

Bibliography for Cotton in the Middle Ages

Arnold, Janet, ed. Queen Elizabeth's Wardrobe Unlocked: the Inventories of the Wardrobe of Robes prepared in July 1600 edited from Stow MS 557 in the British Library, MS LR 2/121 in the Public Record Office, London, and MS V.b.72 in the Folger Shakespeare Library, Washington DC. Leeds: W.S. Maney & Sons, Ltd., 1988.

Includes description of "Dublett of perfumed fustian," noted itself to be of extremely fine quality. Fustians themselves were 15 yards long and half an ell wide in the loom. "The spun cotton used for these fustians came from the Turkey Company and was the finest obtainable."

Although not common, cotton was used on a few occasions for the whole garment of the Queen, such as William Jone's calico kirtle, from fine Indian cotton cloth.

Also mentions a "rolle of cotton" hip pad in an outfit of Thomasina, Elizabeth's dwarf lady and elsewhere. Inventories of the garments of the Queen's artificers include Dubletts "Lyned with fustion" or "Lyned with Cotton," "Cotton kersey for stockes," and "pockettes of fustian."

Baines, Edward. History of the Cotton Manufacture in Great Britain. New York: August M. Kelley, 1966.

This reprint of what was evidentially considered 1835 economic classic includes interesting information about all aspects of the cotton manufacture, from early techniques, inventions, and trade. A bibliographical introduction is added to the 1966 edition. This work does include some early sketches of machinery like the India churka, bow, and charkha. However this 19th c. author has an antiquated bias toward the accomplishments of the English in the manufacture of cotton, though he admits that Spain, Italy, Germany, and the Middle East had earlier cotton industries.

Baker, Patricia. Islamic Textiles. London: British Press Museum, 1995.

Cotton was undoubtedly a major commodity in the Islamic Medieval world. "Cotton" comes from the Arabic *qutn*. Raw cotton was exported in bulk to Italy and Spain for further processing from Syria and Egypt, especially during the 10th and 14th centuries. Guilds for weavers of both fine and coarser cotton, along with guilds cotton-yarn dealers were found across the Medieval Ottoman Empire. Photographs of knitted cotton fragments from 11th-12th c. Fatimid are included.

Balfour-Paul, Jenny. Indigo in the Arab World. Richmond, Surrey : Curzon, 1997.

While this resource focuses on indigo as an important commodity throughout antiquity, cotton is regularly documented as indigo dyed, and both crops were often grown together. White, then blue, were favored most in women's garments in Egypt between the 10th and 13th centuries. Distinctions are made between Fatimid knitting and Fustat textile fragments found both in the 19th c. and then in 1980. This scholarly study includes extensive notes for further research.

Blair-Nelson, Susan. "The History and Use of Cotton." Tournaments Illuminated 128 (1998): 24-25.

This overview of cotton brushes past Early History with Alexander the Great's introduction to cotton in India to the Middle Ages and Marco Polo in the late 11th c., citing a limited number of resources which have a slant toward Indian cultivation and production.

As of 2002, Blair-Nelson, now Susan Harfield, was a student of water resource science at the University of Minnesota. When contacted by email, she indicated that she had not done any further research on cotton.

Bolens, Lucie. "The Use of Plants for Dyeing and Clothing: Cotton and Woad in al-Andalus." The Legacy of Muslim Spain. New York, E.J. Brill, 1992.

Section *Cotton (qutn): a highly profitable sector* explains the cotton plant's agricultural link to Indian, Arab, and Mediterranean civilizations. Cultivation in al-Andalus was first noted in the 10th c., and many detailed treatments of cotton are mentioned by a wide variety of Arab agronomists. Cotton was planted in late winter and harvested in summer, hand-ginned, then pressed into bales. Cotton was considered precious, as cotton clothing was softer and warmer than linen, with the rich wearing it with short cloaks, in contrast to the poor who wore wool.

Brubaker, C. L., et al. "The Origin and Domestication of Cotton" Cotton: Origin, History, Technology, Production. Hoboken, John Wiley and Sons, 1999.

Scientific, yet readable article about four cotton species, Old World and New World. Old World cotton species diverge 14 million years ago, long before human evolution. Explains that all allopolyploids contain an Old World (A genome) chloroplast genome, indicating that the seed parent in the initial hybridization event was an African or Asian A-genome taxon. Both Old World species grew sympatrically in southern and western India, northern Africa, western China and the areas bordering the Indian Ocean trade routes. Notes that cotton cloth and yarn archeological remains of *G. arboreum* from India and Pakistan have been dated to 4,300 B.P. Archeological remains of *G. herbaceum* have not been recovered.

Bruce, Marjory. The Book of the Craftsmen: the Story of Man's Handiwork through the Ages. New York: Dodd, Mead & Company, 1937.

