission of Llyfrgell Genedlaethol Cymru/ The National Library of Wales.

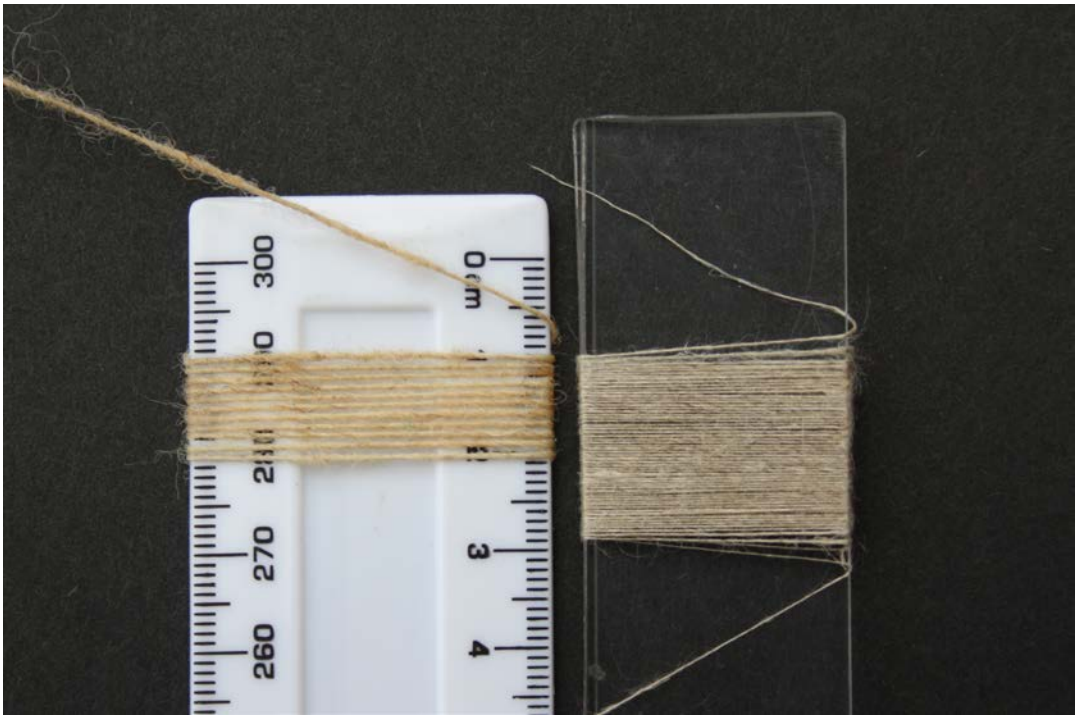


Figure 11: Calculating the sett, on the left using a rule for a worsted yarn (28 epi) and a piece of Perspex for a linen yarn (80 epi) on the right.

[1] FULLER, *The Holy State.*
[2] CUNNINGTON, and LUCAS, *Occupational Costume*. p 11
JENKINS, *Western Textiles I.* p2 Jenkins expands this theory by mentioning the difficulties in understanding the textiles of 'the common man further back than the relatively recent past.'
[3] WILLET CUNNINGTON,C. and CUNNINGTON, P. (1970) *Handbook of English Costume in the Sixteenth Century.* (Revised edition) London: Faber and Faber. p 193 Refers to a handkerchief cut from an old tablecloth.
[4] A Merchant's Wife from the sepulchral brass to Ann Rede in St. Margaret's Norwich 1577 and a Prosperous Yeoman, from sepulchral brass to Anthony Cooke in Yoxford Church Suffolk. 1613. From WILLIAMS, P. (1964) *Life in Tudor England.* London Batsford. pp 55, 65. (Figure 1)
Robert *Greene's* A Quip for an Upstart Courtier, or a Quaint Dispute Between *Velvet Breeches* and Cloth *Breeches* (1592). (Figure 2)
'Man in a blue cloak'. Hans Holbein the younger, circa 1540. [1890,0512.158] © Trustees of the British Museum, London. (Figure 3)
[5] '*The Field of the Cloth of Gold*' c 1545 British School illustrates this with King Henry VIII and his court depicted with importance at the front of the picture. To the front far right of the painting there is very much a 'scene' which is composed of mixed 'sorts' the gentry strolling, the 'vagrants' having a brawl on the step and the maids or servants talking to another lower 'sort'. The Royal Collection.
[6] HARTE, N. B. and PONTING, K. G. (Ed) (1983) *Cloth and Clothing in Medieval Europe. Essays in Memory of Professor E M Carus Wilson.* London: Pasold Research Fund. pp 120-124 Although these samples relate to the mid fifteenth century they are samples which have survived, being carefully stored.
[7] Emails from a curator at the Norfolk Museum, Norwich and an Archivist at the Clothworkers' Company, Clothworkers' Hall.
[8]CROWFOOT, E. PRITCHARD, F. and STANDILAND, K. (1992) *Textiles and Clothing 1150-1450* (New Ed 2001 reprint 2004) Woodbridge: The Boydell Press. pp 3-4, 26
[9] WILD, J. P (1988) *Textiles in Archaeology* Aylesbury: Shire Publications. p 7
[10] CROWFOOT, PRITCHARD, and STANDILAND, *Textiles and Clothing.* p 2
[11] Deliberately Concealed Garments is a research project by Dinah Eastop instigated in 1999; a touring exhibition based on this work was an inspiration. However the items concealed had to be dated and this can not always be executed with precision. More finds are added to the website still available www.concealedgarments.org.
[12] Sample 4693/4 The Mary Rose. The main piece is wool but there are very small remnants which appear to be possibly a linen lining. There have also been some finds in Switzerland where cellulose textiles have been preserved in an alkaline (chalk) lakebed; the finds were of remarkable Neolithic linen cloth.
WILD, *Textiles in Archaeology.* p 8
GOOD, I. 2001 Archaeological Textiles: A Review of Current Research. Annual Review of Anthropology. (Vol 30) p 211
[13] HAYWARD, *Rich Apparel.* In The Rich Apparel. Hayward deals very succinctly with Henry VIII's four acts of apparel from 1510-33 in an overview. A more detailed account can be source through BALDWIN, F. (1926) *Sumptuary Legislation and Personal Regulation in England.* Baltimore: John Hopkins Press. Both predominately deal with the fabric and its content; colour is determined by cost and will be dealt with in Colour Palette.
[14] General information on the fabrics can be obtained from Hayward and Baldwin through the sumptuary legislation. However, for a more specific understanding, the inventories pertaining to the village of Staple refer to the apparel as " all the resydue of his wearing apparell aswell lynen and woollen" C.C.A. PRC 21/16/225; " his apparell lynen and wollen" C.C.A. PRC 21/13/288; "Item his woollen apparell" C.C.A. PRC 21/14 455; " her wearing apparrell wollwn and lynen" C.C.A. PRC 21/16/253.
[15] RYDER, *Sheep and Man.* p 4. Yet this seems open to debate as MARIET,.E. considers Prof. Ewart, and notes the Ice Age in England destroyed the earliest race of sheep and

none existed until the Stone Age, when our domestic sheep were bred from three basic species.
MARIET, *Hand-weaving and Educations.* p 42
[16] TROW-SMITH, R. (1959) *A History of British Livestock Husbandry 1700-1900* London: Routledge and Kegan Paul. p 39
[17] RYDER, *Sheep and Man.* p 446
"If sheep are allowed to wander in search of food they will keep thin and the wool will improve, that is become finer; if they are herded together they will grow fat, which will give fatter mutton - although not necessarily sweeter eating mutton- and certainly resulting in longer and coarser wool. This fact goes far to explain the deterioration in the fineness of English wool that took place as the enclosing movement developed during the sixteenth century."
[18] MARKHAM, *A Way to get Wealth.* p 154
[19] CAMBELL, *The English Yeoman.* p 202
PONTING, *The Wool Trade.* p 30
TROW-SMITH, *English Husbandry* pp 78-79, 97
[20] MARKHAM, *A Way to get Wealth.* p 158
[21] Ibid. pp 159- 60
[22] POTTER, M.D. and CORBMAN, B. P. (1959) *Fibre to Fabric.* 3rd Ed. New York: Gregg Publishing. p 21
[23] Ibid. p16
PONTING, *The Wool Trade.* p 19
[24] MARIET, E. 1949) *Hand-weaving and Education.* London: Faber and Faber. p 42
DIXON, M (1979) *The Wool Book.* London: Hamlyn. p 22 A diagram on the possible development of the sheep breeds and their fleece types demonstrate the timescale of the fleeces available.
[25] RYDER, *Sheep and Man.* p 446
[26] RYDER, M. (1984) Medieval Sheep and Wool Types *The Agricultural History Review.* (Vol 32 part 1) p 21
[27] RYDER, *Sheep and Man.* p 464
Youatt is reported to have stated that 'there have been long woolled sheep on Romney Marsh from time immemorial'.
RYDER, M. (1964) History of Sheep Breeds in Britain *The Agricultural History Review.* (Vol 12 part 1) p 11
TROW-SMITH, *A History of British Livestock.* p 145
[28] TOULSON, S. (1980) *The Drovers.* Aylesbury: Shire Publications. p 28. There is also a little booklet about the packhorse routes since Medieval times where the author sates "So the Golden Fleeces of the Cotswold would be carried to the Staple Town at Calais, through the port of Sandwich". TOMLINSON, M and TAYLOR, P. (1987) *Wool on the Back.* Ebrington: Roundabout Publications. p 4
[29] *The Daily Telegraph.* 13 July 1995 Sheep Flock into Record Books p 8
[30] MARIET, *Hand-weaving and Educations.* p 52
[31] RYDER, Medieval Sheep. p 22
RYDER, History of Sheep. p 5
[32] Researching the old British Wool Marketing Board publications,
RYDER, *Sheep and Man.*
DIXON, *The Wool Book.*
[33] *Portland Sheep* Leaflet from the Rare Breeds Survival Trust.
[34] National Sheep Association (1998) *British Sheep.* 9th Ed. Worcester: N S A. p 125
[35] Fleece obtained from the South East Rare Breeds Centre at Woodchurch, Kent.
[37] There are Textile samples at the Mary Rose containing some 'hairy' fibres which could possibly be from these kempy Portland.
[38] RYDER, Medieval Sheep. pp 17, 24
TROW-SMITH, *English Husbandry.* p 162
[39] Sandie Davison of Kilburn, Yorkshire.
[40] A correspondence from Mr Ryder to Tamsyn Young, January 2007

[41] RYDER, *Sheep and Man.* p 462
RYDER, Medieval Sheep.
[42]PONTING, *The Wool Trade*. p 19
RYDER, *Sheep and Man.* p 459
BOWDEN, P. (1971) *The Wool Trade in Tudor and Stuart England*. (New Impression) London: Frank Cass and Co Ltd. p 26
[43] RYDER, *Sheep and Man.* p 462
RYDER, and GABRA-SANDERS, Fast Castle. p 13
[44] RYDER, Medieval Sheep. p 27 For further information Ryder has produced a succinct table illustrating the microns of the differing types of fleece.
[45] There is often confusion over line, tow, flax and hemp. Linen is woven flax fibres.
[46] www.agf.gov.bc.ca BCMAF Industrial Hemp Factsheet – September 1999
[47] POTTER, and CORBMAN, *Fibre to Fabric.* p 135
SINCLAIR, R. (1956) *The Faithful Fibre.* Glasgow: The Linen Thread Company. p 11
[48] www.bioregional.com/files/publications/BioRegionalHempForTextiles1996.
[49]POTTER, and CORBMAN, *Fibre to Fabric.* p 309
[50] MARIET, *Hand-weaving notes for Teachers.* p 61
[51] PROTHERO, *Select Statutes.* p 72
[52] CROWFOOT, PRITCHARD, and STANDILAND, *Textiles and Clothing.* p 80
[53] Ibid. p 80
[54] POTTER, and CORBMAN, *Fibre to Fabric.* p 23
BAINES, P. (1989) *Linen Handspinning and Weaving.* London: Batsford. p 16
[55] Ibid. p 184
[56] MARKHAM, *A Way to get Wealth.* p 173
[57] Wingham wool, Wentworth, Rotherham, Yorkshire.
[58] There have been 37 references to wheels in the 46 inventories of Staple from 1571-1602: of these 15 are referred to as linen wheels or linen trendles.
[59] C.C.A. PRC 21/6/526
[60] C.C.A. PRC 21/6/235 and 21/6/548
[61] C.C.A. PRC 21/6/307
[62] C.C.A. PRC 20/5/356
[63] C.C.A. PRC 21/5/220, PRC 21/3/60, PRC 21/3/1, PRC 21/16/234, PRC 21/13/288, PRC 21/16/253
[64] C.C.A. PRC 28/7/214
ANDREWES, J. (1991) *Land, family and community in Wingham and its environs: an economic and social history of rural society in East Kent from c.1450-1640.* Ph.D. Thesis, University of Kent at Canterbury.
[65] C.C.A. PRC 32/42/30
[66] ANDREWES, *Land, family and community*. Ph.D. Thesis UKC
[67] C.C.A. PRC 21/16/225. C.C.A. PRC 21/13/93.
ZELL, *Early Modern Kent.* p 124
[68] C.C.A. PRC 21/5/189. After much research the word 'slecked' could not be established. However when looking at the reference it could be assumed the quality of the fibre was superior as the value was virtually double the usual value stated.
[69] CAR Elizabeth I pp 41 ref no: 218 1563
[70] CAR Elizabeth I pp 16 ref no: 85 1560; pp 125 ref no:126 1561: ref no: 128 1561 and pp 36 ref no: 191 1562
[71] MARIET, *Hand-weaving notes for Teachers.* p 61
[72] MANDAVILLE, J. [n.d] *Travels of Sir John Mandeville.* www.gutenberg.org/dirs/etext97/tosjm10h.htm, accessed 9th February 2013. Mandeville notes 'In that land be trees that bear wool, as though it were of sheep, whereof men make clothes and all things that may be made of wool.' Chapter xxix. Legend also reports travellers considered these plants to contain lambs which grew attached to the plant; it bent to the ground allowing the lambs to graze.
[73] POTTER, and CORBMAN *Fibre to Fabric.* p 135

PONTING, K. G. (1986 reprint) *Discovering Textile History and Design* Aylesbury: Shire Publications. Ponting in his glossary states, 'It was only in the eighteenth century, when true cotton arrived in England, that the word took its present meaning.' Prior to this, the term referred to a type of fabric. p 62
TROCME, S. (2002) *Fabrics.* London: Mitchell Beazley. p 17
[74] CHANNING LINTHICUM, *Costume in the Drama.* p 103
RAMSEY, G. (1982) *The English Woollen Industry, 1500-1750.* London: Macmillan Press. p 9
POTTER, and CORBMAN, *Fibre to Fabric.* p 135
MARIET, *Hand-weaving notes for Teachers.* p 61
[75] PEAKE, R.J. (n.d) *Cotton: From the Raw Material to the Finished Product: Common Commodities and Industries* (2nd Revised Ed) London: Pitman and Sons. pp 2-3
[76] Educational leaflet from the Shirley Institute dated 1980. (own copy)
[77] MARKHAM, *A Way to get Wealth.* p 160
[78]JENKINS, *Western Textiles I.* p 203
[79] CROWFOOT, PRITCHARD, and STANILAND, *Textiles and Clothing.* p 27
[80] GARDINER, *Before the Mast.* p 29
[81] TURNER, K. (1980) *The Legacy of the Great Wheel.* Missouri: Select Books. p 37
[82] Ibid. pp 35-37
[83] MINAR, C. J. (2000) Motor Skill and the Learning Process: The Conservation of Cordage Final Twist Direction in Communities of Practice. *Journal of Anthropological Research.* (Vol 57 No 4) pp 381-405 Minar researched the effect of the handedness of the spinner on the spin and ply direction favoured. This paper discusses the findings of 43 spinners and the natural spin direction; she concludes there is no correlation.
[84] TURNER, *The Great Wheel.* p 29
[85] MINAR, Motor Skill and the Learning Process: pp 381-405
[86] This information is taken from 46 personal inventories held at Canterbury Cathedral Archives relating to the parish of Staple.
[87] Unfortunately due to the restrictions of studying these fabrics it was not possible to establish the twist directions.
[88] Chastleton House, Oxfordshire, a visit took place in October 2006 a close inspection was allowed but the use of the counting glass actually on the fabric was not; thus information gleaned is approximate.
[89] Chastleton House, Oxfordshire, October 2006 This information was imparted by one of the guides who had a piece of research dating back to the 1919's it also stated that one worker did less than 1m² in a year (300 working days).

4. Fabrics Available in the Sixteenth Century for the Yeoman.

'Fair warp and fitting woof
Weave a web that bideth proof.'

[Motto of the Canterbury Weavers. circa 1571]

4. 1 The naming of fabrics

This chapter will consider and discuss textiles owned and used by the 'middling sort', [yeomen] who had a variety of financial situations. They were regarded as the backbone of England, especially within Kent. Being frugal yeomen had more disposable income than other 'sorts'. This however, did not mean they were able to invest in a varied wardrobe. Their textiles needed to serve a purpose, both for work and socialising, within the legislation for their class.

The yeoman would have required serviceable, practical fabrics for his working wear and household goods; his Sunday best might be more extravagant, if funds allowed. Even household goods such as curtains would need to be of a dense cloth to withstand the draughts and keep dust at bay; in poorer homesteads, any fabric would be better than nothing. For cloth to be successful, construction must be considered from conception to conclusion. The requirement of the final product, its use, its durability, colour and cost all have financial bearing which need to be carefully considered.

The yeomen of East Kent were quite an invisible 'sort', not readily advertising their status, possibly due to Kent being invaded and conquered throughout history. Kent owes much of its individuality to these events, some having had more impact than others. Trade played an important part, due to the area's close proximity with Calais and the Continent. The East Kent yeomen were therefore open to a number of marketable opportunities which those in other

parts of the realm were not.[1] Refraining from being documented, the 'private' yeoman just worked hard to better himself and his family. Consequently, very little information survives about this 'sort', especially with regard to their clothes.[2] These would have been worn and repaired until there was no life left in them. Good quality garments were bequeathed for services rendered, possibly to a devoted relation or a faithful servant.[3]

Principally, clothing offered dignity and warmth; comfort and style took second place. Yet when establishing any cloth requirement, the end purpose is paramount. Of the natural fibres at the disposal of the yeoman, two have specific qualities which must be considered in the development of the cloths. A shirt of finely spun wool may irritate the skin depending on the breed of sheep; yet linen or hemp has smooth fibres producing a less irritant cloth. The wool would keep the wearer warm but could possibly promote overheating resulting in sweat, although wool is a non-conductor of heat, keeping a regulated body temperature. Linen and hemp absorb moisture, drying quicker than wool, keeping the wearer cool. With these fibres locally available, many contrasting cloths could be made.

Investigating the cloths recorded in yeomen inventories, out of 46 for Staple only 4 refer to a particular fabric.

> *Itm his old hose a canvas dublet a jerken of* russett *and black cote a hatt a payre of shoes* *xv s*
> *Itm his ij old ryset cassock a russet jerkyn a trusse iiii shoese* *xiiij s*[4]
> [Crambroke, 1582]

> *Item iii? Dyaper table clothes and a towell* *xxvi s viii d*
> *Item vi course table clothes* *xiii s iiii d*[5]
> [Dubesse, 1584]

> *Itm a peece of towne clothe* *iij s iiij d*
> *Itm a peece of newe wollen clothe of v yards* *xij s*
> *Itm a pillowe coate and a peece of newe lynnen clothe* *ij s vj d*[6]
> [Maye, 1594]

Itm his best cote and best jerkine	*xx s*
Itm his cloke	*x s*
Itm iij other jerkines and a frysse cassocke	*x s*
Itm ij payer of hosse and his doublet	*x s*
Itm iij sherte	*iij s*[7]

[Taylor, 1575]

Further research in the assizes revealed a number of different fabric names to help compare the limited evidence of named cloths above (Table 2). Huggett in her research also found there was very limited information about cloth and colour, with most references using the following or similar statements: 'his wearing clothes', 'all his wearinge apparrell as well lynnen and woollen' or simply 'his apparell lynen and wollen' [Huggett 1999, p 75].[8] Why was detailed information regarding the apparel not important enough to be included? It can be presumed, that yeomen knew their position in life, as did those around them. This position was accepted and there was no need for discussion.

The questions then arise, how each of these named cloths differs and subsequently, how they were created. Research continues to provide evidence on how cloths are produced to meet the requirements of each specifically named cloth. This is where the establishment of fibre preparation and yarn construction are important for the finished product.

The productions of samples follow the process of empiric and historic evidence. Previous writings do not reveal the practical and essential information about the handle of the cloth. In other academic works repeated theories and contradictions seem to prevail without practical substantiation.[9] The samples which accompany this work will produce tactile evidence of named cloths.

★ A number of the cloths mentioned in the following table were not financially available to the yeoman, mainly as their construction required fibres which had to be imported or because the finishing processes would have been expensive, so they will not be considered.

Name of Cloth	Description of items	No: of ref
Blanket	11 blankets, ref to 1 woollen	10
Broadcloth	1 pair of breeches, the rest as pieces/length	24
Buckram	3 Curtains	1
Calico ★	5 ells cost 3s 2d and 1 piece 3s 4d	2
Cambrick	3 [shirt] bands, 3 ruff bands, 2yds of cloth	4
Canvas	9 doublets, 14 pieces/lengths, 1 linen, 1 bag, 1 broad, 1 pillow and 1 handmade	30
Cheesecloth	10.5 yds valued at 3s 4d	1
Cotton	All pieces and lengths, some coloured	17
Crosscloth	80 recorded, 2 lawn and 6 holland	19
Damask ★	5 pieces and 9 yds	3
Diaper	1 sleeves, 33 tablecloths, 31 towels, 1 napkins	8
Durance	Several pieces and 2 aprons	2
Frieze	7 jerkins, 3 lengths, 3 gowns, 2 coats	14
Fustian	13 pieces/lengths [Milan, homes, jeans], 9 doublets, 2 pairs sleeves, 2 waistcoats, 1 swadband	27
Gorget ★	5 items	2
Grograme ★	3 ells of grograme lile	1
Holland	1 quilt, 3 rails, 18 pieces/lengths, 1 cushion, 3 neckerchiefs, 1 corner-kerchief, 1 handkerchief, 1 kerchief, 14 sheets and 3 aprons	28
Jersey	12 netherstocks and I pair of stockings	2
Kersey	28 pieces/lengths, 1 pair breeches, 1 mantle	27
Lawn	1 band	1
Linsey-wolsey	1 apron	1
Lockram	7 pieces/lengths, 1 apron and 2 kerchiefs	9
Puke	1 piece of cloth; possibly 1 gown may ref to colour	2
Russet	26 pieces/lengths, 7 cloaks, 6 petticoats, 2 silk, 3, breeches, 3 gowns, 1 coat, 1 jerkin, 1 pr venetians	45
Sackcloth	1 doublet, 3 lengths	4
Stammel	2 lengths, 2 petticoats	3
Sipres[cyprese]	3 pieces, 2 hat bands, 1 wok box	6
Taffeta ★	11 curtains, 7 lengths/pieces, 1 pr sleeves, 3 hats, 1 cloak, 2 kirtles, 2 mantles 16 pr garters, 10 valences and a purse	20
Twilling	2yds from a tailor	1
Velvet ★	2 caps, 1 hat, 1 kirtle 1 pr venetians, 1 gown, 3 capes, 1 purse, 4 lengths/pieces, 1 pr gaskins	13
Worsted	1 length, 3 kirtles, 1 smock, 1 doublet, 2 aprons, 1 jacket.	9

Table 2: Cloth names recorded in the Assizes.

