

## WALK LIKE AN EGYPTIAN: AN EXPLORATION OF MEDIEVAL EGYPTIAN STOCKINGS

Knitting can be defined as a fabric formed from one long yarn that is manipulated by a pair of needles into rows of interlocking loops. Each loop of yarn is pulled through the loop below. Some of the oldest knitting in the world can be found in the form of blue and white stockings, and fragments of knitting, from Egypt. It would be nice to have a firm date for these artifacts, but they can't be dated with any real accuracy. According to Ellen Perlman, "early collectors purchased many of the fragments from dealers in antiquities, which means there is no data on what site they were found, or in what context"<sup>1</sup>. In addition, there is no literary or pictorial reference to the stockings or knitting in Egypt. This makes it difficult to date the pieces. Most museums assign them a range of 1200 - 1500 AD, which puts them very firmly in the medieval period. Prior to knitting, stockings were made by a process known as naalbinding, or single-needle knitting.<sup>2</sup> The end result looks similar, but is structurally different from these later stockings.

Egyptian stockings fall into two categories. The first type (pictured top right) are mostly plain white with blue patterned stripes, which may range from very simple to quite ornate. The toes are plain, and are formed by scattered increases (adding stitches to increase the diameter of the toe as the sock is knit), creating a cone shape. The heels are knitted after the rest of the sock is complete, into a gap left for that purpose.

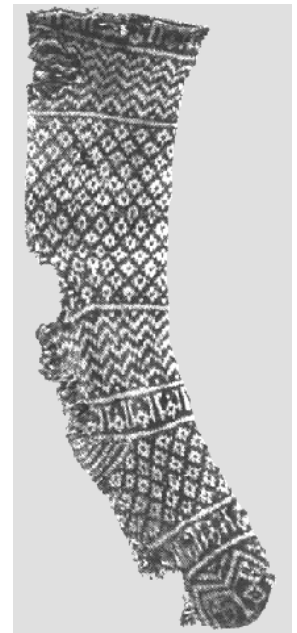
The second type (bottom right), which is the type I've concentrated on in this project, have backgrounds of dark blue with bands of patterned white decoration. The bands are much wider than the stripes of the first type, covering the entire stocking and are sometimes separated by thin white stripes. The toes are worked in a series of a diamonds, making a pyramid shape, and the heel is formed by a series of short rows (knitting back and forth over a decreasing number of stitches to form a kind of pocket for the heel). The rest of this paper will discuss only the second type of stocking, unless specifically indicated.

### The Materials

The historical stockings are knit in a cotton yarn, loosely spun and consisting of two plies, or individual strands spun together. The yarn is fine,



12th c. sock: The Textile Museum, Washington DC



Stocking, 11th-13th c.  
Textile Museum,  
Washington, DC

closer to a modern weaving yarn than what would be considered a sock yarn today.<sup>3</sup> The dark blue yarn was dyed, almost certainly with indigo. The blue dye has been worn off of sections of the stockings, revealing a white (or paler blue) core. This wear pattern is similar to the manner in which modern blue jeans, also dyed with indigo, fade over time.<sup>4</sup>

I chose to use a commercially available sock-weight yarn. As stated above, Laning compares the historical yarn to weaving cotton. I chose not to pursue this option because the amounts in which weaving yarn must be purchased are excessive, and expensive. I felt that a slightly heavier weight was an acceptable trade-off for being able to purchase in smaller, less expensive quantities. It is only 75% cotton (the other 25% is acrylic), but the look and feel is very similar to 100% cotton yarn. It is industrially spun, and consists of four small plies. The blue was also pre-dyed, most likely not with indigo. The color is similar, though it tends toward the more purple end of the blue spectrum. I have included a sample of wool yarn I dyed with indigo at a workshop for comparison.

My decision to use a pre-spun, pre-dyed yarn was one of inexperience and expediency. While I have some skill at spinning wool, silk, and other animal fibers, I have no experience spinning cotton and very little (other than the one workshop) with period dyeing techniques. Rather than put the project on hold until I had become conversant with these facets of fiber arts, I chose to make use of an inexpensive, widely-available commercial substitute. Going forward, however, I'd like to learn more about the aforementioned fiber arts, and perhaps develop this singular project into a body of work.