Extensive chapter on weaving includes descriptions of tools, techniques, and raw materials. Section mentions a 1610 Earl of Salisbury petition to King James I for the reform of abuses in the manufacture of "cotton such as growth in the land of Persia, being no kind of wool." Under the reign of King George, English trade in printed calicos from India, Persia, and China was banned. An exception to the English bias against cotton was fine muslins, which could not be woven on English looms.

Chaucer, Geoffrey. The Canterbury Tales. New York: Washington Square Press, 1948.

This 14th c. Middle English classic mentions fustian, a cotton/linen cloth, in the General Prologue, description of the Knight, 75-76. *Of fustian he wored a gypon.*

Constable, Olivia Remie. "Muslim Merchants in Andalusian International Trade." The Legacy of Muslim Spain. New York, E.J. Brill, 1992.

Between the 10th and 13th centuries during Muslim rule, Andalusian trade spanned the Mediterranean from Spain to Northern Africa, Egypt, and the Middle East. Merchants brought goods from the East, such as textiles, back to Muslim Spain for sale and redistribution in the Christian north. Merchants were organized both by religion (Muslim, Jewish, Christian) and function (stapler, broker, importer/exporter). Yet, merchants rarely specialized in particular goods.

Constable, Olivia Remie. Trade and Traders in Muslim Spain: the Commercial Realignment of the Iberian Peninsula, 900—1500. New York: Cambridge University Press, 1994.

Includes cotton textiles as an important element of trade in al-Andalusian, but also notes missing corroborating evidence in Geniza and Latin notarial contracts. Article emphasizes difficulties in analyzing trade moments of goods due to lack of physical evidence and extensive text records. From a French source, includes al-Rāzī's report of Seville as a producer of a large quantity of cotton. Additional footnotes are useful.

Crawford, M.D.C. The Heritage of Cotton, The Fibre of Two Worlds and Many Ages. New York: Fairchild Publishing Company, 1948.

Includes a timeline of the cotton industry from 800 B.C. to 1832 A.D. Many entries describe periods of cotton cultivation and commerce in the Middle Ages in Europe, including Spain, Italy, Germany, England and France.

Crowfoot, Elizabeth Grace. "The Clothing of a Fourteenth-Century Nubian Bishop." Studies in Textile History In Memory of Harold B. Burnham. Toronto: Royal Ontario Museum, 1977.

This article gives complete describes of every textile in Bishop Timotheos' grave, down to the manner in which fibers were spun (S-spun or Z-spun), woven, and dyed. The inventory includes a fine cotton shroud, a pale blue cotton veil, a cotton body belt, and cotton trousers. Includes technical diagrams of each garment and a fascinating photo of the remains.

Dotson, John E. "A Problem of Cotton and Lead in Medieval Italian Shipping." Speculum 57 (1982): 52–62.

The weight and volume of goods were important measures in Medieval shipping. Venetian maritime codes are the most comprehensive system of freighting equivalents. Article also explains Fibonacci's 13th c. measure of a *sporta* of pepper being the standard for shipping from Alexandria. Two and one-half cantars of cotton was equivalent to a *sporta*. 2:1 cotton:pepper was a standard freighting equivalent in Mediterranean commerce.

In Tiepolo, cotton and cotton thread head the list and were considered "light goods." Other merchant manuals mentioned include Pegolotti and *Zibaldone da Canal*.

Elliot, Fred C., Marvin Hoover, and Walter K. Porter, Jr., eds. Advances in Production and Utilization of Quality Cotton: Principles and Practices. Ames: Iowa State University Press, 1968.

The introduction of this technical manual includes the section "History of the Cotton Culture." Medieval historical highlights include the Moorish origins of Spanish cotton cultivation and the Venetian dominance trade routes and cotton markets. Distinctions between Old World and New World *Gossypium* species are also described.

Encyclopedia of Textiles. Englewood Cliffs: Prentice-Hall, Inc., 1980.

Along with its scientific properties, the chapter on cotton includes a capsule history of cotton employing a world map to easily identify cultivation and trade from antiquity to modern times. Of particular note is mention of the first trade account by *Periplus on the Erythrean Sea*, where cotton appears on the manifest of cargos in the Red Sea, Arabia, the eastern coast of African, and the western coast of India.

Fanelli, Rosalia Bonito. Five Centuries of Italian Textiles: 1300-1800, A Selection from the Museo del Tessuto Prato: Catalogue of the Traveling Exhibition. Prato, Italy: Cassa di Risparmi e Depositi di Prato, 1981.

The catalogue of breath-taking Italian textiles includes two excellent photographs of Perugian tabby weave with weft float pattern linen/cotton towel fragments, and additional pictorial evidence of this textile's prominence in the 15th century.

Favier, Jean. Gold & Spices: the Rise of Commerce in the Middle Ages. New York: Holms & Meier Publishers, Inc., 1998.