4. 2 Do not make one fibre do the job of another

Therefore, in order to construct a sample from only the limited accessible evidence of existing fabrics appertaining to the East Kent yeoman during the sixteenth century, it is necessary to use all available written references to establish how the yarns were created, as well as using measurements from the fragments that are available.[10] This has led to the production of a sample using the four natural fibres; wool, linen, cotton and silk; which would give a good foundation for discussion and further trials. The nature of this 'gamp' is to establish as many variations as possible, researching them visually, practically and through the dyeing process. Results from these samples will extend the possibilities of further investigations. The sample would take the form of five different warp blocks of about 3" [7.6cm] using wool [prepared and spun in two different manners], linen, cotton and silk (Figure 24). By weaving this piece *'as drawn in*' or *'tromp as writ',* a pure block of each fibre could be achieved along with all the other variations. The 15" [38.1cm] square would show a 3" [7.6cm] sample of 25 different combinations – a good starting point for evaluating possible fabrics.

4. 2. 1 The loom

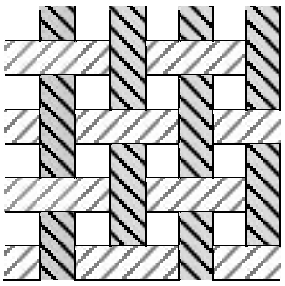
Having established fibres, spin and twist, the consideration of equipment to actually construct this fabric was the next decision. What types of looms were available? It is very easy to assume that in medieval times looms were very simple and it was only basic plain [tabby] weave that could be produced. In fact, by the fourteenth century, looms in England were quite complex and these had the potential to produce richly patterned cloths. This development had evolved from the rotation of 90° from a vertical loom to a horizontal treadle loom [the warp now being horizontal], and the invention of shafts and heddles, allowing the threads to be raised independently to make the shed. This facilitated the passing of the shuttle, freeing the hands and so making weaving much quicker. The 'Tomennesette' loom or Box Broad loom reduced the cost of cloth production because of this method, allowing one qualified weaver to pass the shuttle through the shed to an apprentice. These looms produced as much cloth as two narrow 'Osset' looms, requiring two qualified

weavers.[11] There is evidence the treadle type of loom was in existence as finds dating from the eleventh century have been gathered in Haithaby, North Germany and Gdansk in Poland.[12] It appears the treadle loom, a version of the horizontal type, which can be traced back to China and the silk looms, moved across to Europe and the Low Countries during the Middle Ages. By the thirteenth century, the loom had been fully developed and this 'man'- powered treadle loom has remained virtually unchanged to the present day. Development based on this loom, such as the 'draw loom', has enabled more complex patterns and different cloth construction to be produced.

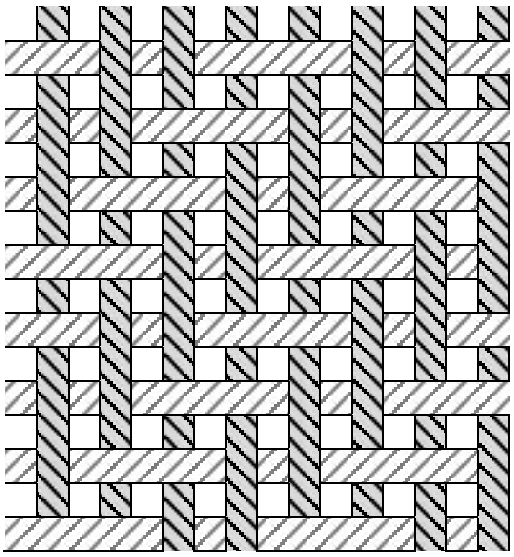
With this information, a decision had to be made as to, which type of loom was to be used. What type of loom did the yeoman have? It is obvious the looms available were very advanced in their ability to weave a multitude of patterns and cloths. However, the sample being produced was only 15" square and this did not warrant the use of a large foot loom. In addition, this piece of equipment was possibly too heavy to test the hand spinning. Would the process of laying, sleying, drawing in and beaming on the warp prove too much for the hand spinning? Therefore, a decision to use a four shaft table loom was made. It must be stated the heddles at this period would have been linen and not the chosen 9/16's wire. The latter although not authentically correct, would cause less friction on the yarns. Another point which should be noted is that, on a handloom, the shafts are lifted and on a *direct tie* foot loom they are pulled down. Therefore, weaving on opposites will produce the fabric the same way as the handloom but with the face of the cloth forming on a different side. This type of loom was a more likely candidate for home weaving. A *counter balanced* loom provides an equally open shed, with the depressed treadle pulling down the shafts and the remaining ones rising.

4. 2. 2 Choice of weaves

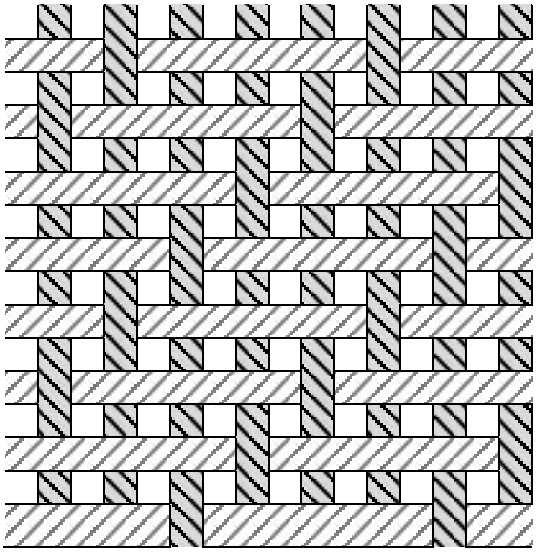
The use of the basic tabby, or plain, 1 over, 1 under principle was essential, as this would give as balanced a piece of fabric as possible and was a weave most commonly and easily performed (Figure 12). A four shaft loom was used with the straight entry which would enable both a tabby and twill to be achieved



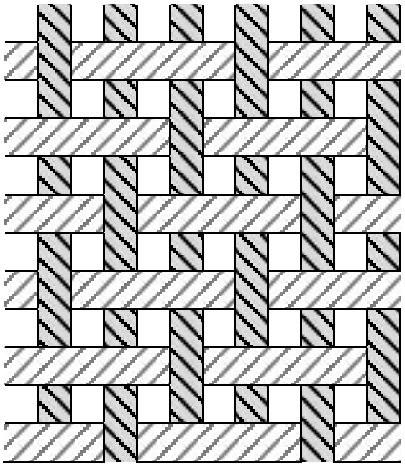
A tabby repeatable block.



2:2 twill repeatable block.



3:1 twill repeatable block.



2:1 twill repeatable block.

Figure 12: Illustrations of the basic weaves under discussion.

using one draw. The same yarn was used in both warp and weft in the pure blocks; the mixtures of different warp and weft combinations would then lead to further research (Figure 24). The next weave to consider was the twill [2:2 twill: over two under two, moving one space to the right on the next pick], with the characteristic diagonal stripe. References have been found to 2.2 twill and 3.1 twill, both of which can be obtained on four shafts (Figure 12). Other twills would require more or fewer shafts and a different threading (Figure 12 the 2:1 twill). Again, further consideration was needed to decide on the principal weave to be used. As the capabilities of the handspun yarn were as yet untested, the more common and balanced 2.2 twill was decided upon. Observations during the process of laying the warp, to passing the weft, revealed the robustness of the yarn and this allowed further consideration of different fabric weaves.

4. 3 Contemplating future work

With the completion of the sample, much useful data has been gathered. Initial expectations and concerns were low: would the hand spinning stand up to the rigours of being warped, sleyed and drawn-in, let alone the weaving process? However, the whole process performed remarkably well. There were less than 10 broken ends of the 310 total in the warp. Most of those occurred in the worsted spun wool which was most surprising; concluding there was not enough twist and the possibility that more grease would alleviate the friction. Although only the wool and silk had been hand spun, in reflection it would be perfectly feasible to contemplate hand spinning the linen. At this juncture the presence of cotton must be considered, the least relevant of the fibres, but included to show how a cellulose fibre reacts alongside the other fibres. With the introduction of cotton at the end of the period under study its inclusion is just as important for the development of textiles in the next century. It is very satisfying to be able to feel these fabrics and make comparisons. A misjudgement on the selvedge had been made, a reference found prior to weaving had referred to a rolled selvedge of plied ends - these ends were used but not doubled in the reed.[13] If this had been executed the selvedges would have been much firmer and would possibly have rolled. It will be necessary to execute the same type of sample with further refinements. The exploration of

spinning a Ryeland fleece as both a worsted and woollen yarn, needed to be considered, as did weaving with a greater number of finer threads. This would naturally lead to an investigation into different setts, each being a potentially beneficial use of research which proved to be equally informative, in a base cloth for dyeing.

The tabby weave sample produced much useful material. All but the linen worked well as a balanced cloth, although this particular sample fits the descriptions of a Buckram especially if it was to be used as a stiffener (Figure 13). Where the different yarns had been juxtaposed comparisons between the samples could be made with regard to the handle and drape; for example the linen warp with the worsted weft has a completely different feel to the worsted warp and linen weft i.e the former will not drape as easily as the latter. Concluding initial planning is vital for the end product to be successful. The *dentage* for the count of yarn is too low and should be increased, however the yarn itself should be constructed finer for another trial allowing for a greater number of threads per inch in the reed, [dentage].

The 2:2 twill sample is more encouraging containing a number of very satisfying results. The wool worsted warp and weft; the silk warp and weft and the woollen warp and weft are very pleasing cloths with a good balance. The linen has, on these samples, proved much too fine and produced a very open and unsatisfactory clothing fabric; it would certainly have benefited from more threads per inch in the warp and weft. However when considering the wide range of fabric names this loosely woven linen again could well have been used in the foundation of garments, interlining fabrics especially if it was sized or starched. The mixed warp and weft especially wool worsted and silk are intriguing, with a sheen that is so dominant, particularly with the silk weft (Figure 14). It is possible to imagine just a few picks of silk here and there or even a yarn of mixed wool and silk fibres being blended in the preparation process, boosting the cloth with luxury and making it quite special.

Figure 13: balanced open weave possibly that of a Buckram . linen warp and linen weft. Left: in grey state. Right: washed fulled version.

Figure 14: A grey state 2:2 twill, worsted warp and silk weft.

To conclude, the sample has given much evidence in a physical form. It has proven more samples need to be executed, especially with greater consideration to the spinning, finer yarns and the inclusion of the Ryeland fleece. The academic descriptions of fabric names are being compared to the tangible cloth, allowing decisions to be made by evaluating the feasibility of production alongside written evidence. It will be beneficial to make a number of these pieces to dye as a whole and compare how the dye is absorbed by each different fibre. Assuming the dyeing was undertaken in the domestic situation, it would have certainly been empiric rather than mathematically correct, with the temperature readings available to a chemist.

4. 4 Cloths: terminology through construction

Having established there was limited written evidence when researching the names of cloths available for the middling 'sort' during the sixteenth century. It was evident that research needed to incorporate a wider timescale. It is very clear much twentieth century literature concerning this evidence is contradictory. Description seem to be the full extent of the academic historian's research, with little understanding for the practical, i.e, woollen cloth made of worsted yarn. How **fine** was **fine** and what was **coarse**? What is the meaning of a mixed or *union* cloth? If we relate today's idea of this tactile quality, would it match that of the 'middling sort', five hundred years ago? Our expectations of cloth, clothes and fashions have changed dramatically over the years. Without any existence of examples of yeoman cloth, there is no true knowledge of their handle, colouring or drape. Hayward states, "The simple truth is that there are no known surviving garments from Henry VIII's wardrobe."[14] She continues to note that something may be found in the future; yet fabric items do not survive well and realistically we cannot rely on such a discovery.

Samples which have survived, from the Mary Rose, are central to this work. A number have been analysed personally, along with other scientific documentation, to help to visualize the quality and manner of production of the garment of the period. Arnold, in her studies of linen shirts, smocks and

neckwear for both men and women, detailed many linen items, giving the patterns and in some cases, the assessed amount of threads in the weave. Munich has a boy's shirt, dated 1550-60 with 72 epi in the warp and 92 ppi in the weft. Another shirt, which Arnold classed as fine, had 77 epi and 73 ppi, but she reports that the weave is uneven. Whereas a 1535-50 boy's shirt has 108 epi and 112 ppi, being classed as evenly woven.[15] The latter two have a discrepancy of 4 threads between the epi and ppi, so what is the reason for the unevenness? Was this due to the quality of the fibre or the expertise of the spinner? What deduction can be made from;

> *linen, firmly woven but quite coarse. The linen inside the neckbands is very coarse. The shirt weighs quite heavily in the hands.*[16]
>
> [Arnold 2008, p 69]

It must be stressed the ends per inch were determined by the thickness of the yarn, which had to be achieved by manual labour and in many cases these yarns were spun on a spindle. The dexterity of the spinner is of extreme importance in cloth production, as this ultimately enables the finer cloths to be evenly woven. Good quality line flax, well prepared and spun by the expert spinner, will result in the best quality yarn, culminating in the best quality linen shirt (as described above) - but what quality was available for yeomen and those of the 'middling sort'? They would not have had the means to have purchased this best quality, so what type of linen covered their nakedness? Markham states:

> *she [the housewife] must learne also how out of her own endeavours, she ought to clothe them outwardly and inwardly for defense for the cold and comeliness to the person.*[17]
>
> [Markham 1625, p 154]

4. 4. 1 Fragments from the silt

The Mary Rose Trust offers a wonderful find of a number of different cloths all pertaining to the 'middling' or 'lower sorts'. Although the pieces in some cases are rather small and have been immersed in sea water for over four hundred years they provide a good starting point for research. This environment was not conducive for the survival of bast fibres, but fortunately there are two small remains: one was the hempen sail cloth which had been folded; the piece that survived was a fragment from the middle of the folded mass of sails

Figure 15: MR 81 A 4919: Fragments of the hemp sails, possibly a spare set which had been folded for storage. Courtesy of the Mary Rose Trust.

Figure 16: MR 81 A 4693/4: Part of a jerkin with a fragment of a linen lining or decorative tape still attached to the seam allowance on the bottom of the piece. Courtesy of the Mary Rose Trust.

(Figure 15). The other fragment was a small piece of linen, used either as a lining or a linen piece of decoration (Figure 16). Again, this was protected being sandwiched between the wool of the outer garment. Disintegration of these fibres has therefore been reduced due to this compaction, leaving small samples to view.[18]

Wool seems to have survived relatively well, leaving 27 positively identified items of clothing out of about 178 woollen textile fragments, many from the same garment. Twelve individual pieces were personally examined to establish a number of criteria; the information is recorded below.

Ref Number	Twist direction (count) warp – weft	e p i	p p i	Content, weave	Nap	Fold and twist
81 A 1233	S S	8	9	Wool – plain	Nil	2 Z
81 A 4919	Z Z	33	20	Hemp – plain	Nil	
81 A 4744	Z (5) Z (5)			Wool – 2:1 twill	Nil	
81 A 4693	S S	16	12	Wool – plain	slight	
81 A 4574[1]	S(14) S (14)	32	32	Wool – 2:2 twill	Nil	
81 A 4574[2]	S S	32	32	Wool – plain	Yes	
81 A 4258	S S	20	26	Wool – plain	Nil	
81 A 2995	S S	28	28	Wool – plain	Yes	
81 A 2539	Z (14) Z (14)	9	9	Wool – plain	Yes	2 S
81 A 2480	S S	36	30	Wool – plain	Yes	
81 A 1669 [1]	S S	32	32	Wool – 2:2 twill	Nil	
81 A 1669 [2]	S S	28	24	Wool – plain	Yes	

Table 3: Analysis of finds examined from the Mary Rose.

For the fragments studied, a document sheet has been compiled and included in Appendix 2.

The information established through this research has clarified that the majority of single spun yarns were of the ‘s’ twist with equal division of ‘s’ and ‘z’ for two fold each being plied in the opposite direction. A quarter of the samples viewed were of a twill construction with two of them a 2:2 twill and one a 2:1 twill. The remaining three quarters were of the tabby or plain weave. No sample had a pattern and only one showed decoration through colour: a

check.[19] When comparing this with Gardiner's 'Catalogue of Textile Fragments' [Appendix 2], out of 167 wool fragments the majority are of plain or tabby weave; 45 refer to a twill weave, of which two are 2:1 twill.[20] However, even this appendix shows a concern: under the category of fibre is placed velvet, but was this velvet of silk or wool worsted? There are a greater number of fragments noted in Gardiner's appendix, which is due to every fragment being analysed rather than one per garment. Therefore the above table of 12 produces a reference to one garment rather than that of possibly 8 pieces of the same garment with similar details.

Personal theoretical knowledge has been noted as well as the information gathered being analysed. By using tacit knowledge gained through spinning and weaving these samples, the possibilities of producing different cloths will be established, along with clarification of a number of written anomalies.

Summarising, a basic tabby weave was predominate for the general 'domestic' type cloth. Extending the work gained from the initial sampler, a cloth has been produced to compare with a fragment sourced from the Mary Rose (Figure 17). A Ryeland fleece, being a short staple, was used to produce a woollen 's' twist yarn, with 8 twist per inch [tpi]. As this original had been napped on one side, it was decided to dye this sample in the piece before raising the nap. The 24 epi warp was constructed with the ideal shrinkage, bringing the cloth to 28 epi, that of the Mary Rose piece. The original fabric may have suffered further shrinkage or distortion due to its exposure to sea water. This sample was woven on a four shaft table loom, drawn in on a straight entry. Unfortunately, the piece did not achieve the correct ppi, only achieving 15-18 compared to the 24 expected; yet the 27 epi was comparable. The cloth was raised on one side and the result was a pleasant handle, being very soft and warm due to the quality and preparation of the fleece and to the nap, which had not been shorn (Figure 27). It was concluded that to produce a more balanced cloth, the weft yarn needed to be finer but the dentage to be kept the same.

Figure 17: MR 81 A 1669: Two fragments one tabby weave and one a 2:2 twill. Courtesy of the Mary Rose Trust.

Figure 18: MR 81 A 4693 Red and yellow check. Courtesy of the Mary Rose Trust.

Figure 19: Fustian; linen warp and woollen weft, possibly the forerunner to Fustian of Norwich.

Figure 20: Fustian: Linen warp with weft of Cashmere and linen binder (left). Linen warp with weft of Romney woollen and Romney worsted binder (right).

A red and yellow check also found on the Mary Rose was the basis for the next experiment (Figure 18). Only a small piece was viewed, which left a query over the repeat. With no evidence of a selvedge the existing piece was carefully analysed. The various alternative repeats were considered and a decision was made to weave as 'drawn in'. As this piece had very little raising on the surface, it was concluded it had not been napped. Research has revealed predominately that worsteds were not napped, which reinforces empiric knowledge.[21] A worsted 's' spun yarn, 9-10 tpi was produced, dyed using madder for the red and golden rod (Soldago) for the Yellow.[22] The resultant cloth however was much closer in weave than the original and would require a slightly thicker yarn. Through the weaving process it was obvious that there was too much twist so less tpi would be more suitable.

4. 4. 2 Ambiguous fustian

Fustian cloth was a popular name for a number of varying fabrics; records note it being used for doublets.[23] The term appears to be generic for a number of different types of cloth, ranging from some with a pile, or the velvet type, to a plain tabby cloth of mixed fibre construction, causing much confusion over the definition of a 'fustian' cloth.[24] Aspin has noted fustian weaving as reputedly consisting of a cotton weft and linen warp and the ability to weave this cloth has been attributed to the weavers of the Low Countries who settled in East Anglia, possibly in Norwich in the sixteenth century.[25] With numerous terms for one cloth, a problem was presented in knowing the authentic construction to use [a more comprehensive discussion can be found in the glossary of Fabric Names]. It was decided to start by creating a cloth of tabby weave with a 'z' spun linen warp and 's' spun woollen weft. The epi attempted was circa 36 ppi and to be at least 20 tpi. Previous experience had demonstrated how difficult it had been to beat back the weft into the warp. Sett as a straight entry in a 14 dent reed, the warp was drawn in. A Romney fleece with a medium length staple was used, being carded and loosely spun with a 's' twist, 8 tpi. The decision to loosely spin the Romney was based on the theory; to beat back the weft hard into the warp less resistance was needed than that of a highly twisted yarn. The effect was very successful resulting in a fabric substantially

well balanced with 38 epi and 32 ppi in the grey state (Figure 19). Continuing from this work further samples were completed using the knowledge learnt. The same sett was used to produce a sample close to the definition of Naples Fustian made of a jersey [worsted] yarn, so shiny it looked like silk, on a linen warp, the jersey was woven to create a pile which could all be uncut, or cut to create a pattern. [26] More samples were woven to establish a form of corduroy and 'pile' effects, either cut or not (Figure 20). Research has not been conclusive on the yeoman's capabilities of weaving this type of cloth and should be pursued.

4. 4. 3 Lovely linen

Another important garment was the smock or the shirt. All classes wore these as they were the undergarments and the night wear, being 'wrought' with thread as the 'sort' allowed. The basis of this garment was the same for all 'sorts' the only difference being the quality and decoration, this pattern holds true for most garments. All shirts were made of linen or hemp, only the quality altering.[27] A number of smocks and shirts of the nobility and gentry can be viewed. Another likely candidate for the yeoman's wardrobe seems to be that of Canvas and Sackcloth both of which have a number of plausible descriptions making them suitable for the shirts of the 'middling sort' (see Glossary). The terminology again is rather problematic with a number of ambiguous fabric names being used for shirts. One of better qualities of linen cloth appears to be that of Cambrick, considered very fine white linen, possibly from France.[28] This seems to be followed by Holland, again a fine linen cloth used for shirting with a coarser version for domestic wear.[29] Yet what constitutes fine; does 112 ppi fit such a category?

The linen samples completed used predominately a commercially spun yarn, for reasons previously noted (Evaluating Fibres), especially in the warp. To obtain the number of epi as discussed by Arnold was quite a task. A 40's and a 20's were used to consider the difference in cloth, with a yarn that was half the count of the other. Both caused a number of difficulties with the drawing in and beaming on, but it worked better when very wet (Figure 21). Weaving was

Figure 21: Linen 40's, hand woven on a 4 shaft table loom, demonstrating the amount of water which was needed to maintain the ability to weave.

Figure 22: A shed made with the warp dry; illustrating how the fibres all became attached to each other and when the reed was drawn back the strain on the threads resulted in breakages. The water greatly reduced this problem.

very challenging because the work needed to be continually saturated (Figure 22). A number of samples were woven on these warps to demonstrate the possibilities available. More success resulted from the white 20's linen than the 40's, mainly due to the thickness. The first warp using 40's linen attempted to create a balanced cloth in tabby. Unfortunately, this was not achieved but lessons were learnt: it was easier to weave when the warp was damp or wet.