### The Technique

The extant stockings are all knit at a fairly fine gauge (the number of knitted stitches and rows per inch), ranging from 9 to 15 stitches per inch, and 10 to 23 rows per inch. It would have taken fine needles to achieve that gauge. Richard Rutt states that the stockings were “handknitted, almost certainly with rods. The rods may have been hooked.”<sup>5</sup> He doesn't, however, elaborate on why he postulated hooked needles.

I used 1.75 mm aluminum knitting needles. It's hard to find wooden needles that small, and metal needles have less chance of breaking. Bone may have been another possible needle material, but I have never had the chance to experiment with them.

The Egyptian stockings are knit from the toe up, as evidenced by the direction of the stitches. Each knitted stitch creates a ‘V’ shape when looked at right side up. Knitting with more than one color, as in these stockings, makes seeing the direction of the ‘V’s very easy to see. The stockings are also knitted in the round. This is evident in the break of the pattern that runs up the sides of the stockings. Fabric



Illustration of “jog”  
Child’s Sock, 11th-15th c. Textile  
Museum, Washington, DC (top)  
and modern stocking (bottom)

knitted in the round forms a spiral of knitted rows, which result in the beginning of one design row being offset from the previous. It creates what is called a “jog,” or a visual break in the flow of the pattern at the point where the design begins. In most modern sock patterns, this jog runs up the back of the leg, but these Egyptian stockings shows it running up one side of the leg.

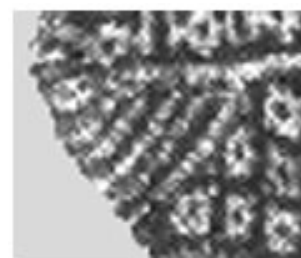
The toes, as stated above, are knitted in varying diamond patterns. I have charted three such variations, which may be found in Appendix 3. The toes appear to have increases every row, resulting in a perfect pyramid shape. After the toe is formed, there may be a band of calligraphic-seeming decoration. Rutt states that the calligraphic variations are a kind of short hand for the word “Allah,”<sup>6</sup> but Laning contests that they may have a more secular meaning: “al-mulik” or “the kingdom.”<sup>7</sup> The whole of the foot is generally taken up with a wide band of small, all-over patterning, such as serrated stripes or a diapered diamond pattern (see Appendix 3 for charted designs).

The heel is formed with a series of short-rows worked back and forth over half the stitches, with alternating striped colors. Most modern short row heels are knit in two steps. The first is to knit back and forth over half of the foot stitches, with each row being knit with one stitch less than the row before. When only a small number of stitches are left, the process begins to reverse. Each subsequent row is knit with one *more* stitch than the last, until all the stitches have been picked up and worked. This results in a heel that looks very like a kind of pocket inserted into the leg of the sock. These stockings are different in that only the first step is performed, and then the stitches are picked up and the stocking is knit up the leg from that point. It looks a little odd to modern eyes, but it is surprisingly effective.

After the heel stitches are all picked up and another calligraphic band is knit, the leg proceeds upward, alternating wide bands of pattern with calligraphic motifs. The stockings appear to have been knit straight, with no increases or decreases to accommodate the way a human leg is shaped. There is no ribbing (a series of stitches making a corrugated pattern stitches for visual interest or elasticity) at the top of the stocking. They would probably have been held up with a ribbon or garters, since plain knitting has a tendency to roll down. The stockings end right after the last motif.



Illustration of pyramidal toe  
Child’s Sock, 11th-15th c. Textile



Short row heels  
Stocking, 11th-13th c. Textile  
Museum, Washington, DC  
(top)  
and modern stocking (bottom)

## My Stockings

My goal with these stockings was two-fold: to use these stockings as a sampler of knitted motifs taken from several historical Egyptian knitted items, and to create a pair of stockings that fit my feet and legs, so that I can wear them comfortably.

I knit my stockings toe up, at a gauge of 9 stitches and 11 rows per inch, which puts them within the tolerances defined by the historical stockings. I also made sure the jog in my stocking runs up the side seam. When both stockings are completed, the “seams” will be on opposite sides of each, and will be worn so that they are on the inside of the leg.