Originally published in 1987 by the Librairie Arthème Fayard as *De l'or et des épices: Naissance de l'homme d'affaires au moyen âge*, this resource discusses multidirectional and diversified trading by Italian merchants, which often included cotton shipments, emphasizing the expertise needed to distinguish between eight different kinds of cotton "from Syria, Byzantium, Apulia, Calabria, Sicily, and Malta, white cotton thread, and colored cotton".

Franz-Murphy, Gladys. "A New Interpretation of the Economic History of Medieval Egypt: The Role of the Textile Industry." Journal of the Economic and Social History of the Orient, 24 3 (1981): 274-297.

Flax was Egypt's top quality textile raw material. Blends of linen and cotton were also produced in response to fashion and demand. Textiles were a foundation for Egyptian international trade.

"Funerary Clothing and Equipment of Dona Maria (?-1235)." Historia Viva, 7 Feb, 2006
<http://www.historiaviva.org/vestimenta/s13_maria_ajuar_en.shtml>.

This 11th c. inventory includes a cotton tunic. A 1999 Spanish language article is cited as the source for this information. Author included parenthetical comments about the pervasiveness of cotton, but could not be contacted via email for further clarification.

Geijer, Agnes. A History of Textile Art. London: Pasold Research Fund in association with Sotheby Parke Bernet ; Totowa, N.J.: distributed by Biblio Distribution Center, 1979.

Translated from her *Ur Textilkonstens Historia*, Agnes Geijer's (1898- 1989) book is considered by many to be the first scholarly work on textiles. Dr. Geijer is often remembered for being a top authority on Scandinavian and Viking textiles. She refers to "a shirt of red fustian" in the Norse Saga, (*Egil hafdi fustans kyrtill raudan*), and other later Swedish and Norwegian texts.

In this resource, she describes India as the original place of cotton cultivation, and perhaps spinning, and discusses extant Indian cotton samples at Fustat, Egypt. She identifies significant variations in the Indian cotton industries, with respect to technology, quality, and products, between Gujarat, the Coromandel Coast, and Bengal. Her discussion of cotton also includes linguistic origins.

Geijer, Agnes. Oriental Textiles in Sweden. Rosenkilde and Bagger, Copenhagen, 1951.

This is catalogue of primarily later period ecclesiastical textiles, some which were cotton fabrics. Includes photographs of extant textiles.

Geijer, Agnes. "Some Evidence of Indo-European Cotton Trade in Pre-Mughal Times." Journal of Indian Textile History. I (1955): 34-39.

According to Dr. Agnes Geijer, curator of textiles at the Statens Historiska Museum, Stockholm, Indian dyed and painted cottons were not rare in Europe before the sea-trade period (1500). Evidence exists in royal and church inventories, and other literature, such as the *Norse Sagas*, according to Geijer. While the Latin word *cottonum* referred to the raw material, many other terms referred specifically to fabrics, such as *bougram* (France), *seter* (Swedish and Norwegian), *zeter* (German), *gudhvefr* (Iceland), *chintz* (Hindi), as well as *qutn*, *qoton* (Arabic).

Gittinger, Mattiebelle. Master Dyers to the World : Technique and Trade in Early Indian Dyed Cotton Textiles. Washington D.C.: Textile Museum, 1982.

Fostat, a suburb of modern day Cairo, is both a geographical and an archeological link between cotton textiles produced in India and then consumed in Europe from antiquity through the Middle

Ages. Gittinger's book includes dozens of photographs of India cotton artifacts from the Textile Museum in Washington D.C. that were found in Fostat, with most pieces dated to the 15th century.

Giusti, Annamaria. Masters of Florence : Glory & Genius of the Court of the Medici. Memphis: Wonders, 2004.

This exhibit catalogue includes the 15th century fustian (cotton/linen) fragment of the bloodied shirt of Giuliano de' Medici. Up to 19 stab wounds can be found in the garment. Exhibit also includes marble bust of Giuliano de' Medici. Color photos.

Harris, Jennifer. Textiles, 5,000 Years : An International History And Illustrated Survey. New York : H.N. Abrams, 1993.

With respect to the early development of textile trade, both India and the Islamic world played major roles. This book includes many pictorial examples of cotton textiles, from Indian floor coverings and painted wall panels to a detail of a pattern muslin, which shows how unimaginably fine these cotton textiles were. Also includes pictures emphasizing the banded decoration of Perugian towels, linen textiles with supplementary-weft patterns in indigo-dyed cotton.

Hirshler, Eric H. "Medieval Economic Competition." The Journal of Economic History, 14 1 (1954): 52-58.

Article discusses inter-guild competition, especially in the 14th and 15th c. in textile industries, mentioning open competition between fustian, linen, woolen, and sackcloth weavers. Furthermore, work states that cotton displaced linens and woolens in southern German cities due to its cheapness as a raw good, and consequential affordability to the masses. Other mixed cotton fabrics appears; pure cotton cloth was quite common. Sources guild documents called *Zunfturkunden*,

Hribal, Jason. "Animals are a Part of the Working Class: a Challenge to Labor History." Labor History. 44 (2003): 435-453.