The final piece resulted in less ppi than when woven dry. The second warp using 20's linen was based on the first, except that the weft was white 40's, anticipating a higher ppi. This was not successful. Further samples were completed using twill variations and a hopsack, which produced very interesting results. The final sample used a weft which was handspun, trying to emulate the thickness of the commercial linen. Evidence from this work has tried to demonstrate some tactile qualities of the linen shirts, although the thread counts are rather different to Arnold's. Cloths referred to, such as, Cheesecloth and Buckram/ Lockram, became apparent in the gamp. The latter two have many similarities, being woven with a more open weave than the rest of the gamp. When stiffened these cloths could ultimately be used as stiffeners within garments. [30]

4. 5 The final phase

The final operation to complete the cycle of cloth production is that of *fulling*. A number of procedures have been devised and perfected over centuries, culminating in different techniques to complete this process. Generally, fulling techniques have changed little from the time of the Romans. Where running water turned a water wheel and powered heavy wooden beaters, continually falling and lifting upon the wet cloth.[31] Other processes soaked the cloth for hours or days on end, with labourers pounding it with their feet. Greene states the main purpose of fulling cloth 'is to shrink and felt together the fibres and threads that compose it' [Greene 1886, p 16], giving good handle and drape.[32] Timmerman maintains that this process does not only give, the fibres and subsequent cloth added strength, but the foundation for other finishes

required to perfect the cloth.[33] Fulling is self explanatory: the holes between the threads require 'filling'. The cloth is deliberately shrunk using three 'agencies'.[34] On contemplation, this 'closing of fibres' was going to answer the ambiguity of some cloth terminology, especially amongst the linens.

When a cloth is removed from the loom it little resembles the intended article and is visually disappointing. Langland wrote in 'The Vision of William concerning Piers Plowman' a man who was prepared to clothe himself and considered cloth in its grey state to be lifeless,

> *Cloth that cometh from the weuyng- is nougt comly to were,*
> *Tyl it is fulled vnder fote – or in fullyng stokkes,*
> *Wasshen wel with water – and with taseles cracched,*
> *Ytouked, and ytented – and vnder tailloures hande.*[35]
>
> [Langland 1886, p 466]

The fulling process employed for finishing can render a fabric softer, suppler and denser as well as more pleasing to the eye. Alternatively it can leave the cloth stiffer, shinier and more durable. Much is dependent upon the sett of the weave: shrinkage will be greater in the warp. About 20% is the average rate.[36] However, Munro states that a particular cloth from Bruges in 1458 had an overall shrinkage of 56%, along with a Ghent broadcloth which was shrunk by 54%.[37] A rudimentary description of the historical process involves firstly, the immersion in water. 'Wetting' is important and can be aided by agents such as soapwort, Mesembryanthemum or fullers earth [*kimolean*]. Acidity renders the fibres harsh and brittle but alkali softens. The water is applied to the fabric and gradually heated, agitation and beating were applied to the cloth by the means of either the human foot or wooden paddles.[38] All of these, in their turn cause, shrinkage. After a period of variant timing, dependant on fibre type and required finish, the cloth is rinsed in cold water. Felting is an extension of this process, preferably using natural soap, giving superior quality felt. The surface of a fulled cloth bears a resemblance to that of felt.[39] Bentley claimed that, in Yorkshire, the weaver lay his cloth on the floor and trampled it with urine before taking it to the fulling mill. However Gordon reports a different picture of the process in Europe 1500- 1750 A D, noting, according to Singer, that linen and cotton were washed with soap or potash while cheaper wool was washed with fuller's earth, pigs' dung or stale urine.[40]

It must be remembered that both linen and hemp also required fulling to help soften the fibres, especially those which would be worn close to the skin. It is well known that a linen cloth becomes more tactilely pleasing as it ages. Grey state linen is not soft or white; it needs to be finished, which includes a number of processes. The fulling part of the finishing process for these bast fibres was carried out by beating or rubbing the cloth with stones or glass rubbers. To whiten these cloths, the traditional method required the linen cloth to be laid out in the sun for about eight weeks; sixteen for a heavier weight. Weather conditions required the wetness of the cloth to be monitored to avoid drying out or rotting. Steeping the cloth in hot water '*lye'* solution [bucked] and later in a fresh solution for eight days was one method of obtaining whiteness.[41] Other methods involve the use of bleaching agents: soap stone, French chalk, fine fuller's earth and fumigation with sulphur. All were time consuming. Washing followed, then steeping in buttermilk, treading and tentering.

Some of the fabrics in the gamp were of loose or thinner construction than others and would require finishing or fulling. To embark on any of these laborious finishing techniques would, obviously, have taken a considerable amount of time. This piece of weaving, 15 inches wide with various components, was fulled within the restraints of the piece.

The recording of a number of cloaks and blankets led to one particular finishing process being tried and tested. A small sample was woven to consider the process of '*napping'*. The dampened cloth was stretched firmly on a wooden board and brushed with a boffin brush (the yeoman would have raised the fibres with a teasel brush) on one side only. [42] Disappointingly nothing happened; then, after continually brushing with further pressure, the fibres began to be raised. The raising of the fibres to form a fluffy surface obscured the underlying weave (Figure 27).

In drawing this chapter to a close, the contradictions of the sixteenth century fabrics and confusing terminology still prevail. The perspective taken by the

practitioner is different from that of academics who might not be appreciative of the intricate details of production. It is through the practical process and embedded empiric knowledge, that these contradictions are highlighted.

When referring to a fragment found at excavations in the Marlowe car park and surrounding areas, Pritchard states that this

> *is a rare survival of a light weight worsted woven in an eight shaft twill, a fabric that can be classified as a 'new drapery'.*[43]
> [Blockley, Blockley, Blockley, Frere and Stow 1995, p 1177]

Although this find is very useful, some of the information is a little misleading. A mistake is referred to in the drawing in; but was this a mistake, or an intentional juxtaposition of the threads to form a pattern? However Pritchard claims,

> *This was probably caused by entering two successive heddles in the wrong order when tying the warp on the loom;*
> [Blockley, Blockley, Blockley, Frere and Stow 1995, p 1179]

This suggests a crossed thread.[44] If this were the case, a shed would not be easily achieved at the area of the crossed thread. When weaving was attempted, the crossed thread would have broken or skipped in the weave and the error subsequently been found.

Pritchard's article continues to mention the complexity of worsted and jersey, yet the description given is counterproductive and would certainly not produce the smooth, glossy quality yarn suggested. Thomas Caesar in his notes states "Worsted is spun in his oile. Jersey is washed out of his oile and spun clean" [Mann 1973, p 140].[45] Scouring completed after combing the fibres would result in unparallel fibres, due to the scouring process removing the oil. Therefore, scouring cannot have taken place before combing, as this would not have ensured the fibres were laying parallel to produce the type of yarn rival to silk. Yet, if the sheep was washed prior to shearing the fleece would be devoid of a certain amount of grease. Best states;

> *Many men will clippe their sheepe the third day after that they are washed; and others againe will lette them goe fower or five dayes; and*

> *some almost a fortnight before they clippe them; but it is to bee considered of accordingly as men finde theire wool to be risen.*
> [Best 1641, p 19]

This implies the fleece was clean when it was shorn.[46] Was this the basis for the jersey yarn?

As the local inventories have shown, there were a number of wheels and quantities of raw hemp and linen, with 30% of households owning one or two sheep; in fact three owners had 480 sheep between them. The annual by-product is one fleece. This amount of fleece would produce circa 2160 lbs of usable wool, based on a Romney fleece weighing 6lbs less an estimated wastage of 25% (1½ lbs) by the total amount of fleece. However, Bowden states the weight of the average English fleece in the mid sixteenth century was 1.9lbs; he does not state if this is all usable quality. [47] Contrarily, Trow-Smith implies the Romney ram fed on the marsh pasture could produce a clip of up to twelve pounds.[48] An average overcoat in cheviot weighs about 3lb, a jacket of lambswool 2lbs and a pair of breeches 2lbs. Most households therefore had the 'ingredients' for making cloth; it was how these fibres were constructed into yarn and then subsequently cloth, which made the differing fabrics.

Through extensive note taking and analysis of the yarn throughout production, a quantity of resource material has evolved. This can be used to reinvestigate and explore further possibilities and expand tactile knowledge, which cannot be experienced in any written form. To comprehend fully this research, the written word needs to be accompanied by the samples to use the senses available. To photograph objects which are dependant on tactile appreciation has caused concern. An initial approach (to disregard any photographic evidence of these samples) produces a problem for the reader. Therefore the photographs are solely as illustration. They are not a substitute for the visual experience of the actual pieces.

Figure 23: A loom, Peniarth, MS 318 fol 70. By permission of Llyfrgell Genedlaethol Cymru/ The National Library of Wales.

Worsted wool warp Worsted wool weft 100%	Linen warp Worsted wool weft	Silk warp Worsted wool weft	Cotton warp Worsted wool weft	Woollen wool warp Worsted wool weft
Worsted wool warp Linen weft	Linen warp Linen weft 100%	Silk warp Linen weft	Cotton warp Linen weft	Woollen wool warp Linen weft
Worsted wool warp Silk weft	Linen warp Silk weft	Silk warp Silk weft 100%	Cotton warp Silk weft	Woollen wool warp Silk weft
Worsted wool warp Cotton weft	Linen warp Cotton weft	Silk warp Cotton weft	Cotton warp Cotton weft 100%	Woollen wool warp Cotton weft
Worsted wool warp Woollen wool weft	Linen warp Woollen wool weft	Silk warp Woollen wool weft	Cotton warp Woollen wool weft	Woollen wool warp Woollen wool weft 100%

Figure 24: Gamp illustrating the variants achieved in one sample

Fibre	Romney Worsted	Linen	Silk	Cotton	Portland Woollen
Warp epi	24 (23)	24 (23)	25 (22)	24 (24)	24 (22)
Weft ppi	25 (24)	25 (24)	28 (26)	26 (23)	23 (21)

Table 4: The rate of shrinkage for each element of the sample. The figures in the brackets are prior to washing.

[1] CAMPBELL, *The English Yeoman.* p 192
[2] Of the inventories and wills examined only 7% state being that of a yeoman. But many of them have goods well over £100
[3] '**Itm** I geve more to my two daughters to eyther of them a flockbede and two paire of sheettes two platters and two pewter dishes and two sausers to be payd to them at the dayes of ther mariage.' C.C.A. PRC 32/35/120b John Dubesses
'Itm I geve unto the aforesaid Thomas one blackcote one russet jerkin one canvas dublett a payre of russet brtehes a payre of netherstock one olde hatt one payre of shoes…... **Itm** I geve unto John Barker my best cloke my best cassoke my black dublett my best breches my best hatt. **Itm** it is my mind that one christening sheete remayne equally between Elizabeth Baker Silvester Apherye and Thomasine Colly the daughters of John Colly.' C.C.A. PRC 32/34/220 Stephen Crambroke.
'Itm I will to Simon Taylor one seame of barley to be paid to hym within thre years next after my decease and my cassock….And also I geve to William Taylor a slevles wolle and a payre of breahes' C.C.A. PRC 32/34/249a Thomas Baxe.
[4] C.C.A. PRC 21/6/98 Stephen Crambroke
[5] C.C.A. PRC 21/6/235 or 548 John Dubesses
[6] C.C.A. PRC 21/13/93 Thomas Maye
[7] C.C.A. PRC 21/2/288 Thomas Taylor
[8] HUGGETT, Rural Costume. p 75
[9] The following quotations will show how the written evidence for one particular fabric, Scarlet, varies. KERRIDGE, E. (1985) *Textile Manufactures in Early Modern England.* Manchester: Manchester University Press. pp 4: 'The carder brushed a sliver of wool …until all the several strands were inextricably entangled into a whole, so that short fibres could be spun into a strong yarn from which a soft faced cloth could be woven….these new carded cloths were a great novelty and at first were given the distinctive name of 'pukes', 'pewkes', puuc or puiklakenen. One excellent type of puke was the scharlaken, escarlate, scarlatto or scarlet, which was cloth dyed scarlet in grain with kermes…'
HAYWARD, *Rich Apparel.* p 386: 'Scarlet a fine quality woollen cloth and a red colour.' How fine is fine?
MIKHAILA, N. and MALCOLM-DAVIES, J. (2006) *The Tudor Tailor.* London: Batsford. p 36: 'Scarlet, Broadcloth of the highest quality; dyed in kermes, usually red. Used for petticoats, waistcoats, hose, gowns, cloaks, linings.'
CHANNING LINTHICUM, *Costume in the Drama.* p 88: 'Scarlet.. it never became cheap: first due to it being a fine worsted cloth; second, because the red scarlet was made of wool dyed in the coccus ilicus.'
HAYWARD, *Dress at the Court.* p 435, classes Stamin-Stammel as 'a fine woollen cloth' in contrast CUNNINGTON, and LUCAS, *Occupational Costume.* p 331, classes aprons as 'coarse woollen cloth'.
[10] There are very few which refer to the yeoman or any specific dates, but the Mary Rose is obviously a wonderful source. Here the whole ship, crew and cargo, can be dated as a whole.
[11] KERRIDGE, *Textile Manufactures.* p 11
[12] CROWFOOT, PRITCHARD, and STANILAND, *Textiles and Clothing.* p 22
[13] Ibid. pp 47-48
[14] HAYWARD, *Dress at the Court.* p 37: Hayward records the English had a tendency to recycle their clothes rather than collect and store as other monarchs did.
[15] ARNOLD, *Patterns of Fashion 4*. pp 65, 71
[16] Ibid. p 69; re 1567 Shirt worn by Nils Sture which is now housed at Upsala Cathedral Museum.
[17] MARKHAM, *A Way to get Wealth*. p 154
[18] The sail cloth was a large amount of sails folded and stored, MR 81 A 4919. The piece of linen lining or trimming, MR 81 A 4693
[19] MR 81 A 4693: Red and yellow check fragment.
[20] GARDINER, *Before the Mast.* Appendix 2 pp 671 - 676

[21] The point of the worsted yarn is to produce a smooth yarn with the fibres laying parallel to each other. The yarn, being smooth and silky, not trapping air and being cool to wear, is ideal for the summer and warmer weather. To raise the nap would be counter productive to the type of spin.
[22] It has proved extremely difficult to grow weld and although research has concluded weld was prolific in the area, this was not personal experience. However another plant, Golden Rod (*Soldago*) which now grows prolifically in the area, was used as an alternative due to it apparently being introduced to England during Elizabeth's reign for medicinal purposes. Financially, it was a disaster, as the plant grew wild and so could not command a high price.
[23] Doublets, the main garment for men and boys, could be made with or without sleeves.
[24]An article by SYKAS, P. (2009) 'Fustians in Englishmen's Dress: From Cloth to Emblem.' *Costume* (Vol 43) pp1 -18: deals with the Fustian over a wide time scale and tries to put a more accurate definition to the term 'Fustian'.
[25] ASPIN, C. (1981) Reprint 1984 *The Cotton Industry.* Aylesbury: Shire Publications p 3
[26] www. norfolktextiles.org.uk/info/research-resources/glossaries accessed 17 February 2007
[27] ARNOLD, *Patterns of Fashion 4*. p 5
[28] MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 36
[29] ASHDOWN, C. *British Costume during Nineteen Centuries.* London: Thomas Nelson and Sons. p 361
HAYWARD, *Rich Apparel*. p 383
[29] CHANNING LINTHICUM, *Costume in the Drama.* pp 97/8
MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 36
MEE, The Clothing of Crayforde. p 40
[30] GROSICKI, Z. (1975) *Watson's Textile Design and Colour; Elementary Weaves and Figured Fabrics* 7th Edition. London: Newnes Butterworth. p 317
[30] CHANNING LINTHICUM, *Costume in the Drama.* pp 103-104
MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 36
MEE, The Clothing of Crayforde. p 40
[31] GORDON, B. (1982) *The Final Steps* Colorado: Interweave Press Inc. p2
[32] GREENE, F. (1886) *Practices in Finishing Woolens and Worsteds.* Philadelphia: The Textile Record. p 16
[33] TIMMERMAN, J. F. (1909) *Woolen and Worsted Finishing: A Practical Manual.* Chicago: American School of Correspondence. p 17
[34] Ibid. p 17
[35] LANGLAND, W. (1886) *The Vision of William concerning Piers Plowman.* Oxford: The Clarendon Press. p 466 B Passus XV line 444
[36]GREENE, *Practices in Finishing*. p17
TIMMERMAN, *A Practical Manual.* p 21
[37] JENKINS, *Western Textiles I.* p 205
[38] GORDON, *The Final Steps*. pp 2-3
[39] CLAESSEN, M. (1981) *Felting: A Manual for Felting Wool to make Clothes or Other Objects*. Holland: Louet. p 2
[40] GORDON, *The Final Steps.* p 3
[41] MARKHAM, *A Way to get Wealth*. p 173
GORDON, *The Final Steps.* p 7
[42] Ibid. pp 10-11
[43] BLOCKLEY, K. BLOCKLEY, M. BLOCKLEY, P. FRERE, S. and STOW, S. (1995) *Excavations in the Marlowe Car Park and Surrounding Areas. Part II The Finds.* Canterbury: Canterbury Archaeological Trust. p 1177
[44] Ibid. p 1179
[45]de MANN, J. (1973) Documents and Sources V: A Document regarding Jersey Spinning in the P.R.O. *Textile History* (Vol 4) p 140
[46]BEST, *Rural Economy.* p 19

TROW-SMITH, *English Husbandry*. pp 78-79
[47] BOWDEN, *Trade in Tudor England*. p 27
[48] TROW-SMITH, *English Husbandry*. p 161

5. Colour Palette.

"He wears ruffet clothes…"

[Thomas Fuller][1]

"He will come to her in yellow stockings, and 't is a colour she abhors; and cross-gartered, a fashion she detests:"

[William Shakespeare][2]

Historically, colour was used as a symbol of 'sort', or social standing within the realm through sumptuary legislation.[3] To wear certain cloths and colours from a higher ranking class than one's own was deemed unlawful, being penalised by a fine, forfeiture of the article in question or, for the 'lowering sorts' imprisonment in the stocks for three days.[4] Henry VIII in 1536 even prohibited Galway, a town in Ireland, from having any garments dyed in saffron; this in turn resulted in an Irish Act forbidding the Irish to wear certain garments also coloured with this dye.[5] Therefore, colour in the sixteenth century differed considerably from today's experiences, understanding and religious connotations.

For this research it is intended that a colour palette for the yeoman in East Kent, during the sixteenth century, be established through the evidence available in inventories and wills. When considering the sixteenth century there is a misconception, the colours used by the 'lower sorts' were dull and drab. This is evoked by general terminology for historical colour such as, 'drab', 'puke', 'rats' and 'sad'.[6] This may well be a fair description of the general 'work' attire, yet a number of yeomen are known to have had their 'best cote' or 'best jerkyn' worn for weddings and special occasions: these could be coloured to distinguish them from the work wear.[7] Harvey implies that the medieval world through to the early modern was one of colour, as depicted through the illustrated manuscripts. Not all colours were available however: black was a difficult and expensive colour to obtain, and generally used for effect, by making a positive statement by the wearer.[8]

Paintings and other artefacts have been subjected to the ravages of time, fading and accumulated dirt concealing the reality beneath. These processes have either temporarily or permanently destroyed the original colours of the initial pigments. Garments have suffered a similar fate, most not even surviving the test of time. Thus there is little evidence of a sixteenth century palette.

Great woollen tapestries hanging in manorial houses are a testament to this process of destruction or distortion. They all have dominating blue hues especially in the areas where there should be green foliage. The reverse side of the tapestry shows the preserved colouring in all its glory. Green is created by dyeing first with yellow [usually weld] then over dyeing with blue [usually woad]. As woad is a more light fast dye than weld, the yellow colouring is slowly destroyed by light leaving behind the stronger light fast blue.[9] At Knole in Kent, an armchair dating from 1680 has been upholstered using a piece of un-faded cloth found underneath a section of the seat, protected from light since it was originally made, this shows the real colours of the coverings as they appeared when new (Figure 25). [10] These colours are bright, clear and intense. Although this example is outside the remit of this study, in terms of both time and of the social 'sort' it appertains too, it demonstrates within the area of furnishing the quality of colours that were possible. Another valuable piece of evidence, proving natural dyes can produce deep colours, is a piece of checked fabric found in the Mary Rose (Figure 18). The original intensity of colour is difficult to ascertain due to the length of time the fragment has remained in silt and sea water, because both have helped destroy the true colour of the original piece. Lumps of silt and mud can still be seen at the bottom of the fragment.

To establish a palette appropriate to the different 'sorts' in sixteenth century society from a minimal amount of original artefacts involves making a conjecture. Once again, written evidence has been the guide.[11] For instance examining wills and inventories, an assessment can be made of people's adherence to, or evasion of, these sumptuary laws by carefully changing the name of the colour. For example, blue can be, 'sky' or 'azure'; red. 'carnation',

Figure 25: Repaired arm of a 1680 chair at Knole, Kent, depicting the colours of the original fabric. Courtesy of The National Trust.

'crimson', 'turkey red' and 'stammel'; each term having certain associations to social 'sort'.[12] A blue coat was valued between 3s 4d (1584) and 16s (1563) and was often the colour of livery priced at 10 s (1583). A 'sky' cloak was valued between 10s (1575) and 16s, (1582) but an 'azure' 'piece of woollen cloth' was valued at £3.00 (1582), with an 'azure' cloth of two ells valued at 13s 4d (1579). Baldwin states that persons;

> *who have an income of £100 per year …as well as the sons and heirs apparent of knights and of men who posses an income of 300 marks a year, and such persons as themselves have an income of £40 ….will not be permitted to wear any fabric which is scarlet, crimson or blue in colour.*[13]
>
> [Baldwin 1926, p 159]

Therefore it is possible that a 'sky' or 'azure' coloured cloak was acceptable. With yeomen, or the 'middling sort', being the subject of this research, it is essential to understand the variety of fabrics and colours to which they would have had access. Outer garments constructed of wool, either of woollen or worsted cloth depending on the use of the garment were the norm.[14] Yet undergarments would have been of linen or hemp, possibly produced locally within the surrounding parishes.[15] Arnold makes the point that everybody would have undergarments of linen, the only difference being the quality.[16] Pure linen cloth remained un-dyed, in its natural state; this research found no mention of any linen article being coloured, only a reference to 'white'.[17]

5. 1 Establishing the colour palette

The sumptuary laws dictated the colour variation for wearing apparel per 'sort'. Yet this does not always seem to have been adhered to as rigorously as perhaps the government would have appreciated. Nor does the law about colour appear to be as clear cut as the regulations concerning cloth.[18] To establish the general attitude to colours, inventories have been essential to this research.

Staple, the centre of this research, has 46 available inventories ten of which mention certain 'painted cloths'. These were characteristic with the 'middling sort', mainly in the southern part of the realm. Inexpensive pigments were used, including red and yellow ochre, red lead, verdigris, lead white, lamp black and weld yellow.[19] The wealthiest yeoman would have a woven tapestry or carpet, while the rest would have a painted cloth hung in the hall.[20] These colourful items, being the forerunner to wallpaper, gave protection against draughts and covered bare stone or unplastered walls. Adding colour and comfort to interior decoration they often depicted scenes from mythology or the Bible.[21] The base cloth was made of coarse linen or hemp with a very obvious weave, possibly in order to replicate the tapestries. They were cheap to produce, which is why they appear regularly in wills and inventories of the 'middling sorts'.[22] Harrison's *Description of England* states:

the walls of our houses on the inner sides in the like sort be either hanged with tapestry, arras work, or painted cloths, wherein either divers histories, or herbs, beasts, knots, and suchlike are stained or else they are ceiled [paneled] with oak of our own, or wainscot brought hither out of the East [Baltic] countries, whereby the rooms are not a little commended, made warm and much more close than otherwise they would be.[23]

[Harrison 1994, p 197]

These painted textiles were more vulnerable than tapestries and plain cloth due to the painted surface which, when rolled or stored, would crack, damaging the fibres and exposing them to the environment, causing them to perish rapidly. As trends changed, so did the cloths, which meant that they were often discarded or cut up for other uses. Plain woollen cloth was also a common article used for decoration and comfort, in the form of bed hangings.