I first attempted to make a five-diamond toe with increases every round, but the result was not the pyramidal shape demonstrated in the surviving stockings. In fact, it resulted in a greater-than-full circle shape that ruffled around the edges. My next attempt, also containing five diamonds, added a round of plain knitting between each increase round, to make the slope of the toe more gradual. This resulted in a more conical toe, but unfortunately, the gauge of my stocking was significantly different from my sample swatches, which were knitted to 10 stitches and 11 rows per inch. This resulted in a sock toe that was an inch too big around for my foot. My final, successful, stocking toe was knit with four diamonds, and increase rounds every other row, and ending with 80 stitches around the foot.

Since half of my goal for these stockings was to end up with a knitted sampler, I researched several extant stockings from books and museum sites, and charted the knitted motifs onto graph paper for ease of knitting. I decided to alternate the type of motif: simple, ornate, simple, ornate, with a calligraphic band separating each wide band.

The “fish” diamond toe I knit is from a stocking in the Textile Museum in Washington, DC (chart C, modified chart D). The calligraphic spacer is from a sock pictured in Rutt’s *History of Handknitting*<sup>8</sup>, although it’s not credited to any museum in particular (chart M). The diapered diamond pattern on the toe is taken from a complete stocking from the DC Textile Museum, but is also found in reverse (blue diamonds on white) on a fragment in the Victoria and Albert Museum (charts I and L).

It’s difficult to see how exactly the short-rows in the heels are formed. I chose to use a modern version of short-rows, where the yarn is wrapped around the end stitch before turning. When the short-rows are complete, the stitches and their wraps are knit together as one, eliminating any gaps or holes that might form.

On the original stockings, the ankle seems to be knitted on the same number of stitches as the foot (in my case, eighty). However, when I tried that in my stockings, the stitches were stretched over the widest part of my ankle and heel, and the result was uncomfortable and unsightly. Instead, I increased from 80 stitches to 104, which allowed for both a wider ankle, and an even number of calligraphic repeats.

The next motif, built around a row of double ended crosses, was taken from an unknown knitted object displayed in the Musée d'art et d'histoire in Geneva (chart G). Experts think that the knitted tube, closed at one end, may have been used as an infant's sock.<sup>9</sup> There is no calligraphic border between this double-cross motif and the next, a very simple series of stacked zig-zags from the DC Textile Museum stocking (chart H). That particular stocking has three wide bands next to each other with no calligraphic borders, so I decided to show in my stocking that it was a possibility. Then comes another band of calligraphic motif. This particular band is slightly different from the rest, in that there are two motifs with extra stitches in them. I needed to have a motif with a stitch count in between the zig-zags (eighty stitches) and the filigree (108 stitches), and so I knit this band with 95 stitches. The sock from which this motif was taken (figure 3) shows one band with a double upright, such as I have used.

Above the zig-zags is a delicate filigree pattern taken from a knitted fragment housed in the Detroit Institute of the Arts (chart K). I knit this section over a substantial number of stitches, both to make sure that the full pattern appeared without parts being cut off, and to make sure that this section of the stocking fit snugly, but not tightly, over my calf area. This motif, as well as the double-cross motif directly above the ankle, have had their colors reversed. Originally, they were knit with blue lines on a white background. I chose to make all the motifs have blue backgrounds to increase the visual harmony of the stockings. After that, another calligraphic band, this time without the extra stitches added.

The last motif is a series of three rows of S and Z shapes, two of which stack on each other in a touching, mirrored fashion, and one that is completely discrete (chart E). This motif is taken from a so-called Child's Sock that currently resides in the Textile Museum in Washington, DC. It's also repeated, without the mirroring, in a fragment in the Victoria and Albert Museum in London. I ended with yet another calligraphic band. The stocking was just an inch or so too short, and I didn't want to cover the decorative motifs with the garter I will have to wear to keep the stockings from falling, so I chose to knit about an inch of plain blue before binding off all the stitches.

### **Complexity**

Two color stranded knitting is a complex process that involves knitting with one color of yarn held in each hand. It requires careful maintenance of even tension between the yarns, lest the knitted fabric look uneven. This process is made even more difficult by the use of a cotton yarn, which is not at all elastic, unlike wool or modern acrylic yarns, and so is very unforgiving.