The article includes a description of the India *churka* roller mechanism for de-seeding cotton, which could gin up to five pounds daily.

Hutchinson, J. B., R.A. Silow, and S. G. Stephens, The Evolution of Gossypium and the Differentiation of the Cultivated Cottons. New York: Oxford University Press, 1947.

This article is the most scientific resource in my collection, filled with drawing and diagrams of numerous gossypium species worldwide, including chromosome and genomes illustrations. The chapter called "The Origin of the Cultivated Cottons" explains that the origins of cotton is directly connected to its use by man. Now grown as an annual, scientific evidence confirms that primitive cottons were perennials. The author concludes that while the progenitors of the early Indus valley cottons may have originated in southern Arabia or Northeast Africa, major changes in the evolution of lint were complete by that time.

Cotton's primarily use to man is as a textile raw material. Throughout history, wild cottons have *only* been found near the location of recorded cotton cultivation. Not only were the fragments found at Mohenjo-Daro made by skilled craftsmen, but their hair characteristics were within the range of Indian cottons used today.

Inalcik, Halil, The Ottoman Empire: the Classic Age 1300—1600. Translated by Norman Itzkowitz and Colin Imber. New York: Praeger Publishers, 1973.

Anatolian cottons were traded throughout the Ottoman Empire, and an integral part of their economy. Much of the output from Anatolian cotton weaving production supplied foreign markets. Cotton textiles were among the chief exports from Asia Minor to Syria and Egypt in the 15th and 16th c. Black sea merchants earned their living from trade in Anatolian cottons. The French brought back cotton, thread, and cotton textiles, and actually began to displace the Venetian in Levant trade especially after the Ottoman-Venetian War of 1570-73. Furthermore, Istanbul itself was an economic link between Anatolia and Rumelia (roughly the remains of the Roman Empire), with cottons trading from many cities in Anatolia.

Irwin, John. "Indian Textile Trade in the 17th Century, Western India." Journal of Indian Textile History. I (1955): 4-33.

Although written from an English trade and economic perspective, this journal article itemizes many forms of traditional India cotton goods, and gives background information on the *Periplus of the Erythraean Sea* noting the unchanged state of industry in Western India, also including a map of the *Centres of Textile Trade, 17th century*.

Irwin, John. "Indian Textile Trade in the 17th Century, Coromandel Coast." Journal of Indian Textile History. II (1955): 24-39.

Indian textiles were a fundamental economic component of spice-island trade for the 15th c. Portuguese and also for Arabs centuries before them. The population of the Malay Archipelago had little use for bullion, but very specific tastes in cotton textiles. Piece goods most suitable for barter were produced in the Coromandel Coast, i.e. the southeast tip of India.

Irwin, John. "Indian Textile Trade in the 17th Century, III. Bengal." Journal of Indian Textile History. III (1957): 58-75.

Although the focus of this article was trade in the 17th century, discussions of a broad spectrum of mixed cotton and silk fabrics from the West Coast of India are included throughout, such as Bengal 'taffaties.' Mentions the popularity of Bengali quilts in England, since the English began trading with India. Includes interesting note concerning the finest Dacca muslins being reserved for Indian monarchy, versus demand from the English East India Company.

Jardine, Lisa. Worldly Goods: A New History of the Renaissance. New York: Doubleday, 1996.

This resource, which focuses on trade and commerce, includes examples of the goods merchants offered. A list of goods from Francesco di Marco Datini about 1400 includes Perugia cottons and in the 1460s Andrea Barbarigo sold Syrian cotton in Venice. Cotton and cotton yarn are also among the goods banned by papal edict from being sold to the Ottoman Empire in the sixteenth century.

Jones, Gwyn. Egil's Saga: Translation, Introduction, and Notes. Syracuse, NY: Book Craftsmen Associates, Inc, 1960.

This volume of the *Norse Saga* describes the dress of Egil at the funeral of his son, Bödvar, which includes a close-fitting red fustian kirtle, laced at the sides.

Kellenbenz, Hermann, "The Fustian Industry of the Ulm Region in the Fifteen and Early Sixteen Centuries," Cloth and Clothing in Medieval Europe: Essays in Memory of Professor E. M. Carus - Wilson. London: Heinemann Educational Books, 1983.

Fustian weaving in Ulm arose out of their earlier woolen and linen weaving industries at the expense of linen due to growing Italian commercial and fashion relations with that region in the 14th century. In the 15th c., Ulm fustian was sold throughout Germany (Hanse towns) and in Spain and England. Weavers received raw cotton from *Wollherren*, merchants who dominated trade with the Italian cotton markets, particularly Venice. In the early 16th c. weavers from Ausburg with the Fugger merchant dynasty began competing with the Ulm fustian market, a rivalry that lasted until about 1555, but petered out due to changing political alliance and fashions, such as *bombazine*, a silk textile or a silk blend with wool or cotton.