References to coloured apparel, however, are very limited: 'i black devonsher carrsyier apron', 'i whyt lynnen aprone', 'black cote', 'red petticote'.[24] The red petticoats were mentioned in two separate inventories, both belonging to the goods and chattels of male testators. The inventories of three local weavers did not record any coloured cloths or anything other than the common domestic cloths typically mentioned.[25] Another inventory, that of Humfrye Mekins, 1591, from an adjacent village, who is believed to have woven or supplied cloth, notes the following with an appropriate value: [26]

Figure 26: Detail of woad dyed gamp illustrating the colour take up difference on wool (four squares in corner of picture) and linen (100% linen square in the centre).

Figure 27: Sample illustrating one side napped to obscure the weave. Sample dyed in spent woad leaves.

Itm iiij yards and one quarter of black freeys	*vj s*
Itm v yards and di of murrey cotton[27]	*iij s viij d*
Itm xij yards and di of greene cotton	*viij s iiij d*
Itm iiij yards of blacke cotton	*ii s*
Itm one yarde of whyte cotton	*viij d*
Itm one yarde and di of black bayes	*xij d*

Lack of written evidence makes research into sixteenth century colour elusive. Therefore the Calendar of Assizes for Kent was researched to see if a better description of stolen articles had been recorded.[28] These proved, during the years from 1559 until 1600, that there were 3066 records of which 608 relate to the theft of particular textile items; these can in turn be subdivided into clothing in general, domestic textiles and textile related articles. From the 608 records, there are 2059 individual items. There were no colour references to any tablecloths, kerchiefs, caps, shirts, sheets, blankets, handkerchiefs, nightkerchiefs, towels, tablenapkins, coverlets, capes, smocks, or carpets. Some of these omissions are understandable, yet why is the colour of capes, carpets and coverlets not mentioned? Was this not important? Identification of an item would surely be easier with a colour reference; therefore, it could be concluded that there was an unwritten rule that certain items were of a particular shade or colour and the need for recording it was not necessary. This is demonstrated in the table (Table 5) which records the items and colour; the column for 'cloth' is the only one containing an entry for every colour documented. Proving a definite palette for the sixteenth century yeoman is undocumented and remains problematic.

Explanatory notes to accompany Table 5

⓪The figures in parenthesis refer to one turkey cloth, one red and green cloak and one red tawney coat; there were also ten red and green curtains and 12 red and green valences.

① Mentioned as a colour or with a fabric implying the russet is a colour.

② The figures in parenthesis refer to items recorded as 'Sheeps Russet'

③ The figures in [] refer to sky and one saveguard and the figures {} refer to azure.

④ Stammel, like russet, refers to a colour and a cloth. Only two of the petticoats are stammel coloured; the rest are assumed to relate to the construction of the cloth.

⑤ One of these pieces was tawney and green.

⑥ One of these is a medley russet cloth.

⑦ The cloth was canvas: two references to pairs of netherstocks and one to upper socks.

Note: there were also references to one sackcloth striped, one doublet striped, one cloth raw, one cloth new colour, one silver coloured cloth and cloak, one harebrain cloth and cloak, one peach cloth, one reference to gold lace, one seasand cloth, one crimson and one carnation purse.

Some fabrics for this period, for example fustian and lindsey woolsey, are of mixed fibres; therefore, it is necessary to consider the properties of the fibres before dyeing. The different properties of the four natural fibres differ in their dye absorption (Figures 7 and 8). The best quality of dyeing took place during the process known as '*stock dyeing',* resulting in good, even penetration of the dye into the fibres prior to spinning.[29] The second quality was '*yarn dyeing'*. Dyeing the spun yarn was inferior to stock dyeing as the individual fibres were not fully exposed to the dye. The most inferior approach was '*piece dyeing*'; lengths of woven cloths were dyed in 'the piece' for home consumption.[30] This

process is regarded as cheap, the colour not fully able to penetrate the cloth and 'wearing white' with time as the outer fibres loose the colour. Cloths constructed of different fibres in the yarn, or where the warp was of a different fibre to the weft, would result in a mottled look. Perhaps this was the 'medley', a term used for a mixture of colours. A number of samples, woven as previously discussed, have been made to prove this theory.[31] This effect could also be achieved by using differing fibres for picks and ends (Figure 26).[32] A further definition for 'medley' is where the wool was 'stock dyed' and different colours were mixed during carding producing subtle blends.[33] Re-dyeing an old garment to give it a new lease of life might also be termed as medley; repeatedly over dyeing of a garment could result in some of the original colour showing through the new, or being completely obliterated.

5. 2 Dyestuffs

During this period, all dyes came from natural sources, plants, lichens, shellfish, minerals and insects. The professional dyer was a chemist, adding various *mordants* to achieve drastically different colours and shades.[34] As with the fibres, there appear to be four dominant dyes which were cheap and easily accessible for most: they were lichen, madder, weld and woad. In addition to these four there were a number of more expensive dyes, mainly used for dyeing fabrics for the wealthier 'sorts' of nobility and royalty [those in the King's favour]. It is important to understand these colours were an aspiration for the 'lesser sorts'.

5. 2. 1 Aspirational dyes

Cochineal - sometimes referred to as the scarlet grain, discovered in Central and South America by the Spanish in 1518.[35] It consists of the dried crushed shells of female beetles belonging to the *Dactylopius* family. Predominately used to produce a range of hues; reds through purple to crimson, however with a tin mordant, English people recognise the colour as 'Hunting Pink'.[36] Cochineal was an expensive product due to the intensive labour required to harvest the beetles yet its popularity nearly replaced kermes.[37]

Kermes - also obtained from crushed insects, *Kermes vermilio Planchon* and *Kermes ilicis* from the Middle East and Mediterranean, both of which produced a 'red'. This dye dates back to the ancient Egyptians and Romans, and it is believed that Kermes became a substitute for Tyrian purple, although it produced a scarlet rather than purple.[38] Both kermes and cochineal were generally referred to as 'scarlet', yet this in turn did not always refer to a shade of red, but instead to a fine or expensive quality of the fabric.[39] The mention of a scarlet petticoat therefore indicates an item of prestige.

Indigo - one of the oldest known dyestuffs extracted through fermentation of the leaves from the plant *Indigofera tinctoria:* it was introduced to Europe from India, during the sixteenth century, via the East India sea route. [40] It had good light fastness, was able to produce a range of rich blues and was often used as an over dye to produce a green, greys and purples. 'Royal blue' was worn by the wealthy, and livery was usually a form of 'blue'. Indigo should not be confused with woad, a cheaper blue dye widely used before the introduction of indigo.[41]

Tyrian purple – from the Lebanon, produced from the mucus extracted from the shells of the *Murex* and *Buccinium*; thousands of shells were required to produce sufficient dye for even the smallest of garments.[42] "Bolton states, "Cloth receiving this dye was often first coloured with a preparation made from two lichens" [Bolton 1972, p 11], making this an extremely expensive dyeing process.[43] Hence the colour purple was much sought, as it symbolised wealth and power, being long associated with royalty, an association going back to the Roman Emperors.[44] In 1453 production of this dye was on the decline. Rossetti, an Italian dyer, imparted knowledge of dyeing with lichen to England using Archil or Orchil, able to produce a rich purple.[45]

5. 3 Colours for the 'middling sorts'

References to plants which yield colour, especially within the area of the study, have been documented. The inventory of Richard Scotte a weaver of Wingham, 1582, notes his debts to among others, Valentyne Austen, of Ickham, for woad at a price of x s.[46] Hasted writes;

> *..about Faverfham feveral fields planted with madder, which is there of late manufactured for the ufe of the dyers… and woad is likewife frequently fowed in the weft Kent for the like ufe.*[47]
>
> [Hasted 1972, p 266-7]

Thomas Taylor of Staple, [in very detailed inventory,] has written at the top in the left hand margin, "Item the wallnutt tree behind the barne xx s", which was an equivalent price to "his best cote and best jerkin."[48] The third primary colour, yellow, was obtained from weld, which grew naturally on the Downlands of Kent rather than being cultivated.[49]

Black- was considered to represent mourning, wealth and power; however there are theories that would dispute this meaning at this juncture in history.[50] This colour, or an attempt at such, was worn by all 'sorts' as well as academics (mainly those with a religious background), clergymen, doctors and teachers.[51] However the quality and depth of shade would reveal the 'sort' of the wearer, being a difficult colour to obtain, as there is no one natural dyestuff that produces a pure black. Ponting states;

> *without doubt most blacks were dyed either by producing a very dark navy, dyed with woad and then topping with a yellow dye such as weld, or possibly a red like madder, or by dying a medium blue and then cross dyeing with first yellow (weld) and then red (madder).*[52]
>
> [Ponting 1981, p 3]

These methods would produce good blacks, but they were very lengthy and the repeated dyeing process was not beneficial to the fabric, as well as being costly. Walnut husks, from the *Juglans regia* tree, however, could provide a possible alternative for the yeoman, as it produces a *substantive* dye (no mordant needed to fix the dye to the fibre). A wide range of colours from a buff/fawn through to a very dark brown or a brown black can be obtained dependent on the part of tree used: husks, bark or leaves. Whichever method was used, repeated dyeing would be necessary to keep the garment a deep black.

Blue - a cheap version was obtained from the widely available plant woad [*Isatis tinctoria*]. Blue, using woad, is associated with the Virgin Mary symbolizing grace, whereas indigo, a stronger blue, represents power and wealth. Woad produced a blue which was worn by different 'sorts'. Servants

wore liveries of woad blue as it was associated with servitude , whilst those more financially empowered would aspire to wearing cloaks of blue dyed with the deeper shade of indigo.[53]

Green - sometimes referred to as French, sage or other variations. There was no single substantive natural dye to produce such a colour and so, green was produced through a combination of dyes. The most common way was first to dye with weld, then overdye with woad. This may well be why there are a number of differing terms for green, from 'popingay' a blue-green to 'willow' a sombre green.[54] Green was a colour which was available to be worn by differing 'sorts'.

Red - worn by most 'sorts', with the shades of red distinguished by the variation of dye; the more expensive ones (cochineal and kermes) produced the brightest and darkest colours. Meanwhile the cheaper more readily available version, madder, was used to produce a whole spectrum of reds from pale pink to coral, light red to brick red, rust to a rich brown. These required the dyer to have experience in the skills of chemistry, such as over dyeing and using different mordants. 'Red' was the colour referred to by the lower 'sorts'; it was their adaptation of crimson. When dealing with 'scarlet' and 'stammell', there is controversy over the terms. They appear to refer to both the colour and the fabric.[55] Canning-Linthicum states, 'scarlet had been made in England since 1182' [Canning-Linthicum 1963, p 88], being purchased for royal wear, stating it was not a cheap fabric due to it being a fine worsted cloth and dyed scarlet red with the dye, kermes. Stammel in the sixteenth century is classed as a replica scarlet, a fine woollen cloth, yet still the definitions vary considerably.[56]

Russet - another ambiguous term meaning both a colour and a cloth. When referring to russet as a colour it is generally considered as a reddish brown, A cheap and easy way to produce this would be to use a natural coloured fleece. (Table 5; notes 1 and 4 illustrates the confusion between cloth and colour.)

White, natural, or sheep,- a term possibly referring to the natural colour. The natural colouring of fleece could range from white through beige and rust red, to brown and black.[57] Most of the linen produced was left in the natural/grey or white state, except when finished for undergarments and linings. As can be expected, only the most wealthy could afford to keep white clean. Being a sign

of purity and virtue, white was much used by Queen Elizabeth I [The Virgin Queen] and for ceremonial events within the church, such as baptisms and weddings.

Yellow - although prohibited by Henry VIII in Ireland in 1536, as stated at the beginning of this chapter, was a colour worn by most classes. It is naturally prolific in a number of dye plants, able to produce colours, from a very vibrant colour to a subtle lemon. Weld (*Reseda luteola*) a native and common source of yellow dye is clear and relatively light fast. Weld has been referred to as dyer's rocket, dyer's mignonette and also known as dyer's broom. The strength of the dye, like woad, depended on the climate and situation of its origin. During the sixteenth century, weld was grown on the Downlands of Kent. [58] Another source of yellow was obtained from saffron, where the bright red stigmas of the saffron crocus [*Crocus sativus*], were dried and used to produce a yellow. Saffron Walden is named after these plants as so many grew in the area. Yellow has been connected with the Jewish faith through the 'badge'; however this association did not deterred the wearing of yellow in people in England.[59] References to two pairs of nethersocks and one pair of upper socks as well as a piece of canvas cloth all coloured yellow were found in items reported stolen. If there had been a strong connection between yellow and the Jewish faith it would have deterred the recognition of owing such a colour.

5. 4 Dye plants grown in Kent

Having considered the colours generally available to the differing 'sorts', it was time to consider the dye plants and their availability to the local 'middling sorts'. The three mainstay dyestuffs grown in Kent were madder, woad and weld, the basis of the colour palette. These were grown for experimentation in the year 2006 to allow for full maturity at the time of this study. Woad and madder grew successfully but weld after numerous sowing germinated poorly. This was possibly due to the area on which it was planted being too rich a soil. However the safflower germinated and flowered very successfully but was not used due to such an elaborate processes needed to remove the dye. A long established walnut tree was also used for experimental purposes.

Dyestuffs traditionally in use from the earliest times were woad, madder, and saffron, either available at home or from countries nearby…..For fixing colours, the essential mordant was always alum, which was extracted from mineral alunite.[60]

[Ramsey 1982, p 12]

5. 4. 1 Madder (Rubia tinctorum)

Madder appears to have reached Europe by the tenth century, when it was grown in Holland, after being successfully grown through the Middle East.[61] Thirsk notes the existence of madder in Catton in Norfolk from as early as 1274. This was possibly due to the important trading link between the Netherlands and King's Lynn.[62] Madder was quite often grown on monastic lands for its medicinal properties. On the other hand, Harrison reports madder had grown profusely as it was a marketable product of this country;

> *but now our soil either will not or at the leastwise may not bear either woad or madder; I say not that the ground is not able so to do but that we are negligent, afraid of the pilling [exhausting] of our grounds and careless of our own profit, as men rather willing to buy the same of others than take any pain to plant them here at home.*[63]
>
> [Harrison 1994, pp 265, 437]

According to Thirsk, there were no botanical reasons preventing the production of madder. The land owner/farmer required dedication and finance to stand the minimum three years before the crop would yield. In 1524, a Kentish gentleman, Sir Edward Guildford, was reported exporting madder which he had grown on the Romney Marsh.[64] This may have been a form of diversification to add income, when the wheat prices dropped due to bad harvests, or simply to please the desires of the King who urged the growing of madder.

There are a number of different species of madder with: Lady's Bedstraw [Galium Verum], Hedge Bedstraw [Galium Mollugo], Northern Bedstraw [Galium Boreala] and Dyer's Woodruff [Galium Odoratum] being the more common names in Britain.[65] It is the plant's roots which are of importance to the dyer. Maturity is reached when the roots at least three years old, being harvested prior to flowering.[66] The soil is carefully removed, not harming the roots, which may be chopped, or dried and ground (Figure 29). After this preparation, the

madder root is ready for use. Madder produces a very wide range of colours. The success of this dye depends on careful regulation of the water temperature in the dye bath: too much heat will dull the colour and reduce any red to a brownish shade.

5. 4. 2 Weld (Reseda luteola)

An ancient dye stuff also known as Wild Mignonette and Dyer's Rocket, weld produces a fast yellow.[67] It was cultivated on the Downlands of Kent in poor quality soil, often barren land, where the top part of the hills were of clay and flint on a chalk base.[68] The southern slopes produced sweet grazing pasture, which grew on shallow soil over the chalk, where treasured sheep grazed, producing a plentiful amount of wool and tasty mutton. [69] Weld, which enjoyed the same favourable conditions, grew wild here. The amount of weld grown, either wild or farmed, was possibly enough to meet domestic demands initially, but by the sixteenth century a small amount was being imported from Flanders.

Lying south of the Chart Hills is the flat Weald, joining the Romney Marsh. The Weald was mainly a wooded area on heavy soil and according to Bagshaw was, 'fertile but not healthy' but this improved the further one travels from the hills.[70] As timber was in great demand for building and the production of looms, there were great areas of clearance, which made more provision for agriculture. Oats and wheat, along with madder, woad and weld, were grown in this newly cleared area, being a principal site for the production of weld for many years to follow.[71] However the majority of the farming included cattle and sheep. [72]

Weld is a hardy annual which can grow to a height of three - six feet on a chalky soil, with a mass of narrow wavy edged leaves on mainly un-branched reed like stems.[73] Every part of the plant, except the roots, can be a dye, usually being harvested towards the end of June/beginning of July. The plants may be used fresh, or dried for later use. There seems to be no difference in

Figure 28: Madder plants in flower.

Figure 29: Home grown madder root, three years old.

the quality of colour from either source. Ponting refers to the shade produced with alum as historically "the best and most important shade".[74] In the production of green, weld was of immense importance, being the undershade on which the blue was over dyed. It is imperative the yellow or the lighter shade is dyed first, to allow the fibres to absorb maximum dye from the weaker colour.

5. 4. 3 Woad (Isatis tinctoria)

This is another ancient dye stuff, known to be used by the Egyptians and later by the Romans.[75] Woad, related to the mustard family, was extensively grown in selected parts of England. The supplies did not meet the demand and woad from Tuscany was imported prior to the sixteenth century and later from Toulouse.[76] To obtain deeper shades, it was advisable to use woad which had grown in a sunnier climate, as this produced a greater density of dye matter within the plant. Woad was not only one of the most pungent but also the most common dye used; it was essential as an over dye. Like madder and weld, woad did not make a commercial crop, mainly due to the effect on subsequent crops. According to Ponting;

> *woad certainly played as dominating a part in the English dye trade in the Middle Ages as Imperial Purple had done in Rome.*
> [Ponting 1981, p 180]

He continues to explain, the colour produced did not become a 'luxury' colour, but its importance lay with its diversity in colour production.[77]

Thirsk offers us evidence of woad growing in the south of the country around Winchester and Southampton, including areas around the rivers Itchen and Rother. It was also apparent that woad preferred the environment around the river floors and the low lying ground of the river valleys, where dairy herds were often kept; forging a link between the word "Wickham" – homestead with a dairy farm and the growing of woad.[78] There were many encouragements for the gentleman farmer to grow woad on a larger scale, but as it was biannual and a labour intensive crop, there was little incentive for large productions. The 'middling sorts' seem to have put aside a small amount of land to produce

some dye stuff for local use, when it would be commercially advantageous during times of low grain prices.[79]

To procure the dye the leaves need to be harvested in the first year, when the plant resembles spinach beet. The dry leaves may be collected repeatedly, from May to September, avoiding the heat of the day, giving a continual supply. The following year the plant will mature and reach its full height of four – six feet, bearing yellow flowers, followed by black seedpods. The leaves can only successfully be used fresh, yet once the dye has been extracted it can be stored and used the following season. There are a number of different methods for storing the dye, from dye powder in balls to liquid in jars, all are rather time consuming but become more commercial in later periods.

5. 4. 4 Rejuvenate: re-dip or re-dye

With such limited evidence concerning the cloth and colour of the period, assumptions must be made to colours worn and used. The original colour of the cloth would not last for as long as the cloth itself: consequently, the article could be re-dipped, thus rejuvenating and extending the life of the cloth or item with a different shade. This was a practice continued until the twentieth century. Within the constraints of the sumptuary laws, garments could have been dyed using local ingredients, which were cheap and easy to source. The laws for the 'lowering sorts' restrict the type of cloth worn by the value, Hayward's table of Henrician Sumptuary Legislation states;

> *A serving man, yeoman taking wages or such others as may not dispend of freehold 40s by year [were forbidden to wear] – cloths in there hose above 2s the yard – gowns, coat, jackets or other garments made of cloth costing more than 3s 4d per broad yard except if it be his master's livery…*
>
> [Hayward 2009, p 35]

This demonstrates the restrictions applied to the quality rather than colour of the textiles worn by the 'lower' and 'middling sorts'.[80] Therefore the yeoman's wife could dye cloth or wool at home with a number of local ingredients; the colour was unlimited and without a specific name.[81]

Figure 30: Weld plants in flower.

Figure 31: Woad plants first year of growth.

Figure 32: Sample being immersed into a fermenting woad bath using an ancient recipe.

Figure 33: Two gamps illustrating the different shades obtained using walnut husks.

Figure 34: Elderberry (background) and weld (left) dyed gamps

An interesting observation by Harvey notes that the Middle Ages was a world of colour with black used to make a statement. A person depicted wearing black could be one of high position and wealth, or wore shame and grief.[82] It was during the Renaissance that black was used in fashion to reinstate the meaning of respectfulness, authority and social standing beyond that of royalty.

5. 5 Nature's harmony

Although natural dyestuffs may be classed as 'scientific' in present day standards they represented the only way the 'middling sort' could enhance their home produced cloths. By dyeing the gamps in this purely domestic situation, keeping notes of each dye used, it is still impossible to describe the visual experience in words. The thought of using a yellow with a purple from to-day's palette would envisage opposite colours of the spectrum (Figure 34). Yet, in the historical palette the reality is colouring of a harmonious quality and even dyed colours which have not dried as expected work well together.

The colours and shades available through the natural dyeing are numerous. Authors have taken their own personal approach to the subject.[83] Recipes made and followed religiously may produce results that differ considerable. Water quality, minerals in the soil from which the plants grew and the seasonal effect of weather conditions all play a part. Any of these which affect the food harvest also apply to dyestuffs.[84]

Due to the availability, the substantivity and the recorded value of a walnut tree, a particular experiment was carried out. A bucket full of walnut husks was collected green and stored for four months, resulting in the oozing of a dark brown liquid. A gamp was immersed in this liquid with extra rain water to equal 4pints and produced a pale fawn. The following year, a second sample was attempted using the same amount of husks, from the same tree, stored for a much shorter time and the same recipe followed. The result, a lovely mellow dark brown, was quite astounding (Figure 33).

Using other gamps and yarn samples, further colours were achieved with different dyestuffs, using the same quantities, time and agitation; to achieve the fairest experiment and conclusions. Neither written description nor modern photography was able to portray the variations of colour accurately. Continuing dyeing in this manner, the myriad of colours available on the gamp provide a wide reference source for further fibre or yarn mixes in the weaving. These experiments gave an accurate view of how all four natural fibres reacted when dyed in exactly the same system.

As this natural process uses chemicals to a minimum, the colour and light fastness are beholden to the properties of the individual ingredients. Some are more resistant to light than others and this is apparent with woad. Here it may appear the colours merge into one another: this is the beauty of their harmony, with no one colour 'fighting' another. These subtle changes add to their charm and inquire of the terminology – how red was 'red' and how did it differ from 'scarlet'? Has four hundred years of 'progress misinterpreted the colouring the yeoman enjoyed? The dyed gamps have been able to offer visual evidence to help clarify some of these speculations. In order to preserve the information these gamps have provided it is necessary to store them away from the light and from each other to keep light destruction to a minimal. They also bring to the fore the vulnerability of such colouring.

Garments of the 'middling sorts' were very important, an absolute necessity and were worn until they could be of no more use. Research has revealed that cloths were over dyed during their initial construction; therefore the garment that was looking a little 'tired' might have been re-dyed to rejuvenate it to last a little longer- until the next clip?