Labib, Subhi Y. "Capitalism in Medieval Islam." The Journal of Economic History, 29 (1969): 79-96.

Excellent article on Islamic commerce explains the unique dynamics of the movement of wealth in Arab society in the Middle Ages. To emphasize the worldwide trade relationships during Islam's economic golden age cotton, among other goods, is listed as being brought by Arabs to Sicily and Africa. Also mentions that traded textiles, including cotton, bore the name of the producing city as an indication of quality and value of the fabrics.

Lakwete, Angela. Inventing the Cotton Gin: Machine and Myth in Antebellum America. Baltimore: John Hopkins University Press, 2003.

This book helps dispel myths that cotton was ginned by hand before Whitney's invention. Includes pictures of Indian churka, a roller machine used for separating seeds from lint.

Lamm, Carl Johan. Cotton in Medieval Textiles of the Near East. Paris: Libraririe Orientaliste Paul Geuthner, 1937.

Many clear cotton fragments photos collected from museums in Egypt and the Middle East can be studied, both knitted and tablet woven. Includes examples where textile fragment was knitted with both cotton and wool.

Lane, F.C., "The Mediterranean Spice Trade," American Historical Review, XLV 3, (1940): 581-590.

A note to this article includes a 16th c. Venetian ship manifest recorded in Alessandro Magno's diary, which lists bales of cotton among a extensive variety of spices in its cargo.

Lane, Frederic C., "Tonages, Medieval and Modern," Economic History Review, XVII 2, (1964): 213-233.

Shipping capacity was a critical element of medieval commerce, and was effected by both cargo weight as well as capacity. A freight ton was standardized at 40 cu. ft. Venetian 14th c. shipping regulations refer to a light pound and a heavy pound. Light cargos, mainly cotton, were important for many Venetian galleys during this period.

Lee, Henry. The Vegetable Lamb Of Tartary : A Curious Fable Of The Cotton Plant, To Which Is Added A Sketch Of The History Of Cotton And The Cotton Trade. London: Sampson Low, Marston, Searle, & Rivington, 1887.

Despite uncertainty over whether the vegetable lamb was actually *gossypium*, since cotton cultivation in Tartary is under scrutiny, this late 19th c. work includes a chapter on the history of

cotton, from its Moorish introduction to Spain and the renowned Barcelona cotton sail-cloth to Venetian and Genoese 11th c. trade and 14th c. fustian and dimiti production.

Lemire, Beverly, “The Meanings of Trade: Indian Cotton, Gender, and the Fashion System in Europe, c. 1500-1800.”

Dr. Beverly Lemire of the University of Alberta and Founding Chair of the Material Culture Institute, presented this paper in Lisbon in May 2008. Focused primarily on the global economic importance of Indian calicos in the later Middle Ages, Lemire emphasizes that demand for cotton goods was driven by fashion and design (Indian textile producers ability to respond to a wide spectrum of design preferences worldwide), as well as gender-driven primary and secondary markets. (Included with express permission from the author.)

Lewis, Ethel. The Romance of Textiles: the Story of Design in Weaving. New York: MacMillan Company, 1937.

This resource includes chapters on the “Textile Arts of Spain” (Cordova, Seville, Granada, Barcelona) and the “Weaving Centers of Italy” (Venice, Genoa). It also mentions a 12th c. Arabic text on scientific methods of cultivating cotton.

Lopez, Robert Sabatino, Irving Woodworth, Raymond, Olivia Remie Constable. Medieval Trade in the Mediterranean World: Illustrative Documents. New York: Columbia University Press, 2001.

In Chapter IV “The Diversification of Merchandise: Two Hundred and Eighty-eight ‘Spices’” a translation from Italian of Francesco di Balduccio Pegolotti’s *The Practice of Commerce* lists eight distinct cottons (as is mentioned in Favier), placed in Florence between 1310 and 1340. Furthermore, the article explains that the term “spices” was generalized to also include textile fibers.

This resource also includes a compilation translated from Italian called *The Book of Wares and Usages of Diverse Countries*. Records list Venetian trading destinations. A record for Ragusa (Dubrovnik), 1458 mentions ships headed to Syria to load cotton.

Footnotes explains that Venetian merchants used “gross” and “minute” weights. 100 lbs gross weight equaled 158 lbs minute weight. Cotton from the Levant was measured in minute weight.

May, O. L., et al. “Development of the World Cotton Industry.” Cotton: Origin, History, Technology, Production. Hoboken, John Wiley and Sons, 1999.

Article features an excellent timeline, and gives a clear understanding of the economic and political factors that drove the world cotton industry, from its inception in ancient India, through early Greek and Roman trade, Moorish cultivation in Spain, development of a cotton industry in Italian city-states, Ottoman Balkan (Bulgarian?) production, competition with English wool manufacture, and later into the establishment of domestic British and American industries.

Mazzaoui, Maureen Fennell. The Italian Cotton Industry in the Later Middle Ages 1100–1600. Cambridge: Cambridge University Press, 1981.

Dr. Mazzaoui, who is a Professor of history at the University of Wisconsin, Madison, gives any researcher a rich, in-depth study of cotton in the Middle Ages, including cultivation, shipping and commerce of both raw and finished goods, the movement of the industry into Southern Germany and the eventual decline of the Northern Italian cotton industry. Many of her citations are in Italian, which may explain why her work seems to fill such a void in the study of cotton in the Middle Ages. After studying her research, Dr. Mazzaoui confirmed to me in email that cotton was

indeed a mass-produced fabric for the common man during the later middle ages. This resource is indispensable to my study.

---, ed. Textiles: Production, Trade and Demand. Aldershot: Ashgate Variorum, 1998.

Maureen Mazzaoui's introduction summarizes each chapter in this scholarly collection. Murat Cizakca's article, "Incorporation of the Middle East into the European World Economy," includes a section on the Imports of Cotton to Europe. Of special interest is the fact that the Thirty Years War is thought to have been the death-knell of the German cotton industry, explaining the drop-off in demand for raw materials from the Ottoman Empire around that time.

McCuin, Judith MacKenzie. The Intentional Spinner: a Holistic Approach to Making Yarn. Loveland, CO: Interweave Press LLC, 2008.

Cotton comes from trees or shrubs in the *Malvaceae* (mallow) family. Fibers have 200-300 twists per inch, alternating directions every 3-4 turns. Bolls open when fibers dry, straighten, and relax. Short summary explains that cotton is distinctly indigenous to India, Africa, and the Americas. It was brought to Medieval Europe from the Crusades. Includes description of cotton by medieval writer, John Mandeville.

McKitterick, Rosamond. "Commercial Expansion in the later Middle Ages." Atlas of the Medieval World. Oxford: Oxford University Press, 2004.

This brief article includes an interesting map entitled "The Commercial Revolution in the Middle Ages" which shows cotton as a commodity in the Levant, Egypt, Sicily, and Malta.

---, ed. "Trade in Fourteenth-century Europe." The New Cambridge Medieval History, Vol. 2: 700-900. Cambridge: Cambridge University Press, 1995.

Citing Mazzaoui, this article describes the increased demand for inexpensive cotton cloth, manufactured in Lombardy in the 14th century. Cotton was imported from Asia Minor, especially Syria, since it could not be grown in Northern Italy itself. Includes mention of cotton/hemp blend sailcloth as an economical alternative to linen.

Meyer, Lynn. "Textiles of Islamic Spain." Complex Weavers' Medieval Textile Study Group 24 (2000): 3-9.

In her section on Cotton, the author quotes Watson with respect to the introduction of cotton cultivation into Spain in the 9th century. The brief article also mentions 12th century exports of Sevillian cotton. Of concern, though, is the author's conclusion that the lack of references to Andalusian cotton trade diminishes its potential significance.

Patterson, R. "Spinning and Weaving." A History of Technology. Ed. Charles Singer. 7 vols. Oxford: Clarendon Press, 1956.

In this chapter, there is a subsection devoted to cotton. The Greek lexicographer Pollux is credited with first describing fustians (from Fostat, a suburb of Cairo). In Europe, fustians were the most important cotton products. The Moors introduced cotton to Spain in the 8th c. By the twelfth century, Italy and France became important centers of cotton production. Germany and England's cotton industries flourished in the 14th and 15th centuries, respectively. The finest medieval grade of cotton was cultivated in Syria.

Robinson, Stuart. A History Of Dyed Textiles: Dyes, Fibres, Painted Bark, Batik, Starch-Resist, Discharge, Tie-Dye, Further Sources for Research. Cambridge, MA: The MIT Press, 1969.

Includes discussions of Medieval dyes and techniques, including the specific materials dyed, which include fabrics composed of a thick cotton warp and a fine silk weft in Japan and a bast-thread and cotton warp ikat in Africa. Includes a detailed table, "Geographical distribution of Tie and Dye techniques."

Roche, Julia. The International Cotton Trade. Cambridge, England: Woodhead Publishing, Ltd., 1994.

Some historical discussion, including note of Egyptian cotton growing from 6-700 A.D. More useful information includes details about the cotton cultivation, such as average temperature (25C), cultivation cycle (175-225 days), and water (600 mm/annually). Only 35% of modern cotton production is rain-fed, the rest relying on irrigation. Mentions that some cotton is still handpicked in Zimbabwe, ensuring cotton consistently cleaned and ripened. Author explains that no mechanical picker can harvest long and extra long staples without causing damage to the fiber.

Rutt, Richard. A History of Hand Knitting. Loveland, CO: Interweave Press, 1987.

Rutt's work includes a section on Medieval Egypt in his *Before 1500* chapter. He indicates that most Islamic cotton knitted fragments are attributed to the 12th c. He explains that the cotton sock artifacts are knitted toe-up.