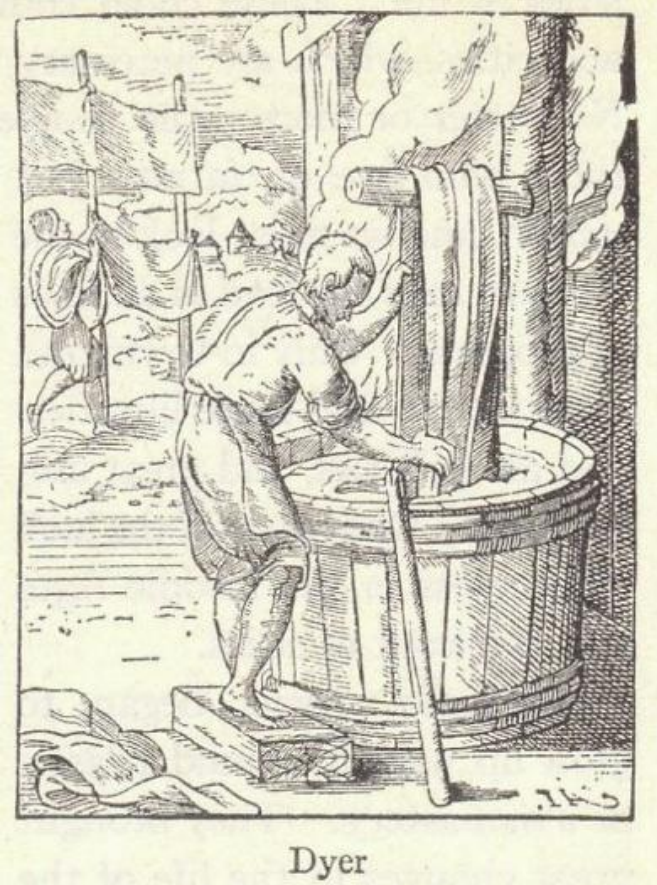


Figure 35: Dyer; Medieval Guild of Craftsmen, from wood engravings made in the sixteenth century. www.studenthandouts.com accessed 20th February 2013

[1] FULLER, *The Holy State,* p 108
[2] SHAKESPEARE, W. (circa 1600) *Twelfth Night – What you will*. Act II scene V lines 205-207
[3] HAYWARD, *Rich Apparel.* pp 29-39
There are a number of different publications which discuss the sumptuary laws; Hayward, however. has produced a chart for easy viewing.
[4] BALDWIN, *Sumptuary Legislation.* p 162
[5] Saffron (Crocus sativus) is obtained from crocus flowers. It is not very fast but was very popular. It yielded a yellow.
ROBINSON, S. (1969) *A History of Dyed Textiles.* London: Studio Vista. p 27
BALDWIN, *Sumptuary Legislation.* pp 140 - 145 Fashions and colours were sometimes restricted due to a difference of opinion, either political or social.
[6] 'Sad' is a term used when the mordant iron is used as it 'saddens' the colour.
[7] CAMPBELL, *The English Yeoman.* p 254.
[8] HARVEY, J. (1995) *The Men in Black.* London: Reaktion Books Ltd. p 52. He uses an example of stage hands wearing black "as a visible sign that they were not" seen.
[9] An exhibition, April 2012, in Florence in the Palazzo Vecchio showing the construction of tapestries from the fifteenth – sixteenth century stated there were only three dyestuffs to make all colours used in tapestries: they were madder, woad and weld which reflect the primary colours. It is important to note that when the first colour is applied, it is on virgin white fibres and so will take the weaker shades well, leaving the darker colour to use as the overdye to carefully change to the required shade. However, not all natural dyes have equal properties of light fastness.
[10] Repaired arm of a chair (1680) at Knole, Kent, which depicts the colours of the original fabric. By kind permission of The National Trust.
[11] There are many references to Sumptuary Legislation. The earliest records of these laws are believed to date back to the reign of Edward III in 1327. There may have been previous types of sumptuary legislation but the existence of such documents are not known. Baldwin sates that the yeoman and grooms of the royal table did not have any restriction on colour but they did as regards the cloth. p 150
BALDWIN, *Sumptuary Legislation*. p 12
HAYWARD, *Rich Apparel.* pp 29-39
[12] COCKBURN, *Calendar of Assizes.* Record numbers Blue: 247, 275, 462, 1137, 1231, 1372, 1440, 1629, 2393. Sky: 782, 1137, 1446, 1877. Azure: 987, 1187. Red: 39, 238, 306, 564, 631, 945, 1240, 1274, 1693, 1727, 2107, 2119, 2171, 2316, 2443, 2507, 2667, 2836. Carnation: 2004. Crimson: 1075. Turkey Red: 728. Stammel: 2564, 2646, 2724.
[13] BALDWIN, *Sumptuary Legislation.* p 159
[14] This point is discussed in Fabrics Available.
[15] There are two references in Staple to hemp seed: Thomas Taylor, 1575, 'iij tovetts of hemp sede', C.C.A. Records PRC 21/2/288 and Nicholas Leggatt, 1601, having 'one bushell of hempsed ,' C.C.A. Records PRC 21/16/225, implying hemp was grown. There are further references to hemp and hemp stock in 5 other inventories. Linen is only mentioned for spinning. Thomas Taylor, 1575, C.C.A. Records PRC 21/2/288. 'ij pound of linen'. 'ij quarters of woull linen yarn work' Stephen Crambroke, 1582, C.C.A. Records PRC 21/6/98. 'work and tow' Robard Foat, 1584, C.C.A. Records PRC 21/6/524 . 'certain linene yarn work and tow' Thomas Tucker, 1597, C.C.A. Records PRC 21/13/422
[16] ARNOLD, *Patterns of Fashion 4*. p 5: Line being the best followed by tow and then hemp being more coarse.
[17] In all the inventories and Assizes studied linen is only ever recorded as white. The structure of the fibre tends to prevent dye penetrating the structure: therefore even the strong dyes produce a paler colour which will fade.
BAINES, P. (1985) *Flax and Linen.* Aylesbury: Shire publications. p 30
[18] Sumptuary laws for the middling to lower 'sorts' stipulated a value which each garment was not to exceed rather than specifying the cloth, thus limiting the choice

and in turn restricting the colour to one which was cheaply available of homegrown. There were obvious colours which were used solely for Royalty and their houses which are succinctly dealt with by Hayward in a table.
[19] www.lincstothepast.com/exhibitions/treasures/painted-cloth.
[20] MANDER, N. (1997) Painted Cloths: History, Craftsmen and Techniques. *Textile History.* (Vol 28 issue 2). p 19
CAMPBELL, *The English Yeoman.* p 233
[21] BROOKE, *Four Walls Adorned.* p 32
[22] Inventories listing painted cloths. Nicholas Leggatt, C.C.A. Records PRC 21/16/225.
Stephen Crambroke, C.C.A. Records PRC 21/6/98.
Steven Dade, C.C.A. Records PRC 21/6/526.
John Dubesses, C.C.A. Records PRC 21/6/235.
Thomas Maye, C.C.A. Records PRC 21/13/93.
Margart Moyne, C.C.A. Records PRC 21/13/215.
Robert Moyne, C.C.A. Records PRC 21/10/325.
Barthelmew Pettit, C.C.A. Records PRC 21/12/198.
Thomas Taylor, C.C.A. Records PRC 21/2/288.
Elizabeth Turner, C.C.A. Records PRC 21/13/107.
[23] HARRISON, *The Description of England.* p 197 There is no reference to the origin of this information, so one could conclude this was an observation made by Harrison himself.
[24] Elizabeth Bax, C.C.A. Records PRC 21/17/96.
Thomasyne Baxe, C.C.A. Records PRC 21/17/240.
Stephen Crambroke, C.C.A. Records PRC 21/6/98.
Thomas Maye, C.C.A. Records PRC 21/13/93.
Barthelmew Pettit, C.C.A. Records PRC 21/12/198.
[25] Richard Haslocke, C.C.A. Records PRC 21/16/254.
Richard Scotte, C.C.A. Records PRC 21/5/189.
Richard Stupple, C.C.A. Records PRC 32/31/320.
[26] Humfrye Mekins [Umphry Meakyn] C.C.A. Records PRC 21/11/57 and 21/11/55.
[27] The terminology 'cotton' has been considered in the glossary.
[28] COCKBURN, *Calendar of Assizes*.
[29] ZELL, *Early Modern Kent.* p 113. Zell states that the woollens produced in Kent were dyed in the wool.
[30] KERRIDGE, *Textile Manufactures.* p 14
CHANNING LINTHICUM, *Costume in the Drama.* p 11. A statute of 1552 prohibited the sale of cloth of any colours other than scarlet, red, crimson, murrey, violet, puke, brown-blue, black, breen, blue, orange-tawney, russet, marble, sad new colour, watchet, sheeps colour, lions colour, motley or iron grey due to 'false and deceivable colours'.
[31] This can be seen in the number of dye sample which are appendices to this work.
[32] A self stripe or dog tooth check arrangement using different fibres, twist directions or spin.
[33] KERRIDGE, *Textile Manufactures.* p 15
[34] A mordant is a substance used to fix the dye colour to the fibres, without which, an unsubstantive dye will fade, or the colour will bleed. An essential mordant was Alum, extracted from alunite, but wood ash, stale urine, rusty water where iron has soaked, Sumach and Oak galls are just a few more.
[35] GOODWIN, *A Dyer's Manual.* p 55
[36] FEREDAY, *Natural Dyes.* p 32
[37] PONTING, *A Dictionary Of Dyes.* p 43
[38] FEREDAY, *Natural Dyes.* p 32
[39] PONTING, *A Dictionary Of Dyes.* p 158
[40] Ibid. p 103
[41] FEREDAY, *Natural Dyes.* p 33
GOODWIN, *A Dyer's Manual.* p 67

[42] According to PONTING, *A Dictionary Of Dyes.* p 94 'Twelve thousand shells yield only one and a half grammes of dyestuff.'
[43] BOLTON, E. (1972) reprint *Lichens for Vegetable dyeing.* London: Studio Vista Publications. p 11
[44]www.chriscooksey.demon.co.uk/tyrian/ accessed 20 October 2011
FEREDAY, *Natural Dyes.* p 32
GOODWIN, *A Dyer's Manual.* p 52
[45] BOLTON, *Lichens for Vegetable dyeing.* p 11
[46] C.C.A. PRC 21/5/189
[47] HASTED, *The History of the County of Kent.* pp 266-7
[48] C.C.A. PRC 21/2/289 (289)
Walnut trees Juglans regia (royal nut of Jupiter), are believed to be one of the oldest food bearing trees known to man circa 7000 B.C. The walnut husks were used significantly through history to produce both dye and ink
http://denevell_books.home.insightbb.com/making_walnut_ink.htm
[49] ZELL, *Early Modern Kent.* p 82
[50] CUNNINGTON, P. and LUCAS, C. (1972) *Costume for Births, Marriages and Deaths.* (Reprint 1978) London: Adam and Charles Black. p 146. Considers the alternative colours for mourning, with white being worn at Elizabeth of York's funeral (1503).It was customary to use white when mourning a child and a woman, especially young and innocent as white represent innocence and virginity. Cunnington and Lucas also note Henry VIII wore white for mourning Anne Boleyn, which is confirmed by Hazlitt who notes the information came from 'Hall's Chronicle'.
HAZLITT, W. 1905 Faiths and Folklore; A Dictionary of National Beliefs, Superstitions and Popular Customs, Past and Current, with their Classical and Foreign Analogues, describes and Illustrated. London; Reeves and Turner. p 425. Hazlitt also states 'Granger tells us, 'It is recorded that Anne Boleyn wore yellow mourning for Catherine of Arragon.''
[51] MARLY, D. (1986) *Working Dress: A History of Occupational Clothing.* London: Batsford. p 12
[52] PONTING, *A Dictionary Of Dyes.* p 18
CHANNING LINTHICUM, *Costume in the Drama.* p 3
[53] COCKBURN, *Calendar of Assizes.* A blue livery coat was stolen in 1583 from a servant which was valued at 10s. [1231]
[54] CHANNING LINTHICUM, *Costume in the Drama.* pp 33-34
[55]HAYWARD, M. (2007) Crimson, Scarlet, Murrey and Carnation: Red at the Court of Henry VIII *Textile History* (Vol 38 no 2) p 137
[56] CHANNING LINTHICUM, *Costume in the Drama.* pp 88-90 .
COCKBURN, *Calendar of Assizes.*. The assizes mention four references to stammel; 1 refers to 2 petticoats stammel coloured valued at £2.00,[2646] the same value as 2 stammel petticoats [2564]. A piece of stammel cloth is valued at 30s [1616] and 12 yards of stammel woollen cloth at £12.00 [2724]. A red petticoat is valued at 6s 8d [631]
HUGGETT, Rural Costume. p 83
[57] HAYWARD, *Rich Apparel.* p 98
MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 39
[58] ZELL, *Early Modern Kent.* p 82
www.renaissancedyeing.com/store_crewel_elizabethan-range accessed 25 March 2011
[59]FRASER, R. (2003) *A People's History of Britain.* London: Chatto and Windus. p 178 . Fraser explains that in 1290 Edward I had expelled Jews from living in England, but a small number managed to stay in London because they had converted to Christianity. During the period under discussion anti-Semitism remained.
Shakespeare refers to yellow in a couple of his plays, such as, Twelfth Night where he is making fun of Malvolio – Shakespeare could have been referring to Malvolio as an out cast by making him wear yellow stockings. Shakespeare also uses yellow for the Jewish money lender Shylock in The Merchant of Venice.

RUBENS, A. (1981) *A History of Jewish Costume.* London: Peter Owen Ltd: p 86
[60] RAMSEY, *The Woollen Industry.* p 12
[61] HOFENK de GRAAFF, J. (2004) *The Colourful Past; Origins, Chemistry and Identification of Natural Dyestuffs.* London: Archetype. pp 92 – 110. Hofenk de Graaff has produced a valuable in depth scientific approach to these natural dyes. She studies historical and current terminology, dyeing methods, chemical properties and case studies.
WICKENS, *Natural Dyes for Spinners and Weavers.* p 59
[62] THIRSK, J. (1997) *Alternative Agriculture: A History.* Oxford: Oxford University Press. p 104
[63] HARRISON, *The Description of England.* pp 265, 437
[64] THIRSK, *Alternative Agriculture.* p 104
[65] GOODWIN, *A Dyer's Manual.* p 64
[66] JACOBS, B. (1977) *Growing Herbs and Plants for Dyeing.* Tarzana: Select Books p 57
[67] HOFENK de GRAAFF, J. *The Colourful Past.* pp 214 – 221 This chapter discusses weld in great scientific depth.
[68] BAGSHAW, *History Gazetteer.* p 26
THIRSK, *Alternative Agriculture.* p 39
[69] ZELL, *Early Modern Kent.* p 77
[70]BAGSHAW, *History Gazetteer.* p 26
[71] THIRSK, *Alternative Agriculture.* p 133
[72]LAWSON, T and KILLINGRAY, D
(Eds) (2004) *An Historical Atlas of Kent* Chichester: Phillimore and Co Ltd. Article by Thirsk p 72
[73] JACOBS, *Growing Herbs.* p 95
[74] PONTING, *A Dictionary Of Dyes.* p 178
[75] HOFENK de GRAAFF, J. *The Colourful Past.* pp 245-250 Hofenk de Graaff discusses the chemistry and light-fastness qualities.
[76] THIRSK, *Alternative Agriculture.* p 80
[77] PONTING, *A Dictionary Of Dyes.* p 180
[78] THIRSK, *Alternative Agriculture.* p 84
An inventory refers to woad being grown in a village called Ickham, near Canterbury, part of the same hundred as Staple. C.C.A. PRC 21/5/189
[79]THIRSK, *Alternative Agriculture.* p 83
[80] HAYWARD, *Rich Apparel.* p 35
[81] CAMPBELL, *The English Yeoman.* pp 251-2
[82] HARVEY, *The Men in Black.* p 52
[83] FEREDAY, *Natural Dyes.*
GOODWIN, *A Dyer's Manual.*
THURSTON, V. (1977) *The Use of Vegetable Dyes.* Leicester: Dryad Press.
[84] BAKER, T. H. (no date but inscribed 1946) *Records of the Seasons, Prices of Agricultural Produce and Phenomena Observed in The British Isles.* London: Simpkin Marshall and Co.

6. Conclusion

This study is based heavily on the practical aspect. It was conceived from one idea, yet it straddles the divisions in society. It has attempted to construct the forgotten everyday cloth of the sixteenth century East Kent yeoman's world, in the environs of the time. Studying the combination of geography, demography, social history and archaeology different pieces of evidence are conjoined, being translated into a practical methodology. This gave an insight, though by no way a definitive picture, of the sixteenth century yeoman, his cloth and clothes, made by his own hands. This faction of society incorporated different values of disposable income, their aspirations, with one restraint: funds were limited. Consequently, importance was placed on the durability and reliability of their commodities. This was very much in evidence: with regard to cloth and clothing, cloth had to be fit for the purpose for which it was intended. This obviously led to the natural perfection of crafts and ultimately the complete appreciation and skill of each element. Every process undertaken had to ensure the best result was achieved, notwithstanding the quality of the initial ingredient. The reader interpreting all the intricacy involved in these cloths will appreciate the intention of the original question.

Cloth, an essential commodity, should not be underestimated; neither should the raw fibre. Good wool cloth would keep one warm and protect one from the elements and the surplus could supply an income for the family. This work has demonstrated that cloth production was highly important in agrarian daily life. Both the raw fibre and the cloth itself required meticulous skilled labour to succeed were bequeathed to favoured and loved ones and valuable enough to warrant theft.

The tactile qualities are made evident through this practical approach. The gap that exists concerning actual cloth has resulted in a number of misnomers and confusion regarding terminology over the centuries. Bennett describes altering the machinery to emulate the homespun: 'quite closely the rough thread spun by hand.'[1] [Bennett 1914, p 86], which is in sharp contrast to a woven cloth

from Palmyra, Syria, late third century AD, where the spinner has spun wool so fine it can achieve a 168 thread count in the weft per cm.[2] This is equivalent to 420 per inch, or the fact that each thread can only be 0.06mm in thickness. During experiments to ascertain the diameter of linen and wool fibres, it has been impossible, with the fibres available, to find a thickness of fibre which could be spun to produce such a fine yarn. The finest fibre of a Portland sheep gave a reading of 0.02mm, which would require only three fibres spun together at any one time to give the required thickness to produce the cloth from Syria. Considering the date this was constructed, it seems incorrect to class handspun, of twelve hundred years later, as a 'rough thread'. So have we lost the dexterity to create the Syrian yarn? Have the fibres become thicker through evolution? Yet the fact remains that 0.06mm is very fine.

There is also confusion over terminology, related to the fibre, spin, fabric or finish, all of which play important roles in the production of cloth. For example, during the sixteenth century, there are many references to 'cotton'; Humphrey Maekins, a weaver from Wingham has *"Itm v yards and di of murrey cotton iij s viij d, Itm xij yards and di of greene cotton viij s iiij d, Itm iiij yards of blacke cotton ii s and Itm one yarde of whyte cotton viij d".*[3] "Coventry made linsey-woolseys and kerseys and converted plains into cottons."[4] "Shrewsbury specialized in cottons", but were these made of cotton fibre?[5] When we consider cotton needed to be imported it would have been a more expensive commodity than the indigenous fibres. Cotton has only been found in one inventory of the 58 studied and this belonged to a weaver. When comparing the values of the supposedly cotton cloths against woollen cloths, it is interesting to note, four and a quarter yards of black 'freeys' is valued at six shillings compared to four yards of black 'cotton' valued at two shillings. Also one yard of white 'cotton' was valued at eight pence, compared to one yard of white 'kersey' at ten pence.[6] The price comparison is confusing if cotton refers to true cotton fibre, an expensive imported commodity rather than possibly a finishing process. Hayward refers to cotton in her glossary as "cheap, woollen cloth with a fluffy surface".[7] This leads to the impression that 'cottoning' is a finishing process, as its appearance is similar to that of a brushed cotton cloth. Therefore, does the word 'cotton wool' refer to the virgin wool that resembles a *'cotton bol',* or to the finish?[8] There are similar confusions with fustian, linsey

woolsey and union cloths, to state a few. Linsey woolsey could be any alternative type cloth, produced in England prior to the New Draperies, consisting of a linen warp and wool weft. It is unclear if the weft was woollen or worsted but this may have just depended on the fleece available. There is also the possibility this was a union cloth.[9] Larger samples, based on the evidence gleaned from the gamps, may be created to give the exact portrayal of the drape and handle of named cloths. Artistic impressions can be used but they cannot be relied upon to clarify particular drape qualities, so this has to be deduced through practical experimentation. Unfortunately, due to the amount of labour required to handspin and weave these samples, larger lengths have proved too time consuming to produce within the timescale of this research. However, further experimentation would include the production of lengths created solely for making into authentic garments. This process would enable further research and understanding into the handle and drape, alongside the practicalities of sewing cloth.

Consideration for the local trade or production appears to have been ignored by historians, mainly due to the lack of recorded information. Many local spinners are known to have provided the yarn, yet it is unsure for what purpose this yarn was intended. Academics have researched cloth and clothing of the richer part of society. A view point which takes an academic approach, considering the regulations imposed during production for imported, exported or internally traded cloths. Given the perennial interest in the grand attire of the Tudors, those of the ‘middling’ and ‘lower sorts’ certainly have less appeal. The dye samples have been prepared to help conclude the palette of the ‘middling’ to ‘lower sorts’ of society. Paintings of the time regarding the daily life of the ‘lesser sorts’ are limited, but they supply a visual basis for a colour palette. Hoefnagel’s ‘The Marriage Feast of Bermondsey’ reportedly displays a view of English society and is not devoid of colour indeed, there appears very little sign of drab, sad colours. This questions the popular assumption of a grey dull view of the yeomen’s textiles. Dyers know that iron ‘saddens’ a colour, so perhaps this is another misnomer. Experimentations completed in dyeing positively reflect Hoefnagel’s view.

Through this research, it is very apparent that the whole family had to work together to survive. When the day's work outside was completed, there were tasks inside to keep the family busy. Markham infers, the manufacturing of the yarn was the job of the housewife. To complete this task, she would have needed assistance with the lengthy preparation work. If the housewife was to be as proficient as research has found, this would have needed much practice. It must therefore be assumed that the females of the house would have learnt spinning skills at an early age. To produce yarns as fine as already suggested, with a spindle or basic Saxony spinning wheel, we can only assume that their skill and dexterity were far greater than the skills known today. Cloths found, some from outside of the period under study, show a professionalism we cannot even think about emulating.

The turn of the twenty first century brought an intensifying quest for the 'greener' world and new questions about how we should be considering our planet. However, true 'green' fibres are being ignored. Is this through ignorance, or reticence to build upon the past? Wool is a yearly by-product and will be replaced each year with another fleece of the same for as long as the sheep lives. Flax, also an annual by-product, produces oil. With careful planning and full comprehension of these fibres, research has shown many cloths can be made for the changing seasons. A large number of these new 'green' fibres, although waste or by-products, require intensive manufacture to produce the *'extruded fibres*' for spinning. This puts into question the economy of such fibres.

To achieve the practical part of this work effectively, the samples included are paramount, they start bridging the gap which has prevailed through previous valuable academic approaches, to understand how everyday textiles of this period handled. It is hoped that future practitioners, historians and designers of displays will benefit from this research and its findings, bringing to the fore the talents everybody needed to master in order to cloth themselves and their families.