Sanchez, Expiracion Garcia. "Agriculture in Muslim Spain." The Legacy of Muslim Spain. New York, E.J. Brill, 1992.

Andalusi agronomists' original contributions to this science began in the 10th century and peaked in the 12th century. In the category of *Industrial plants*, one of the most important textile plants grown in this medieval region was cotton.

Scherer, James A. B. Cotton as a World Power: A Study in the Economic Interpretation of History. New York: Frederick A. Stokes Company, 1916.

Book I of this resource "From India to England," includes chapters that discuss the introduction of cotton into Spain in the 6th c. through the Renaissance. While an older work, the author was a professor at the Throop College of Technology in Pasadena, CA.

Schlingloff, D. "Cotton-Manufacture in Ancient India." Journal of the Economic and Social History of the Orient 17 (1974): 81-90.

Numerous ancient Hindu and Buddhist text sighted, describing both private and state fabrication of cotton. The pre-industrialization of cotton processing is spelled out in four phases: 1) cleaning, 2) ginning, 3) batting, and 4) twisting. Discusses one and two roller ginning processes throughout antiquity in both India and China. Article includes diagrams of bows for the loosening of fibers in medieval Europe. "Twisting" to rolling cotton into *pīnī*, *piunnī* (punis), making the cotton ready to spin.

Schoff, Wilfred H. The Periplus of the Erythraean Sea: Travel and Trade in the Indian Ocean by a Merchant of the First Century. New York: Longmans, Green, and Co., 1912.

The *Periplus* is an extremely rich account of early sea trade. Cotton goods, particularly cloth of all grades, yarn, and stuffing, are noted repeatedly throughout the document, primarily originating in Barygaza, on the west coast of India. Grades of cotton cloth listed range from the coarse

“molochine” and “monache” broad cloth to fine costly muslins called “Gangetic.” Of interesting note is the fact that weavers needed at least 5 months to product 10 yards of Bengali muslin.

Siegelau, Seth, ed. Bibliographica Textilia Historiae: Towards A General Bibliography On The History Of Textiles Based On The Library And Archives Of The Center For Social Research on Old Textiles (CSROT). New York: International General, 1997.

While there are limited citations specifically for cotton in this bibliography, there is a wealth of related textile citations gathered here.

Spufford, Peter. “Trade in fourteenth-century Europe.” The New Cambridge Medieval History VI c 1300--1415. Ed. Michael Jones. New York: Cambridge University Press, 2004.

Article discusses how rough hemp canvas fabrics were used in Italy and France, and also mixed with cotton to make sailcloth. Mentions how cotton was not grown in Northern Italy, but imported for processing into cloth. Demand for cheap cotton throughout Europe and the Mediterranean was satisfied by the burgeoning Lombardy cotton industry.

Strieder, Jacob. Jacob Fugger the Rich, merchant and banker of Augsburg, 1459-1525. Hamden, CT: Archon Books, 1966, ©1931.

Augsburg, Germany fortunes were built upon trade, particularly in conjunction with its expanding Augsburg manufacturing sector, especially with respect to fustian weaving. Led by Fuggers, other families whose fortunes grew as they transformed from weavers to merchants include the Ehem, the Bimmel, the Höchstetter, among others. Augsburg merchants, including Hans Fugger, imported raw cotton from Venice and exported back finished cloth.

Taylor, W. C. (William Cooke). The Hand Book of Silk, Cotton and Woollen Manufactures. London : R. Bentley, 1843.

This work documents cotton as an article of commerce first in Arrian’s *Periplus of the Erythean Sea*. Principle cotton ports were Barygaza, Baroche, and Masalia. The Periplus details an Indian cotton industry in the 1st c. A.D., which remained essentially unchanged through the 19th c. producing a range of goods from the coarsest sailcloth to the finest muslin. Also mentions the 6th c. introduction of cotton into Western Europe through Constantinople in the tariff import duties levied by Emperor Justinian.

Thorson, Stephanie (Alianora Munro). “Perugian Towels.” Compleat Anachronist 114 (2002): 1-32.

While primarily an instructional technical resource for recreating woven “Perugia” domestic linens, which were popular from the 13th to the 16th centuries, the author explains that these tablecloths, napkins, handtowels and headdresses were typically linen or fustian (linen warp/cotton weft), with a heavier woad or indigo dyed cotton single for the pattern wefts. Resource include modern weaving charts.

Turnau, Irena. "The Diffusion of Knitting in Medieval Europe", Cloth and Clothing in Medieval Europe: Essays in Memory of Professor E. M. Carus-Wilson. London: Heinemann Educational Books, 1983.

Article in this collection includes good photograph of 12th century Indian or Arabic knitted cotton socks, probably from Egypt. Mentions that socks were worked on two needles and had complex turned heels. Sites L. Bellinger’s 1954 *Textile Museum Workshop Notes*.

Ulrich, Pamela V. "From Fustian to Merino: The Rise of Textiles Using Cotton Before and After the Gin." Agricultural History 68 (1994): 219–231.