This subject can only be fully appreciated by viewing and predominantly touching the samples which run parallel with this study. Only by handling the pieces will the truth be nearly understood, Green notes, 'Could I illustrate with sample to show what we have gained in the fulling mills, a much better idea would be given'[10] [Green 1886, p 16]. Ponting also makes the same point for the woolman's view: 'A modern woolman would give a great deal to know what sixteenth century wools were like – their quality, their length, the yield they gave'[11] [Ponting 1961, p 25]. The true essence of the practitioners' understanding of cloth is captured by Collingwood when he states "a piece of cloth is only half experienced unless it is handled"[12] [Collingwood 1955, p 451]. Yet due to the lack of actual fabrics, some issues are lost to us forever and will remain unknown.

[1] BENNETT, F. (1914) *Woolen and Worsted Fabrics Glossary.* Boston, Bennet and Co Inc p 86
[2] JENKINS, *Western Textiles I.* p 110
[3]C.C.A Record number PRC 21/11/57
[4] KERRIDGE. *Textile Manufactures.* p 21
[5] Ibid p 177
[6] C.C.A. PRC 21/11/57
[7] HAYWARD, *Rich Apparel.* p 381
[8] MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 36 Cotton here is referred to as "Narrow wool,loosely woven and fairly lightweight: there was no cotton fibre in this fabric – raising the nap was known as 'cottoning'."
[9] CHANNING LINTHICUM, *Costume in the Drama.* p 81
HAYWARD, *Rich Apparel*. p 383
MEE, The Clothing of Crayforde p 40
[10] GREENE, *Practices in Finishing.* p16
[11] PONTING, *The Wool Trade.* p 25.
[12] COLLINGWOOD, P. (1955) Arts and Crafts Exhibition. Quarterly Journal of the Guilds of Weavers, Spinners and Dyers. (No 14) p 451

Appendices

Appendix 1

Cloth Terminology.

Appendix 2

Working Documents of samples viewed at the Mary Rose.

Appendix 3

Samples of staple and fibre thickness.

Appendix 4

Samples of naturally dyed wool and linen.

Appendix 1

Cloth Terminology

Blanket

The inventories state twenty individuals had forty blankets, an average of two items per half the population of the village. A price range of between 6d -10s is quoted for these blankets; however there is no distinction to the age, quality or size.[1] The purpose of a blanket would be to keep somebody warm, therefore ideally would have been made from a short stapled fleece carded, loosely spun with a woollen spin thus trapping as much air as possible. A tabby weave with medium filling allowing the final cloth to be napped trapping more air for better insulation.[2]

Broadcloth

None of the inventories viewed state broadcloth, the assizes only refer to a pair of breeches while the other 24 records are of cloth pieces or lengths. There is a general consensus to a wide woollen tabby weave fabric, woven on broad looms able to produce cloth two yards wide. The term 'broadcloth' seems to be used generically relating to geographical areas, no written weaving formula has been found to date proving the technical construction of this cloth. Written descriptions of broadcloth are contradictory, from 'fine woollen cloth' to 'heavy woollen broadcloths' and 'often quite coarse in quality'. [3] Priestly states "West Country broadcloth was made from carded short staple wool and after coming off the loom it was fulled, becoming in consequence thick, felted and uniform in appearance."[4]

Buckram

Made of linen or cotton, or as a union, with a coarse open tabby weave used mainly for garments but owing to the open nature of the cloth lent itself to having an added starch to render the fabric a stiffener.[5] This stiffened cloth was used for creating shape to areas such as collars, gowns and the top of sleeves. It is therefore rather confusing to find the one reference to buckram in the assizes as curtains; it can be assumed that either these were rather

important as they were lined with buckram or contrarily they were cheap as they were constructed from a lining type material.[6]

Cambrick

A very fine plain white linen with a high thread count used mainly for ruffs, collars, shirts and handkerchiefs which is endorsed by the evidence found on the assizes.[7] This fabric originated from Cambrai in north east France. Due to the fine quality of this fabric it was not one the 'middling sort' would have been able to afford, possibly a cloth which may have been bequeathed by a grateful benefactor.

Canvas

A cloth described by Ashdown as, "a very coarse type of cloth", whereas Hayward states "a fine unbleached cloth made of flax or hemp".[8] Further reference tends to lead to a cloth of hemp or tow flax used for shirts, as it was a durable cloth for hard work wear, a cloth more suited to the 'middling sort'.[9] Also used for doublets, work aprons and most household linen.[10]

Cheesecloth

A loosely woven cotton plain cloth very light and soft in which condition it is used for wrapping cheese and butter. This kind of cloth is also heavily sized or stiffened and used for underlining.

Cotton

This term for cloth seems ambiguous, the 'middling sort' would not be in the financial position to purchase a fabric made of cotton fibre, it would have been an imported fibre or fabric. Therefore, when the term 'cotton' is associated with the lower or 'middling sorts' it is assumed it is woollen cloth similar to Frieze.[11] References in the inventories which relate to 'cotton' value this at less than that of a similar amount of woollen cloth, concluding this was a cheap cloth. The black freize was valued at 1s 5d per yard compared to the black cotton at 6d a yard and black bayes at 8d.[12] This questions as to how imported fibre or cloth could be cheaper than the home grown wool if the cloth was made of the cotton fibre. It must be stressed that there was cotton cloth available at the time, albeit rather limited and definitely not to the middling

'sort'. However 'to cotton' referred to a nap or a down which was furnished on frieze or similar fabric.[13] A term used by shepherds and within the 'sheep world' is cotting which refers to felting of the fleece.[14]

Diaper

A term which does not relate to the fibre content of the cloth yet most refer to linen cloths woven in small defined patterns, diagonals, chevrons or figures using a twill sett.[15] As the term within this study was generally used in conjunction with tablecloths and towels it can be assumed the diaper, diagonal pattern helped with the absorption of moisture as in huckleback work.

Durance

A strong closely woven worsted cloth used predominately during the sixteenth centuries, obtaining its name from the strength.[16] Produced in different colours it served well as aprons but it was sometimes lace trimmed and used for bodies and petticoats.[17]

Frieze

A narrow, heavily felted and napped, woollen cloth constructed of coarse or medium wool. During the finishing process the pile was rubbed, raised and twisted to form burs, it was stretched and treated with a solution of honey and water and brushed with a crisper, finally the cloth was put over a roller with short wire points.[18] The nap was normally only raised on one side of the cloth, making it warm, also being relatively cheap, yet it was made in different qualities; Ashdown implies there is no cloth which is able to compete with frieze for warmth.[19] This cloth was much worn by the lesser sorts but the different qualities made it available to the 'middling sorts' too. Mentioned for use in garments like jerkins, gowns and coats for both men and women, it is obviously a much sought cloth.[20] It is not clear if this was generally a tabby or twill woven cloth.

Fustian

This appears to be a generic term for a number of different types of cloth, some with a pile, or the velvet type. There is much discussion concerning the definition of a fustian cloth.[21] Until the sixteenth century most fustian was

imported from a number of different towns and therefore this expenditure made it available only to the nobility and not the middling 'sorts'. Milan fustian was the most expensive, being imported from Italy, next in quality was Naples, Jean and Genoa fustian with Holms and Ulm the cheapest. With the statutes limiting the use of silk any cloth including this fibre was unobtainable to the middling 'sort' and so was aimed solely at the nobility. This did not stop the hard working middling 'sorts' aspiring to have or make a similar quality cloth. It seems fustian was breaking out of the mould of a plain or twill type cloth by using the shedding mechanism of the loom to develop a pattern. The fustian of Naples was made of a jersey (worsted) yarn, so shiny it looked like silk, on a linen warp, the jersey was woven to create a pile which could all be uncut, cut, or cut and uncut to create a pattern. The pile could also be cut into different lengths.[22] Research has revealed woollen fustians was woven in Norwich circa 1336, these English cloths were 15 yards long and half an ell (22.5 inches) wide.[23] According to Sykas, 'home production of fustians in England probably began with wool or wool-mixture cloths', he continues to state that a statute of 1554 allowed the Norwich weavers who had napped cloths of wool with either cotton or linen to be called 'fustian of Norwich'.[24]

A contradictory term reports fustian as 'a coarse cloth of linen or flax,' so, was this a very poor quality cloth trying to emulate something more grand, without the use of carefully spun silken worsted yarn.[25] Other terms are vague and consider the cloth as "linen and worsted or linen and cotton wool" as stated by Mee, with the latter part of this statement leaving the reader unsure as to whether this is cotton, the cotty part of wool or wool.[26]

Other fustians are stated as being made from cotton and linen with the earliest noted reference to a cotton fustian made in England used cotton imported by the Turkey Company.[27]

Holland

A fine tabby woven linen cloth originally made in Holland, hence the name, during the middle ages used for shirts, smocks and kerchiefs with a coarser version for bed linen and linings.[28]

Jersey

Jersey, the name given to a worsted spun yarn on the Saxony wheels brought to England by the Strangers, therefore a Jersey cloth was woven from Jersey yarns.[29]

Kersey

A coarse narrow cloth however at times has been referred to as a fine or light fabric which was possibly used by the better 'sorts', thus a discrepancy over whether this was a coarse or light weight cloth has been established.[30] Other references note a worsted cloth possibly coarse, produced from long staple wool, woven in a 2:2 twill weave, which was slightly fulled, often with a ribbed surface due to the nature of the weave, used for hose, breeches, petticoats, stockings, linings cloaks.[31] A product made for export in 1537 and was a light weight, narrow quality, coloured fabric which was subsequently surpassed by those of the New Draperies.[32]

Lawn

A very fine linen cloth; in fact so fine that it was likened to a 'cobweb' and even transparent, used for bands and coifs. The quality of this cloth was far too elitist for the 'middling sort' with a lawn band valued at 1s.[33]

Linsey woolsey

A loosely tabby woven cloth; of linen warp and wool weft, reputedly in England by 1483.[34] Reference to use as aprons.[35]

Lockram

Regarded as a union cloth yet predominately known as a loosely woven fabric of thick hemp yarn. The union reference is ambiguous and could refer to the differing qualities of the fibre – hemp and tow flax, rather than a mixture of different fibres. Commonly used by lesser sorts for ruffs, bands, coifs, kerchiefs, household linen and linings.[36]

Puke

A colour or a fabric? A term referring to both and unless implied rather difficult

to distinguish. Hayward refers to it as "imported woollen cloth, often black in colour, also a bluish – black colour."[37] Legislative accounts of Philip and Mary imply this was a dyed in the wool cloth, of different qualities. According to Channing "the wardrobe accounts of Edward IV, 1481-3, contained frequent items of puke and a century later it is listed with scarlet among very 'fyne clothes' destined for the Levant trade."[38] Shakespeare noted 'puke stocking' Henry IV part I, act II, scene IV line 70.[39] It could be assumed this cloth was worn by gentlemen attendants of the upper 'sorts', both women and women of the middling 'sorts, with the lower 'sorts' wearing puke cloth stockings made from the poorer quality yarn.[40]

Russet

Another term for both colour and a cloth type. Referring possibly to the original domestically homespun and woven cloth, as of Anglo Saxon times, being a cheap, coarse, narrow woollen cloth left in the grey state, white, cream, through to a reddish brown and undressed, commonly used for women's attire. The 1364 statute, which was repeated by Henry VIII and James I allows only blanket and russet cloths for the husbandman and poorer person, thus the tradition of 'countrymen' having russet coats may have been started. Russets due to their easy of construction represented all that was honest and simple.[41]

Sackcloth

Coarse cloth of hemp usually made for sacks. However the sackcloth made by the Sandwich Dutch appears to be of a different sort, used for shirts and smocks, having a content of linen and silk and some being striped.[42] This does draw us to consider was it silk or where the fibres different and so the dyetake up procured the stripe effect.

Sipres (Cyprese)

A number of similarly spelt and pronounced words used for the collection of lightweight or transparent linen fabric, possibly with a crepe weave, commonly used for hat bands and veils, (black for mourning). Some references report sipres as transparent silk originally from Cyprus, being produced in England at

the end of the sixteenth century.[43]

Stammel

A red cloth dyed with kermes, yet the type of cloth is not clear. Hayward states as 'coarse woollen cloth, or linsey woolsey'.[44] Channing Linthicum states stammel as ''bastard scarlet' a fine woollen cloth which should not be confused with ermine'.[45] Often used for superior petticoats valued at threefold that of other red petticoats.[46]

Twilling

Research has not proved fruitful with this term, so empiric knowledge would tend to lead to a twill fabric used as a lining or interlining, of a relatively firm construction adding support to tailored garments.

Woollen

A term for a cloth made from wool prepared by carding the fleece so the fibres are juxtaposed. The product, a cloth in which the air is trapped, making it a good insulator and ideal for keeping the wearer warm. This is not a name of a particular cloth but that of the preparation.

Worsted

Like woollen is a generic term for cloth made from long stapled fleece which has been combed prior to spinning and spun with the fibres parallel, forming a lustrous yarn; named after a village in east Norfolk (Worstead). The cloths of a worsted yarn have many names some of the more common for this study are; stuff, say, serge, bay or baize, all either whole or half worsteds. During preparation the fibres were even blended with silk or linen to produce a more superior worsted. Due to the lustre of the fibres, through the worsted spinning process, these lustrous worsted cloths were not fulled, neither were the New Draperies (some of the mixed cloths were only lightly fulled), which would imply they were of worsted spin, fulling would have been counter productive as the fulled cloth leaves the weaves invisible in the end garment and the surface fluffy which would have distracted from the luster. The Wallons moved from Sandwich to Canterbury circa 1570 to continue to produce the bays and says

they had been making in Sandwich. The Wallons remaining in Sandwich continued with the production of these fabrics but the Canterbury Wallons had begun to specialise in lighter weight, mixed fabrics using the combination of silk and wool.[47]

Of the New Draperies there were :

Bays, Baize – a woollen cloth, although woven in the grease, the warp was spun with a high twist with the weft being very loosely spun thus the filler was very soft with the strength being that of the warp.[48] The cloth was then fulled and degreased leaving a very soft cloth which was then napped usually on one side. Considered as a light material constructed of either single or plyed yarns, used for coverings, curtains, linings, shirts and petticoats.[49]

Bombazine – a 2:1 twill cloth usually with a silk warp and worsted weft was woven in grey state and died in the piece. Black bombazine was in demand for mourning this cloth production was introduced to England by the Dutch.[50]

Say – a narrow all worsted, woven in a number of different qualities depending on the end use including a 2:2 twill. It was used for cloaks linings, shirtings and children's frocks as well as bed hanging and curtains. It was usually piece dyed in a variety of colours.[51]

Serge - a durable twilled worsted or a half, again this was usually piece dyed.[52] According to the Norfolk weavers serge a hard wearing and cheap cloth was like say but usually had a worsted warp and woollen weft.[53]

Stuff - A term given to a worsted cloth produced from a long stapled wool which had the shorts ends removed during combing, this produced a lustrous cloth, the weave used is uncertain.

[1] COCKBURN, *Calendar of Assizes*. The assizes mention 10 entries: 305, 306, 886 a blanket valued at 10s, 888, 1629, 2327 a blanket valued at 6d, 2699, 2744, 3060, 3061.
Inventories held at C.C.A.:- Nicholas Leggatt PRC 21/16/225, Lawrence Omer PRC 21/16/234, Edward Baldock PRC 21/13/288,
Elizabeth Bax PRC 21/17/96, Stephen Beaman PRC 21/14/455, John Bowle PRC 21/12/118, John Crambroke PRC 21/5/220, Stephen Crambroke 21/6/98, Robard Foat PRC 21/6/524, Joan Hixe PRC 21/16/253, Thomas Maye PRC 21/13/93, Margart Moyne PRC 21/13/215, Joane Pettite PRC 21/3/60, Edward Rose PRC 21/14/384, Nycoles Sayer PRC 21/12/171, Cycely Stevedaye PRC 21/13/430, Thomas Tucker PRC 21/13/422, Ane and Richard Turner PRC 21/12/44, Elizabeth Turner PRC 21/13/107.
[2] Thelma Morris describes Blanket cloth thus "a thick heavily milled woollen cloth used for garments as well as bed-covers", from www. norfolktextiles.org.uk/info/research-resources/glossaries accessed 15th January 2012
[3] MEE, The Clothing of Crayforde. p 40
MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 36
[4] PRIESTLY, U. (1990) *The Fabric of Stuffs: The Norwich Textile Industry from 1565.* Centre for East Anglian Studies. p 12
[5] GROSICKI, *Watson's Textile Design*. p 317
CHANNING LINTHICUM, *Costume in the Drama.* pp 103-4
MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 36
MEE, The Clothing of Crayforde. p 40
[6] COCKBURN, *Calendar of Assizes.* Record number 136
[7] ASHDOWN, *British Costume.* p 359
POTTER, and CORBMAN, *Fibre to Fabric.* p 169
[8] ASHDOWN, *British Costume.* p 359
HAYWARD, *Rich Apparel*. p 380
[9] HUGGETT, Rural Costume. p 81
[10] CHANNING LINTHICUM, *Costume in the Drama.* pp 96-7
COCKBURN, *Calendar of Assizes.* Record numbers 216, 263, 341, 406, 822, 914, 1135, 1247, 1437, 1440, 1471, 1685, 1693, 2087, 2181, 2447,2533 are all lengths of canvas. 247, 397, 462, 670, 1187, 1195,1538, 1835, 1952, 2342, 2699 are all items.
C.C.A.: Stephen Crambroke PRC 21/6/98
Henry IV part I act II scene IV line 74 pp 396 refers to a white canvas doublet.
[11] www. norfolktextiles.org.uk/info/research-resources/glossaries accessed 15th January 2012
www.oed.com/view/entry/42481 accessed 10th August 2012
[12] These figures have been taken from the inventory of Humfrye Mekins [Umphry Meakyn] C.C.A. Records PRC 21/11/57 and 21/11/55.
[13] www. norfolktextiles.org.uk/info/research-resources/glossaries accessed 15th January 2012
www.oed.com/view/entry/ 42483 accessed 10th August 2012
[14] (1998) *British Sheep.* The National Sheep Association, The ninth edition p 283
[15] ASHDOWN, *British Costume.* p 360
HAYWARD, *Rich Apparel.* p 381
[16] ASHDOWN, *British Costume.* p 360
[17] CHANNING LINTHICUM, *Costume in the Drama.* pp 74-5
COCKBURN, *Calendar of Assizes.* Record numbers 1362 – several pieces of durance valued at £20.00, 1511 2 aprons of durance valued at 10s.
[18] HAYWARD, *Rich Apparel.* p 382
HUGGETT, Rural Costume. p 81
MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor*. p 36
MEE, The Clothing of Crayforde. p 40
[19] ASHDOWN, *British Costume.* p 360
[20] CHANNING LINTHICUM, *Costume in the Drama.* p 75-6
MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 36

[21]An article by SYKAS, Fustians. pp1 -18. deals with the Fustian over a wide time scale and tries to put a more definitive definition to the term 'Fustian'.
[22] www. norfolktextiles.org.uk/info/research-resources/glossaries accessed 15th January 2012
[23] ASHDOWN, *British Costume.* p 360
CHANNING LINTHICUM, *Costume in the Drama.* pp 106-9
[24] SYKAS, Fustians. p 2
[25] HAYWARD, *Rich Apparel*. p 382
[26] MEE, The Clothing of Crayforde. p 40
[27] A letter of 1586 from the Turkey Company to Aleppo Factors discuss the quality and quantities of cotton and the uses intended for each. CHANNING LINTHICUM, *Costume in the Drama.* p 108 A summary of how the cotton and linen fustians were constructed is given by SYKAS, Fustians. p 2
[28] ASHDOWN, *British Costume.* p 361
HAYWARD, *Rich Apparel*. p 383
[28] CHANNING LINTHICUM, *Costume in the Drama.* pp 97-8
MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 36
MEE, The Clothing of Crayforde. p 40
[29] De MANN, J. (1973) Documents and Sources V: A Document Regarding Jersey Spinning in the P.R.O. *Textile History* (Vol 4) pp 140-1. Mann refers to a document of circa 1596 stating there are three types of spinning; woollen spun on the great wheel, worsted which was rock spun and jersey on a small wheel because this way of spinning was first practised on the isle of the same name.
[30] ASHDOWN, *British Costume.* p 361
CHANNING LINTHICUM, *Costume in the Drama.* pp 79-80
Ashdown also refers to this as a woollen cloth where as others refer to a worsted. As kersey was supposedly named after the town it was made, in the heart of the worsted spinning area it would be presumed this was a worsted spun yarn.
MEE, The Clothing of Crayforde. p 40. Mee states kersey as "An English cloth woven from a short staple wool".
[31] HAYWARD, *Rich Apparel*. p 383
MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 36
[32] CHANNING LINTHICUM, *Costume in the Drama.* pp 79-80
[33] Ibid. pp 98-9
HAYWARD, *Rich Apparel*. p 383
COCKBURN, *Calendar of Assizes.* Record number, 2713 one lawn band valued at 1s.
MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 36
[34] CHANNING LINTHICUM, *Costume in the Drama.* p 81
HAYWARD, *Rich Apparel*. p 383
MEE, The Clothing of Crayforde. p 40.
[35] COCKBURN, *Calendar of Assizes.* Record number, 312 one apron valued at 8d.
[36] HAYWARD, *Rich Apparel.* p 383
[36] CHANNING LINTHICUM, *Costume in the Drama.* pp 99-100
MEE, The Clothing of Crayforde. p 40
[37] HAYWARD, *Rich Apparel*. p 385
[38] CHANNING LINTHICUM, *Costume in the Drama.* p 85
[39] SHAKESPEARE, W. (1984) *The Illustrated Stratford Shakespeare.* London: Chancellor Press. p 396
[40] National Archives PROB 11/43 John Pikes (1559) " a cassock clothe of the said half fine puke cloth" a number of other items of this 'said' cloth were bequeathed to different persons.
[41] CHANNING LINTHICUM, *Costume in the Drama.* pp 86-7
HAYWARD, *Rich Apparel*. p 385
[42] Ibid. p 385
KERRIDGE, *Textile Manufactures.* p 70
[43] HAYWARD, *Rich Apparel.* p 386

KERRIDGE, *Textile Manufactures.* p 126
MIKHAILA, and MALCOLM-DAVIES, *The Tudor Tailor.* p 36
[44] HAYWARD, *Rich Apparel*. p 386
[45] CHANNING LINTHICUM, *Costume in the Drama.* p 90
[46] COCKBURN, *Calendar of Assizes.* The assizes mention 2 stammel petticoats [2564] compared to a red petticoat is valued at 6s 8d [631]
[47] LAWSON, and KILLINGRAY, *Historical Atlas.* Article by Zell and Chalkin p 75
[48] Ibid. p 13.
www. norfolktextiles.org.uk/info/research-resources/glossaries accessed 15th January 2012
HAYWARD, *Rich Apparel*. p 379
[49] JENKINS, *The Wool Textile.* p 28
[50] PRIESTLY, *The Fabric of Stuffs.* p 13
HAYWARD, *Rich Apparel*. p 380
[51] JENKINS, J. (Ed) (1972) *The Wool Textile Industry in Great Britain.* London: Routledge and Paul. p 28
PRIESTLY, *The Fabric of Stuffs.* p 13
HAYWARD, *Rich Apparel*. p 386
[52]JENKINS, *The Wool Textile.* p 28
PRIESTLY, *The Fabric of Stuffs.* p 14
www. norfolktextiles.org.uk/info/research-resources/glossaries accessed 15th January 2012
[53] PRIESTLY, *The Fabric of Stuffs.* p 14

Appendix 2

Sample number:
MR 81 A 1669

Where sample kept:
The Mary Rose Trust, Portsmouth.

Date when viewed:
18th April 2011

Condition:

Size of sample: 16cm x 5cm (Yellow)

1. 15cm x 5 cm (Red)
2. 11cm x 0.75cm (Brown)

Original usage: There are three samples from garments, two of a similar size but of different colours and a small dark brown strip which could well be a braid of some kind.

Basic description: Where found: Orlop deck 03 section.

Specific details

Composition: All appear to be of wool.

Twist per inch: Unable to identify

Twist direction warp: 's' singles on both sample 1 and 2

Twist direction weft: 's' singles on both sample 1 and 2

Threads per inch warp: 1. Yellow 32
2. Red 28

Threads per inch weft: 1. Yellow 32
2. Red 24

There was no evidence of a selvedge so difficult to ascertain where the selvedge ran.

Tamsyn Young

Weave type:
Sample 1: This is a strip of 2:2 twill and appears to have been dyed a yellow previously. It is slightly felted but this is possibly because of wear rather than in the making.
Sample 2: This is also a strip of fabric but it is of plain weave and is felted – napped the weave has been covered. Possibly madder dyed has some silt remaining within the fabric.

Sample number:

MR 81 A 2480

Where sample kept:

The Mary Rose Trust,

Portsmouth

Date when viewed:

18th April 2011

Condition:

Size of sample: 44cm x 36cm

Original usage: Jerkin / cape.

Basic description: Where found on the Orlop deck section 03

In Ryder's article this is referred to as a cape, the warp being of hairy medium fleece and the weft as generalized medium.

Specific details

Composition: Wool, on the reverse side it is very napped so much that the weave is obliterated by the brushing.

Twist per inch: Unable to identify

Twist direction warp: 's' singles

Twist direction weft: 's' singles

Threads per inch warp: The direction of the warp has been established based on the pattern piece, the warp running the length of the garment. 36

Threads per inch weft: For the above reason, 30

Weave type: A plain weave which has been fulled on one side, to the extent the fabric looks like felt.

Close up of the Jerkin/ cape

Sample number:

MR 81 A2539

Where sample kept:

The Mary Rose Trust,

Portsmouth.

Date when viewed:

18th April 2011

Condition: Fragments

Size of sample:20cm x 9cm

Original usage:

Basic description: Found on the Orlop deck 03 section, with some leather, these fragments were possibly part of a leather bag. They are referred to as coarse wool

Specific details

Composition: Coarse wool, in fact some of the fibres resemble those of goat or horse hair or very kempy fleece.

Twist per inch: c 14

Twist direction warp: 'z' singles Plied 's'

Twist direction weft: 'z' singles plied 's'

Threads per inch warp: 9

Threads per inch weft: 9

Weave type: This was a very coarse plain weave fabric, dyed in the cloth by the way the threads appear undyed where the weft/warp has disappeared.

Close up of fragment MR 81 A2539

Tamsyn Young

Sample number:

MR 81 A2995

Where sample kept:

The Mary Rose Trust, Portsmouth.

Date when viewed:

18th April 2011

Condition: Good

Size of sample: 54cm x 25cm

Original usage: Sock woven

Basic description: This sock was found in the hold H4 it is very napped so much that there is virtually no base showing. It is a plain weave and very closely woven. Referenced in Ryder's article and refers to the warp as medium hairy and the weft as shortwool. However they conclude the warp and weft the same thickness.

Specific details

Composition: Wool

Twist per inch: Unable to identify

Twist direction warp: 's'

Twist direction weft: 's'

Threads per inch warp: 28

Threads per inch weft: 28

Unable to establish where the selvedge was but would assume the sock length would have been placed on the warp. However as the weave appeared balanced this is rather immaterial.

Weave type: Close plain weave

Close up of woven sock MR 81 A2995

Tamsyn Young

Sample number:

MR 81 A4258

Where sample kept:

Mary Rose Trust,

Portsmouth.

Date when viewed:

18th April 2011

Condition: Good, had silt still in the garment

Size of sample: 39cm x 34cm. This was the front piece of the jerkin.

Original usage: A red jerkin most probably dyed with madder, the front of the jerkin had previously had some kind of embellishments like a braid which has been removed.

Basic description: Where found: On the Orlop deck 03 section there are a number of parts that belong to this jerkin.

Specific details

Composition: Wool

Twist per inch: Possibly 8 per inch- this was established from a piece of yarn which was unwoven and protruding from the garment piece.

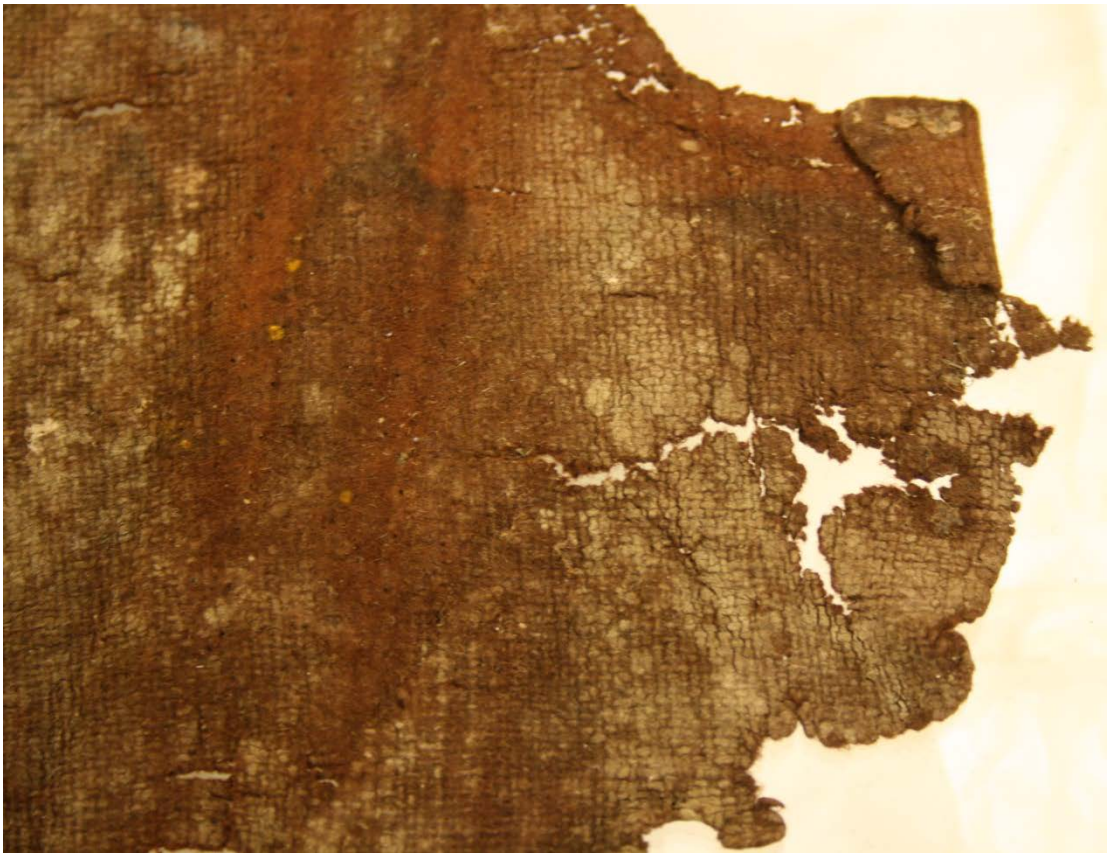
Twist direction warp: 's' singles

Twist direction weft: 's' singles

Threads per inch warp: 20 (Although there was no evidence of a selvedge the warp has been established on the length of the garment being cut on these threads for strength and length.)

Threads per inch weft: 26

Weave type: Plain weave. The garment had a fair amount of silt still in the material however you could see the weave and it was slightly felted but this did not appear to be an overall effect to may have been produced by the water or wear before being submersed in the sea.



Close up of the red Jerkin R 81 A4258

Tamsyn Young

Sample number:

MR 81 A 4574 – [1]

Where sample kept:

The Mary Rose Trust,

Portsmouth

Date when viewed: 18th April 2011

Condition: Fragments possibly from a garment. One of the edges could be a selvedge or possibly where it has been rolled/ turned.

Size of sample: 5cm x 23cm

Original usage: Unknown.

Basic description: Where found: on the Orlop deck section 03

Specific details

Composition: Wool

Twist per inch: approx 14

Twist direction warp: 's' singles

Twist direction weft: 's' singles

Threads per inch warp: 32

Threads per inch weft: 32

Weave type: 2: 2 twill. The yarn may well have been spun as a worsted as the fabric does not seem to be as hairy as others and it was easier to count the twist, thus leading one to believe the fibres initially all laid the same way.

Close up of MR 81 A 4574 – [1]

Tamsyn Young

Sample number:

MR 81 A 4574- [2]

Where sample kept:

The Mary Rose Trust,

Portsmouth.

Date when viewed: 18th April 2011

Condition:

Size of sample: Overall 12cm x 48cm (each strip measured approx 4cm in width). The dark brown strip was approx 0.5cm in width.

Original usage: Unknown

Basic description: Where found on the Orlop Deck 03 section.

Specific details

Composition: Wool

Twist per inch: Unknown

Twist direction warp: 's' singles

Twist direction weft: 's' singles

Threads per inch warp: 32

Threads per inch weft: 32

Weave type: Plain weave, the overall effect is one of velvet but this has been created by the amount of fulling that has taken place. In some areas the napped fibres have been worn away.

Close up of MR 81 A 4574- [2]

Tamsyn Young

Sample number:

A 4693/4

Where sample kept:

The Mary Rose Trust,

Portsmouth

Date when viewed:

18th April 2011

Condition:

Size of sample: 22cm x 20cm

Original usage: This appears to be part of a jerkin which possibly had a lining.

Basic description: There seems to be a very small fragment of linen along the bottom edge of the sample. This could be where the lining was attached. Information from the Mary Rose actually suggests the small fawn piece of fabric is linen lining. Under a counting glass this piece shows a more hairy appearance to that which one would expect from linen, whereas the fibres at the bottom edge do really demonstrate the appearance of the cellulose feel of linen. Further investigation would be needed to clarify this fact. There is no record of a deck or position this article was found.

This has been referenced in Ryder's article, the pieces were associated with a basket; perhaps for storage during the journey, the warp is regarded as that of generalized medium and the weft as hairy medium, with the weft coarser.

Specific details

Composition: Wool with possibly a linen lining.

Twist per inch: This was extremely difficult as the sample was very tightly woven and well felted

Twist direction warp: possibly ‘s’

Twist direction weft: possible ‘s’

Threads per inch warp: again this was very hard possibly to establish where the selvedge was but a count of 16 was calculated

Threads per inch weft: as above possibly 12

Weave type: This was a plain weave it was well felted and although the tpi does not reflect the look the weave looks balanced.

Tamsyn Young

Sample number:

MR 81 A 4919

Where sample kept:

Mary Rose Trust,

Portsmouth.

Date when viewed:

18th April 2011

Condition: Good for hemp

Size of sample: 6cm x 3cm, 15cm x 4cm

Original usage: Hemp Sail cloth

Basic description: Hemp sailcloth found on 03 section Orlop deck where it appeared to be kept in storage as a spare set of sails. They were folded and compacted into itself and so only fragments have survived.

Specific details

Composition: Hemp

Twist per inch: Due to the storage and the way it had been found it is very hard to see any twist and appears very straight.

Twist direction warp: Unable to identify accurately but possibly ‘z’

Twist direction weft: Unable to identify accurately but possibly ‘z’

Threads per inch warp: 33

Threads per inch weft: 20

Weave type: Plain weave

Close up of the hemp sails MR 81 A 4919

Appendix 3

Fibres taken from the different fleeces, used for the woven samples, illustrate the varying thickness. These measurements have been calculated as accurately as possible on these fibres, due to natural conditions each clip may vary.

Romney staple.

Fibres ranging

25-38 microns

Ryeland staple.

Fibres ranging

20-30 microns

Portland staple.

Fibres ranging

20-33 microns

Linen fibre.

Fibres ranging

27-63 microns

A micron = a thousandth of a millimetre.

Appendix 4

Samples taken from the dyed gamps to illustrate actual colours on wool and linen fibres.

Glossary

As drawn in: The numerical sequence in which the threads are drawn through the headles.

Break: A weakness in the staple.

Chapman: A travelling sales man.

Cotton Bol: The seed pod from the cotton plant which houses the fibres and the seed.

Cotty: Short staple of poor quality and may be a tangled mess not fit for use.

Crimp: The wave in the staple.

Dentage: The amount of spaces in the reed per measurement.

Double drive: The single driving band of a spinning wheel which drives both the wheel and flyer.

Ell: A measurement of cloth. Flemish ell was equal to 27" whereas the English ell was 36"

Extruded Fibres: A continuous filament; a liquid is secreted solidifying when in contact with the air producing a smooth uniform filament, either natural or manmade.

Fleece: The shorn wool from the sheep's back.

Folded: When two or more singles yarns are twisted together to form a thicker yarn.

Fulling: Finishing process after weaving.

Gamp: A systematic arrangement of warp threading and/or colour of equal sized sections woven as drawn in. The result, a perfect arrangement of equal sized squares each with a different composition.

Grey: Cloth which is in its natural state after weaving, prior to washing or scouring.

Kempy: A hair not a staple, which does not take dye due to the lack of porosity.

Line: The best quality of the bast fibres stretching the full length of the original plant.

Lye: Solution used in the finishing process.

Mixed: Fibres mixed during preparation for spinning.

Mordant: A fixative from natural substances causing a chemical reaction.

Napping: The drawing up of fibres to the fabric surface.

Piece dyeing: Cloth dyed when it has been woven the cheapest and least effective of the dying processes.

Prime or diamond: Best quality.

Reed: Part of the loom which establishes the warp density, historically made from reed or bone.

Retting: A process in the preparation of the bast fibre; the woody part of the plant is allowed to decompose leaving the fibres. There are different ways of retting; dew retting utilising the dew keep the plants moist. Wet retting requires the plants are laid in a stream or flowing river.

Rise: About half an inch of distinct staple between the skin and the fleece mass. An adept shearer will carefully guide his shears through this area not nicking the skin thus leaving blood on the fleece, neither will he retrace his steps causing ‘second clippings’.

Rolag: The name given to the woollen prepared fleece (carded). It resembles a long roll of fibres.

Second clippings: Caused due to the shearer cutting the fleece again possibly due to inexperience or the sheep not being held well while shearing took place. Second clippings need to be removed as they interfere with preparation and will prevent a smooth yarn being produced.

Selvedge: This is the edge of a piece of cloth; normally the warp threads are doubled in the reed on the selvedge to give a firmer edge for the durability of

the cloth. In some instances it has been reported a folded yarn is used to make the edges curl.

Setts: The weight of the fabric which has been determined by the epi.

Staple: A single fibre of sheep fleece. A short stapled fleece would be more suited to a woollen spin whereas a long stapled fleece would be best spun as a worsted spin.

Stock cards: A pair of wooden boards with small wire hooks used to prepare the fleece for woollen yarns.

Stock dyed: Fleece which has been dyed prior to spinning into a yarn maximizing the intensity of colour.

Substantive: A dye stuff which requires no mordant.

Suint: Sweat from the sheep.

Tabby: Plain weave; over one, under one.

Tops: Commercially prepared fibres.

Tow: The short fibres from the bast fibres, this produces a poorer quality yarn due to the shorter lengths of the fibres.

Trendle Wheel: It appears the word trendle is a dialect of the word trundle meaning a small wheel. It is not clear if the terminology incorporates treadle which is becoming apparent at the time.

Tromp as writ: A tradition phrase meaning woven as drawn in. If the headles were threaded 1-2-1-2- then the weaving would be the lifting/lowering of the shafts in the same order.

Twill: Diagonal weave formed by the filler yarn crossing two or more warp yarns and subsequently moving one space to the left or right for each pick.

Union: A cloth woven of mixed yarns; linen warp and woollen weft.

Wool wheel: Generally regarded as a Great Wheel

Woollen: Yarn spun from fibres which have been prepared by carding; the fibres are juxtaposed during this preparation too produce a warm yarn. A

woollen cloth has been woven using this yarn; it is usually warm due to the air trapped between the fibres. Many woollen cloths are fully and napped.

Worsted: A yarn spun form fibres which have been prepared by combing, resulting in all the fibres laying parallel to one another. A worsted cloth has been woven using these yarns.

Yarn dyed: Yarn which has been dyed after spinning and before weaving.

Figure 36: A wood cut from the Travels of Sir John Mandeville 1371.

Describing the cotton plant as a 'tree that bears wool as though it were of sheep'. [Mandeville Chapter xxix]

Accessed 9th February 2013

List of References

Inventories for Staple.

Baldocke, Edward C.C.A. PRC 21/13/288 and C.C.A. PRC 21/14/380

Bax, Elizabeth C.C.A. PRC 21/17/96

Baxe, Thomas C.C.A. PRC 21/7/60

Baxe, Thomasyne C.C.A. PRC 21/17/240

Baxe, Widow C.C.A. PRC 21/13/96

Baxe, William C.C.A. PRC 21/13/531

Beaman, Stephen C.C.A. PRC 21/14/455

Bowle, John C.C.A. PRC 21/12/118

Church, John C.C.A. PRC 21/4/88

Crambroke, John C.C.A. PRC 21/5/220

Crambroke, Stephen C.C.A. PRC 21/6/98

Cutler, John C.C.A. PRC 21/5/89

Dade, Steven C.C.A. PRC 21/6/526

Dubesses, John C.C.A. PRC 21/6/235 and C.C.A. PRC 21/6/548

Dunnyng, William C.C.A. PRC 21/13/111

Foat, Robard C.C.A. PRC 21/6/524

Foat, Widow C.C.A. PRC 21/13/67

Footes, Annys C.C.A. PRC 21/13/108

Hatcher, Thomas C.C.A. PRC 20/5/356

Hilles, Roger C.C.A. PRC 21/4/156

Hixe, Joan C.C.A. PRC 21/16/253

List of References

Latt, John C.C.A. PRC 21/6/307

Lawrence, Mychaell C.C.A. PRC 21/11/11

Leggatt, Nicholas C.C.A. PRC 21/16/225

Lynch, Symon C.C.A. PRC 21/2/207

Maye, Thomas C.C.A. PRC 21/13/93

Moyne, Margart C.C.A. PRC 21/13/215

Moyne, Robert C.C.A. PRC 21/10/325

Neame, William C.C.A. PRC 21/8/94

Norris, Thomas C.C.A. PRC 21/11/30

Omer, Lawrence C.C.A. PRC 21/16/234

Omer, Vincente C.C.A. PRC 21/6/166

Pache, John C.C.A. PRC 21/9/204

Pettit, Barthelmew C.C.A. PRC 21/12/198

Pettit, John C.C.A. PRC 21/3/1

Pettite, Joane C.C.A. PRC 21/3/60

Rose, Edward C.C.A. PRC 21/14/384

Sayer, Nycoles C.C.A. PRC 21/12/171

Standford, Robert C.C.A. PRC 21/15/385

Stevedaye, Cyely C.C.A. PRC 21/13/430

Taylor, Thomas C.C.A. PRC 21/2/288[289]

Tucker, Laurance C.C.A. PRC 21/13/268

Tucker, Thomas C.C.A. PRC 21/13/422

Turner, Ane and Richard C.C.A. PRC 21/12/44

Turner, Elizabeth C.C.A. PRC 21/13/107

Woode, George C.C.A. PRC 21/12/29

Inventories from neighbouring parishes.

Beche, John C.C.A. PRC 32/32/198a

Godden, Tamsyn C.C.A. PRC 28/7/214

Gooddyn, Alice C.C.A. PRC 28/5/164

Harflett, Thomas C.C.A. PRC 32/28/10

Haslocke, Richard C.C.A. PRC 21/16/254

Jeckson, William C.C.A. PRC 21/11/80

Mekins, Humfrye C.C.A. PRC 21/11/57

Skott, Richard C.C.A. PRC 21/5/189

Stupple, Richard C.C.A. PRC 32/31/320

Trystram, John C.C.A. PRC 21/1/362

Worsley, Thomas C.C.A. PRC 28/10/420

Wills from Staple.

Baxe, Thomas C.C.A. PRC 32/34/249a

Baxe, William C.C.A. PRC 32/38/13a

Churche, John C.C.A. PRC 32/34/55

Crambryke, John C.C.A. PRC 32/34/198

Cranbroke, Stephen C.C.A. PRC 32/34/220

Cutler, John C.C.A. PRC 32/34/155

Dade, Steven C.C.A. PRC 32/35/84a

Dubesses, John C.C.A. PRC 32/35/120b

Hills, Roger C.C.A. PRC 32/34/76

Rose, Edward C.C.A. PRC 32/38/149a

List of References

Tayler, Anthony C.C.A. PRC 32/38/37b

Wills from neighbouring parishes.

Austen, Valentine C.C.A. PRC 32/30/310

Shaw, Edmond C.C.A. PRC 32/32/183

Bibliography

ANDREWES, J. 1991 *Land, Family and Community in Wingham and its Environs; and Economical and Social History of Rural Society In East Kent from c.1450-1640*. PhD Thesis University of Kent at Canterbury.

ARMSTRONG, A. 1995 *The Economy of Kent 1640 – 1914.* Woodbridge; Boydell Press and Kent County Council.

ARNOLD, J. 1985 *Patterns of Fashion: The Cut and Construction of Clothes for Men and Women c 1560-1620*. London; Pan Macmillan.

ARNOLD, J. 1988 *Queen Elizabeth's Wardrobe Unlock'd.* Leeds: Maney.

ARNOLD, J. 2008 *Patterns of Fashion 4: The Cut and Construction of Linen Shirts, Smocks, Neckwear, Headwear and Accessories for Men and Women c 1540-1660.* London; Pan Macmillan.

ASHDOWN, C. c.1930 *British Costume During Nineteen Centuries.* London: Thomas Nelson and Sons Ltd:

ASHELFORD, J. 1983 *A Visual History of Costume; The Sixteenth Century.* London; Batsford.

ASPIN, C. 1981 *The Cotton Industry*. Aylesbury; Shire publications.

ATWATER, M. 1928 *The Shuttlecraft Book of American Handweaving.* London; Macmilian. (6th Edition)

AUERBACH, E. 1954 *Tudor Artists*. London; University of London.

AYRES, J. 2003 *Domestic Interiors - The British Tradition 1500-1850*. London; Yale University Press.

BACKHOUSE, M. 1995 *The Flemish and Walloon Communities at Sandwich during the reign of Elizabeth I (1561-1603).* Brussel; Paleis der Academien.

BAGSHAW, S. 1849 ? *History Gazetteer and Directory of the County of Kent Volume 1.* Sheffield; G. Ridge.

BAGSHAW, S. 1849 *History Gazetteer and Directory of the County of Kent Volume II.* Sheffield; G. Ridge.

Bibliography

BAINES, P. 1982 *Spinning Wheels; Spinners and Spinning.* London; Batsford. (Reprint 1986, 1991)

BAINES, P. 1985 *Flax and Linen*. Aylesbury; Shire publications.

BAINES, P. 1989 *Linen Handspinning and Weaving.* London; B.T.Batsford Ltd.

BAKER, T. H. (Collected by) [n.d.] inscribed 1946 *Records of the Seasons, Prices of Agricultural Produce and Phenomena Observed in the British Isles*. London; Simpkin Marshall and Co.