Ulrich's tightly knit article brings together the authority of many resources in this bibliography, especially Wadsworth, Baine, and Watson. Her foot-noting is pristine, effortlessly leading to additional resources.

Vester, Paula J. Spinning Cotton, Stone Mountain (GA): self published, 2003.

Paula J. Vester, a spinning instructor from Georgia, has self published a concise, yet informative book which include cotton history, types, forms, properties, preparations, spinning, finishing, and more. Includes color photographs of techniques.

Wadsworth, Alfred P. and Julia Man. The Cotton Trade And Industrial Lancashire, 1600-1780. New York: Augustus M. Kelley, 1968.

While English cotton manufacturing was more than two centuries behind Italy, Spain, Germany, and even Switzerland, fustians became its most important products. Fustians were used for blankets, pillows, socks, and doublets. War and plague hurt the cotton manufacture in southern Europe before the middle of the 16th c. This resource, originally published in 1931, is referred to frequently in other resources.

Watson, Andrew M. "The Rise and Spread of Old World Cotton." Studies in Textile History In Memory of Harold B. Burnham. Toronto: Royal Ontario Museum, 1977.

The varieties of gossypium that we know today and Old World Cotton are distant cousins at best. Watson's article explains the difference between herb and tree cotton. The author explains that while many other fibers, such as wool, silk, and linen, were woven with cotton, the author explains that some textiles were indeed woven entirely of cotton in the middle ages.

Watt, George, The Wild And Cultivated Cotton Plants of the World: a Revision of the Genus Gossypium Framed Primarily with the Object of Aiding Planters and Investigators Who May Contemplate the Systematic Improvement of the Cotton Staple. London: Longmans, Green, and Company, 1907.

Includes some linguistic discussion of words for cotton. Mentions 9th c. Arab sources for G. arboretum which can grow for 20 years, but whose fiber production peaks at 9 years. Sulaiman reference to Calicut "garments are for the most part round and wove to that degree of fineness that they may be draw through a ring of the middling size." Marco Polo (1290) refers to the production and manufacture of cotton in Persia, Kashgar, Yarkand, Khoton, Guzerat, Cambay, Teligana, Malabar, Bengal, etc.

Wescher, Herta. "Cotton Growing and Cotton Trade in the Orient During the Middle Ages." CIBA Review 64 (1948): 2334–2337.

This comprehensive article traces the origins of cotton in India to the early cotton industry in 10th c. Spain. Italian shipping records include both raw and finished cotton from the 12th c. and onward. Wescher's work is not only a wealth of information, but a great jumping-off point for additional research.

Wescher, Herta. "Fustian Weaving in South Germany from the Fourteenth to the Sixteenth Century." CIBA Review 64 (1948). 8 Oct, 2008 <<http://www.elizabethancostume.net/cibas/ciba64.html>>.

Cotton and fustians first appeared in Germany around 1320, via Constance, which is in the Southwest corner of the country. This article details all aspects of the fustian industry, including cotton beating, spinning, weaving, bleaching, and the complex commercial channels for finished goods, which were run by merchant dynasties including the Fuggers and the Besserers.

Wheeler, Monroe, ed., Textiles and Ornaments of India, a Selection of Designs. New York: Museum of Modern Art, 1956.

Artifacts included in this book are based on an exhibition held at the Museum of Modern Art in 1955. The Introduction explains that “There is not record of a time when the people of India did not grow, weave, and dye cotton cloth, and wear patterned cotton garments.” John Irwin’s chapter on “Indian Textiles in Historical Perspective” explains that as early as 200 B.C., the Roman word for cotton was *carbasina*, derived from the Sanskrit *karpasa*. Also includes photograph of a fragment of indigo resist-dyed cotton, 12th c. tomb, Fostat, Egypt.

Willan, Thomas Stuart. A Tudor Book of Rates. Manchester: Manchester University Press, 1962.

In the early 16th century, tariff lists allowed the imposition of duties on both imports and exports. In 1582, England’s Custome House published an alphabetized list of the valuation of over 300 trade goods. While somewhat convoluted, this list includes at least a dozen examples of cotton goods, including calicos, fustians, bombazine (twilled cotton and worsted dress material), “cottens” spun and unspun.

Zohary, Daniel, Maria Hopf. Domestication of Plants in the Old World, the Origins and Spread of Cultivated Plants in West Asia, Europe, and the Nile Valley. Oxford: Clarendon Press, 1988.

Concise yet informative articles “Old World cottons: *Gossypium arboreum* and *G. herbaceum*” explains that the domestication of these cottons probably began in Africa, based on the assumption that wild bush cottons are not found in the Indian subcontinent, along with the discovery of cotton seed and lint in fossilized goat dung from 2500 B.C. Yet, there is no evidence of cotton weaving in that area at that time. The authors conclude that cotton was imported to India very early in the history of its domestication.