BALDWIN, F. E. 1926 *Sumptuary Legislation and Personal Regulation in England*. Baltimore; The John Hopkins Press.

BARRY, J. and BROOKS, C. (Ed)1994 *The Middling Sort of People Culture,Society and Politics In England 1550-1800*. Hampshire; The Macmillan Press Ltd.

BEARD, G. 1991 *The National Trust Book of The English House Interior.* London; The Penguin Group.

BENJAMIN, W. 1970 *Illuminations*. London; Jonathan Cape.

BENNETT, F. 1914 *Woolen and Worsted Fabrics Glossary*. Boston; Bennet and Co.

BERESFORD, M. 1954 The Poll Tax and Census of Sheep, 1549 *The Agricultural History Review.* pp9-15

BERNARD, G. 1982 The Fortunes of the Greys, Earls of Kent in the Early Sixteenth Century. *The Historical Journal.* (Vol. 25 No. 3) pp 671-685

BEST, H. 1641 *Rural Economy in Yorkshire in 1641: being the Farming and Account Book of Henry Best of Elmswell.* London; George Andrews (1957)

BINDOFF, S. 1950 (rep 1981) *Tudor England*. Middlesex; Penguin Books Ltd. (reprint)

BLACK, M. 1945 *Key to Weaving*. Canada; Bruce Publishing Company. 6th Edition 1952

BLOCKLEY, K. BLOCKLEY, M. BLOCKLEY, P. FRERE, S. and STOW, S. 1995 *Excavations in the Marlowe Car Park and Surrounding Areas.* Canterbury; Canterbury Archaeological Trust.

BOLTON, E. 1972 *Lichens for Vegetable Dyeing*. London; Studio Vista Publications (Reprint)

BOWDEN, P. J. 1971 *The Wool Trade in Tudor and Stuart England*. London; Frank Cass and Co Ltd. (New Impression)

BROBY-JOHANSEN, R. 1968 *Body and Clothes An Illustrated History of Costume*. London; Faber and Faber.

BROOKE, I. 1952 *Four Walls Adorned Interior Decoration 1485-1820*. London; Methuen and Co.

BROOKES, I. 1939 *Western European Costumes Vol I 13th Century to 17th Century*

CAMBELL, M. 1945 *The English Yeoman under Elizabeth and the early Stuarts.* New Haven; Yale University Press.

CAMERON, E. 2006 *Short Oxford History of Europe: The Sixteenth Century*. New York; Oxford University Press.

CHANNING LINTHICUM, M. 1963 *Costume in the Drama of Shakespeare and his Contempories.* New York; Russell and Russell.

CLAESSEN, M . 1981 *Felting: A Manual for Felting Wool to Make Clothes or Other Objects*. Holland; Louet.

COBB, H. 1995 Textile Imports in the Fifteenth Century: The Evidence of the Customs' Accounts. *Costume* (No. 29) pp 1-11

COCKBURN, J. S. (Ed)1979 *Calendar of Assize Records Kent Indictments Elizabeth I*. London; HMSO.

COLLINGWOOD, P. 1955 Arts and Crafts Exhibition. *Quarterly Journal of the Guilds of Weavers, Spinners and Dyers.* (No 14 June) pp 451

COPLEY. 1977 *Camden's Britainna - Kent* (Edited from 1789 Edition of Richard Gough). London; Hutchinson and Co.

COWEL, J. 1685 *The Interpreter, Words and Terms used Either in the Common or Statue Laws of this Realm*. London; The Affigns of Richard Alkins and Sir Edward Alkins Knight for H Twyford, Tho Baffel, J. Place and H. Sawbridge.

Bibliography

CRESSY, D. 2003 *Society and Culture in Early Modern England*. Aldershot; Ashgate

CROSS, N. 2001 Designerly Ways of Knowing: Design Discipline versus Design Science. *Design Issues*. (Vol. 17 No. 3) pp 49-55

CROWFOOT, E. PRITCHARD, F. and STANILAND, K. 1992 *Textiles and Clothing*. London; HMSO Publication.

CUNNINGTON, P. and LUCAS, C. 1967 *Occupational Costume in England from the Eleventh Century to 1914*. London; Adam and Charles Black.

CUNNINGTON, P. and LUCAS, C. 1972 *Costume for Births, Marriages and Deaths*. London; Adam and Charles Black. (reprint 1978)

De L MANN, J. 1973 Documents and Sources V: A Document Regarding Jersey Spinning in the P.R.O. *Textile History*. (Vol 4) pp 140-1

DE MARLY, D. 1986 *Working Dress A History of Occupational Clothing*. London; Batsford.

DIXON, M. 1979 *The Wool Book*. London; Hamlyn.

DOBERS, P. STRANNEGARD, L. 2005 Design, Lifestyles and Sustainability. Aesthetic Consumption in a World of Abundance. *Business, Strategy and the Environment*. (Vol. 14) pp 324-336

DUTTON, D. 2005 *Authenticity in Art*. Oxford University Press.

DYER, C. 1997 History and Vernacular Architecture. *Vernacular Architecture*. (Vol 28) pp 1-7

ELTON, G. R. 1955 *England under the Tudors*. London; Routledge. (3rd Edition 1991)

EVANS, M. 1930 *Costume Throughout the Ages*. London; J.B. Lippincott Company.

EWING, E. 1984 *Everyday Dress 1650 – 1900*. New York; Chelsea Publishers.

FANNIN, A. 1979 *Handloom Weaving Technology*. New York; Van Nostrand Reinhold Company.

FEREDAY, G. 2003 *Natural Dyes*. London; British Museum.

FOWLER, H. W. and FOWLER, F. G. (Eds) 1964 *The Concise Oxford English Dictionary*. Oxford; Clarendon Press.

FRASER, R. 2003 *A People's History of Britain.* London; Chatto and Windus.

FULLER, T. 1648 *The Holy State*. Cambridge; Roger D[aniel] for John Williams. (2nd Edition).

GARDINER, D. 1954 *Historic Haven*. Derby; Pilgrim Press Ltd.

GARDINER, J. 2005 *Before the Mast; Life and Death aboard the Mary Rose*. Portsmouth; Mary Rose Trust Ltd.

GINSBURG, M. (Ed) 1993 *The Illustrated Book of Textiles*. London; Studio Editions.

GOOD, I. 2001 Archaeological Textiles: A Review of Current Research. *Annual Review of Anthropology*. (Vol 30) pp 209-226

GOODMAN, N. 1989 *Art and Authenticity*. New York; Prometheus Books.

GOODWIN, J. 1982 *A Dyers Manual.* London; Pelham Books.

GORDON, B. 1982 *The Final Steps: Traditional Methods and Contemporary Applications for Finishing Cloth by Hand*. Colorado; Interweave Press.

GREENE, F. H. 1886 *Practice in Finishing Woolens and Worsteds*. Philadelphia; The Textile Record.

GREENWOOD, J. 1994 Woad. *The Textile Society Magazine*. (Vol. 22)

GROSICKI, Z. 1975 *Watson's Textile Design and Colour; Elementary Weaves and Figured Fabrics Seventh Edition.* London; Newnes Butterworth.

GROSS M, YI-LUEN, D. 2009 Educating the New Makers: Cross Disciplinary Creativity. *Leonardo*. (Vol. 42 No. 3) pp 210-215

GUY, J. 1997 *The Tudor Monarchy*. London; Hodder.

HALL, A. 1978 *The Standard Handbook of Textiles*. London; Butterworth and Co. (8th Edition)

HARRISON, W. 1968 *The Description of England*. (Ed by Georges Edelen). Ithaca N.Y.; Cornell University Press.

HARTE, N. B. and PONTING, K. G. 1983 *Cloth and Clothing in Medieval Europe. Essays in Memory of Professor E M Carus Wilson*. London; Pasold Research Fund.

HARVEY, J. 1995 *The Men in Black*. London; Reaktion Books Ltd.

HASTED, E. 1972 *The History and Topographical Survey of the County of Kent Volume 1 .* Wakefield, England; E.P. Publishing Ltd. (Reprint)

HASTED, E. 1972 *The History and Topographical Survey of the County of Kent Volume IX .* Wakefield, England; E.P. Publishing Ltd. (Reprint)

HASTED, E. 1972 *The History and Topographical Survey of the County of Kent Volume X .* Wakefield, England; E.P. Publishing Ltd. (Reprint)

HASTED, E. 1972 *The History and Topographical Survey of the County of Kent Volume XI .* Wakefield, England; E.P. Publishing Ltd. (Reprint)

HAYWARD, M. 1996 Luxury or Magnificence?Dress at the Court of Henry VIII. *Costume*. (No. 30) pp 37-46

HAYWARD, M. 1997 The Packing and Transportation of the Possessions of Henry VIII, with Particular Reference to the 1547 Inventory. *Costume*. (No. 31) pp 8-15

HAYWARD, M. 2002 The Sign of Some Degree? *Costume*. (No. 36) pp 1-17

HAYWARD, M. 2007 Crimson, Scarlet, Murrey and Carnation: Red at the Court of Henry VIII. *Textile History*. (Vol 38 No 2) pp 135-150

HAYWARD, M. 2007 *Dress at the Court of Henry VIII*. Leeds; Maney.

HAYWARD, M. 2009 *Rich Apparel: Clothing and the Law in Henry VIII's England*. Farnham; Ashgate Publishing.

HAZLITT, W. 1905 *Faiths and Folklore; A Dictionary of National Beliefs, Superstitions and Popular Customs, Past and Current, with their Classical and Foreign Analogues, describes and Illustrated.* London; Reeves and Turner.

HEMMINGS, J. (Ed) 2012 *The Textile Reader*. London; Berg Publishers.

HEMMINGS, J. 2012 *Warp and Weft: Woven Textiles in Fashion, Art and Interiors*. London; Bloomsbury.

HOFENK de GRAAFF, J. 2004 *The Colourful Past: Origins , Chemistry and Identification of Natural Dyestuff.* London: Archetype.

HOLDERNESS, B. A.1976 *Pre Industrial England Economy and Society 1500-1750*. London;

HOSKINS, W. G. 1997 *Local History in England*. London; Longman.

HUGGETT, J. 1999 Rural Costume in Elizabethan Essex: A Study Based on the Evidence from Wills. *Costume.* (No. 33) pp 74-88

HUNTING, P. 1989 *A History of The Drapers' Company.* London; The Drapers' Company.

IMPREY, E. 2009 Made in England. *Heritage Today.* pp 14-19

JACOBS, B. 1977 *Growing Herbs and Plants for Dyeing*. Tarzana, Select Books.

JENKINS, D. (Ed) 2003 *The Cambridge History of Western Textiles I*. Cambridge; Cambridge University Press.

JENKINS, D. (Ed) 2003 *The Cambridge History of Western Textiles II*. Cambridge; Cambridge University Press.

JENKINS, J. (Ed) 1972 *The Wool Textile Industry in Great Britain.* London; Routledge and Paul.

KERRIDGE, E. 1967 *The Agricultural Revolution*. New York; Augustus M Kelley.

KERRIDGE, E. 1985 *Textile Manufactures in Early Modern England*. Manchester; Manchester University Press.

LAMBARDE, W. 1826 *A Perambulation of Kent*. London; Baldwin, Cradock and Joy.

LAMBARDE, W. 1970 *Perambulation of Kent.* Bath; Adam and Dart (First published 1576)

LANGLAND, W. 1886 *The Vision of William Concerning Piers Plowman.* (Ed by W. Skeat) Oxford; Clarendon Press.

Bibliography

LAWSON and KILLINGRAY 2004 *An Historical Atlas of Kent*. Chichester; Phillimore and Co Ltd.

LAWSON, J. 2007 Rainbow for a Reign: The Colours of a Queen's Wardrobe. *Costume*. (No. 41) pp 26-44

LEMIRE, B. 2006 Wool. Products and Markets from the Thirteenth to the Twentieth Century. *Costume.* (No. 40) pp 72-74

LIPSON, E. 1921 *The History of the Woollen and Worsted Industries.* London; Adam and Charles Black

LLOYD, T. H. 1977 *The English Wool Trade in the Middle Ages*. Cambridge; Cambridge University Press.

LOCKYER, R. 1964 *Tudor and Stuart Britain, 1471-1714.* London; Longmans.

MANDER, N. 1997 Painted Cloths: History, Craftsmen and Techniques. *Textile History*. (Vol 28 no 2) pp 119-148

MANDEVILLE, J. [n.d] *Travels of Sir John Mandeville.* www.gutenberg.org/dirs/etext97/tosjm10h.htm accessed 9th February 2013.

MARIET, E. 1942 *Handweaving and Education.* London; Faber and Faber. (Second Impression 1949)

MARIET, E. 1949 *Handweaving Notes for Teachers.* London; Faber and Faber.

MARKHAM, G. 1625 *A Way to get Wealth: by Approved Rules of Good Practice in Good Husbandry and Huswifrie*. London; for Roger Jackson.

MARSDEN, J. 2000 The Chastleton Inventory of 1633. *Furniture History.* (Vol. 36) pp 23-42

MARSDEN, P. 2003 *Sealed by Time: The Loss and Recovery of the Mary Rose. (Archaeology of the Mary Rose Vol I)*. Portsmouth; Mary Rose Trust.

McDONOUGH, M. and BRAUNGART, M. 2002 *Cradle to Cradle*. New York; North Point Press.

MEE, S. 2004 The Clothing of Margaret, Parnell and Millicent Crayford 1569-1575. *Costume*. (No 38) pp 26-40

MIKHAILA, N. and MALCOLM-DAVIES,J. (2007) What Essex Man Wore: An Investigation into Elizabethan Dress Recorded in Wills 1558 to 1603. In Hayward, M. Kramer, E (2007) *Textiles and Text: Re-Establishing the Links Between Archival and Object Based Research*. London: Achetype. pp 18-22

MILHAILA, N. and MALCOM-DAVIES, J. 2006 *The Tudor Tailor*. London; Batsford.

MINAR, C. J. (2000) Motor Skills and the Learning Process: The Conservation of Cordage Final Twist Direction in Communities of Practice. *Journal of Anthropological Research.* (Vol 57 No4) pp 381-405.

MITCHELL, D. 1989 'By Your Leave my Masters': British Taste in Table Linen in the Fifteenth and Sixteenth Centuries. *Textile History*. (Vol. 20 No. 1) pp 49-77

MOUNTFORD, H. 1995 *Understanding Kent.* Canterbury; Foreland Publications.

MURRAY, J. CRAIGE, W. ONIONS, C. and BRADLEY, H. 1928 *A New English Dictionary on Historical Principles: founded mainly on the material collected by The Plilological Society. Vol X part II*. Oxford; Clarendon Press.

NICHOLLS, M. *1999 History of the Modern British Isles. 1529-1603 The Two Kingdoms*. Oxford; Blackwell Publications.

PAGE, W. (Ed) 1932 *The Victoria History of the County of Kent Volume Three.* London; The St. Cathrine Press.

PARRY, L. 2005 *Textiles of the Arts and Crafts Movement*. London; Thames and Hudson.

PAYNE, S. WILCOX, D. PARDOE, T. and MIKHAILA, N. 2011 A Seventeenth Century Doublet from Scotland. *Costume.* (No 45) pp 39-62

PEAKE, R. J. [n.d.] *Cotton: From the Raw Material to the Finished Product: Common Commodities and Industries series.* London; Pitman and Sons. (2nd Edition revised)

PIPONNIER, F. and MANE, P. 1997 *Dress in the Middle Ages.* London; Yale University Press.

PONTING, K. G. 1961 *The Wool Trade Past and Present.* Manchester; Columbine Press.

PONTING, K. G. 1980 *A Dictionary of Dyes and Dyeing*. London; Bell and Hyman.

POSTAN, M. 1952 *Medieval Wool Trade.* (Lecture on 29th February 1952) London; Department of Education.

POTTER, M. D. and CORBMAN, B. P. 1960 *Fibre to Fabric*. New York; Greeg Publishing Division. (3rd Edition)

PRIESTLEY, U. 1990 *The Fabric of Stuffs: the Norwich textile industry from 1565.* East Anglia; The Centre of East Anglian Studies.

PRITCHARD, T. 2003 *The New Draperies: Examples from Archaeological Deposits in England.* In L. B. Jørgensen, J. Banck-Burgess and A. Rast-Eicher (Eds), *Textilien aus Archäologies und Geschichte: Festschrift für Klaus Tidow, Neumünster: Wachholtz Verlag. pp 234-44*

PROTHERO, G. W. 1913 *Select Statues and other Constitutional Documents Elizabeth and James I.* Oxford; Clarendon Press. (4th Edition 1963)

RAMSEY, G. D. 1982 *The English Woollen Industry, 1500-1750*. Hampshire; The Macmillan Press Ltd.

REYONLDS, S. 1977 *An Introduction to the History of English Medieval Towns.* Oxford; Clarendon Press.

RICH, E. 1950 The Population of England. *The Economic History Review*. (Vol. 2 No.3) pp 247-265

RICHARDSON, C. 2004 *Clothing Culture 1350-1650*. Aldershot; Ashgate Publishing Ltd.

RICHARDSON, C. 2006 *Domestic Life and Domestic Tragedy in Early Modern England*. Manchester; Manchester University Press.

ROAKE, M. 1973 *Essays in Kentish History*. London; Cass

ROBINSON, S. 1969 *A History of Dyed Textiles*. London; Studio Vista.

RUBENS, A. 1981 *A History of Jewish Costume.* London; Peter Owen Ltd.

RULE, M. 1982 *Mary Rose: The Excavation and Rising of Henry VIII's Flagship.* London; Conway Maritime Press.

RYDER, M. and GABRA-SANDERS, T. 1992 Textiles from Fast Castle, Berwickshire, Scotland. *Textile History*. (Vol. 23 No 1) pp 5-22

RYDER, M. 1964 History of Sheep Breeds in Britain. *The Agricultural History Review.* (Vol 32 part 1) pp1-12

RYDER, M. 1984 Medieval Sheep and Wool Types. *The Agricultural History Review.* (Vol 32 part 1) pp 14-28

RYDER, M. 1984 Wools from Textiles in the Mary Rose, a Sixteenth Century Warship. *Journal of Archaeological Sciences*. (Vol. 11) pp 337-343

RYDER, M. L. 1983 *Sheep and Man*. London; Gerald Duckworth and Co Ltd.

SALZMAN, L. F. 1926 *England in Tudor Times*. London; Batsford. (Re-issued 1933)

SAUNDERS, G. 2002 *Wallpaper in Interior Decoration*. London; V and A Publication.

SCHMIDT, A. J. 1961 *The Yeoman In Tudor and Stuart England*. Washington; The Folger Shakespear Library.

SCHOESER, M. 2003 *World of Textiles.* London; Thames and Hudson.

SHAKESPEARE, W. c. 1600 *Twelfth Night*

SINCLAIR, R. 1956 *The Faithful Fibre*. Glasgow; The Linen Thread Company.

SLEIGH-JOHNSON, N. 2007 The Merchant Taylors' Company of London under Elizabeth I: Tailors' Guild or Company Merchants? *Costume*. (Vol. 41) pp 45-52

SPUFFORD, M. 1984 *The Great Reclothing of Rural England: Petty Chapmen and their Wares in the Seventeenth Century*. London; The Hambledon Press.

SPUFFORD, M. 2000 The Cost of Apparel in Seventeenth-Century England and the Accuracy of Gregory King. *The Economic History Review*. (Vol. 53 No. 4) pp 677-705

STARKEY, D. 1990 *Lives and Letters of the Great Tudor Dynasties: Rivals in Power.* London; Macmillan.

STARKEY, D. 2010 *Crown and Country: The Kings and Queens of England a History*. London; Harper Press.

STRONG, R. 1969 *Painting in England 1540-1620; The Elizabethan Image*. London; Tate Publications.

STRONG, R. 1969 *The English Icon: Elizabethan and Jacobean Portraiture.* London; Routledge and Kegan Paul.

SYKAS, P. 2009 Fustians in Englishmen's Dress: From Cloth to Emblem. *Costume*. (No 43) pp 1-18

TANKARD, D. 2012 A Pair of Grass Green Woollen Stockings: The Clothing of the Rural Poor in Seventeenth Century in Sussex. *Textile History*. (Vol 43 No1) pp 5-22

TATE, W. E. 1951 *The Parish Chest: a study of the records of parochial administration in England*. Cambridge; Cambridge University Press.

TAYLOR, L. 1998 Doing The Laundry? A Reassessments of Object-based Dress History. *Fashion Theory*. (Vol. 2 Is. 4) pp 337-358

THIRSK, J. 1984 *The Rural Economy of England (Collected Essays)*. London; The Hambledon Press.

THIRSK, J. 1997 *Alternative Agriculture A History; from the Black Death to the Present Day.* New York; Oxford University Press.

THORNTON, P. 1993 *Authentic Decor The Domestic Interior 1620-1920*. Wiedenfield and Nicolson

THURSTAN, V. 1977 *The Use of Vegetable Dyes*. Leicester; Dryad Press. (15th Edition)

TIMMERMAN, J. F. 1909 *Woolen and Worsted Finishing: A Practical Manual*. Chicago; American School of Correspondence.

TIRAMANI, J. 2000 Janet Arnold and the Globe Wardrobe:Handmade Clothes for Shakespeare's Actors. *Costume.* (No. 34) pp 118-122

TOMLINSON and TAYLOR 1987 *Wool on the Back*. Ebrington; Roundabout Publications.

TOULSON, S. 1980 *The Drovers* (45). Aylesbury; Shire Publications.

TROCME, S. 2002 *Fabric*. London; Octopus Publishing Group.

TROW-SMITH, R. 1951 *English Husbandry*. London; Faber and Faber.

TROW-SMITH, R. 1959 *A History of British Livestock Husbandry 1700-1900.* London; Routledge and Kegan Paul.

TURNER, K. 1980 *The Legacy of the Great Wheel.* Missouri; Select Books.

WAYLAND-BARBER, E. 1994 *Women's Work: The Forst 20,000 Years; Women, Cloth and Society in Early Times.* London; W.W. Norton and Company.

WICKENS, H. 1986 *Natural Dyes for Spinners and Weavers*. London; Batsford. (Reprint)

WILD, P. J. 1988 *Textiles in Archaeology.* Aylesbury; Shire Publications.

WILET CUNNINGTON, C. and CUNNINGTON, P. 1954 *Handbook of English Costume in the Sixteenth Century*. London; Faber and Faber. (1970 revised)

WILLAN, T. 1962 *The Tudor Book of Rates*. Manchester; Manchester University Press.

WILLIAMS, P. 1964 *Life in Tudor England*. London; Batsford Ltd.

WOOLLEY, M. The Making- Value and Values in the Craft Object. A Paper given

WYLD, H. C. (Ed) 1931 *The Universal Dictionary of the English Language.* London; The Amalgated Press.

YAIR, K. PRESS, M. TOMES, A. 1999 Design Through Making: Crafts Knoweldge as Facilitator to Collaborative New Product Development. *Design Studies.* (Vol. 20 No.6) pp 495-514

YAIR, K. PRESS, M. TOMES, A. 2001 Crafting Competition Advantage: Crafts Knowledge as a Strategic Resource. *Design Studies.* (Vol. 22 No. 4) pp 377-394

YARWOOD, D. 1979 *English Costume from the Second Century B.C. to Present Day*. London; Batsford. (5th Edition)

YOUINGS, J. 1984 *Sixteenth Century England*. Middlesex; Penguin Books.

YOUNG, J. 2001 *Authenticity in Performance*. London; Routledge.

ZELL, M. (Ed) 2000 *Early Modern Kent*. Woodbridge; The Boydell Press.