Technique aside, the patterns I charted do vary in terms of scope and complexity. The zig-zag pattern on the ankle is one that repeats after six stitches and four rows. It can be easily memorized, and easily executed. The filigree pattern on the calf, however, is a pattern that repeats over 18 stitches and 37 rows. It is not intuitive, and unlike the zig-zags, which can be executed from memory, this is a pattern that I feel must have been charted somehow.

Instead of using the patterns already charted in any of the resources I referenced in researching these stockings, I felt that it was important to chart my own designs. I looked at photographs of extant stockings, fragments, and even an unknown tubular item from Egypt, and charted the positions of colored stitches on graph paper. Usually when graphing a knitting chart, I would use a specialized grid, since knit stitches are wider than they are tall. But working with more than one color means that the floats (yarn that is held at the back of the work while the opposite color is being knit) pull the stitches into a more square shape.

Another facet in dealing with multiple knitted charts is managing the number of stitches over which any given motif is knit, often called a pattern repeat, or just repeat. A motif that has a repeat of 8 stitches must be knit over a multiple of that many stitches, or risk not having a seamless pattern. Almost all of the motifs charted have different numbers of stitches in their repeats, meaning that I had to reconcile the number of repeats with the measurements of my leg. Nearly all the patterns tiled evenly, with the exception of the third calligraphic band from the toe, which needed four extra stitches to match my leg measurement.

Most of the charts worked exactly as written, but at least one needed revision. The “fish” toe began as a chart that indicated increases every row, but as I stated above, it was less than successful. I re-charted it to show increases every other row, and included both charts for comparison in Appendix 3.

I have been knitting for eight years, mundanely, and have accomplished some fairly complicated and ambitious projects (two cabled sweaters, dozens of socks, and four lace shawls), and the first stocking took me nearly forty hours to complete. Without proof of provenance, it is hard to say who might have worn the historical stockings. The fact that they are knit with difficult technique, in complex patterns suggests that they were knit either by someone with leisure time to spare, who was familiar with, and had a decently long history of knitting, or a skilled craftsperson who was getting paid to produce beautiful items.

I mentioned earlier in this paper that I would like to expand this singular project into a body of work, exploring techniques and materials that get closer and closer to what would have been used and done in period. To that end, I am glad that my first step along this journey has been to focus on method and technique. It allowed me to familiarize myself with the fairly complicated process of two-color knitting with cotton yarn, and to become comfortable with new-to-me techniques, such as this short-row heel without having to worry about precious materials such as hand-spun, hand-dyed yarn. Moving forward, I will certainly endeavor to bring a greater historicity in terms of hand-made materials to my stocking projects.

## Appendix 1: Extant Knitted Stockings and Fragments



Fig. 1 (left):  
12th c. Sock  
Textile Museum  
Washington, DC

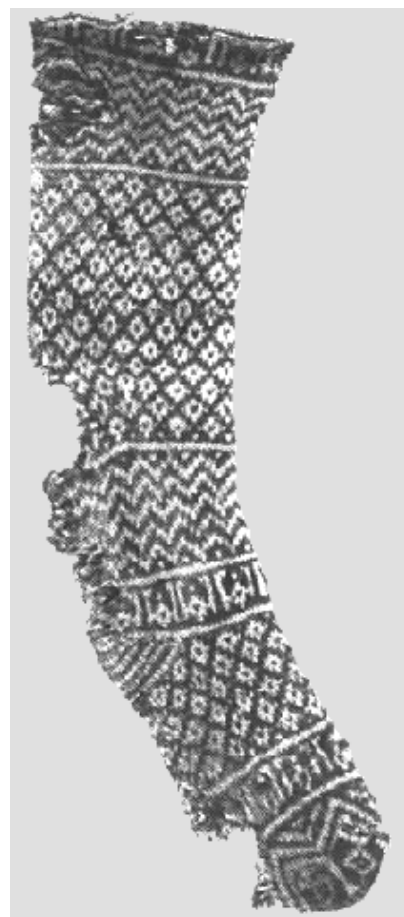


Fig. 2 (right):  
Sock, poss. 13th c.  
Metropolitan Museum  
of Art, New York



Fig. 3 (left):  
Stocking, 11th-13th c.  
Textile Museum,  
Washington, DC



Fig. 4 (right):  
Child's Sock, 11th-15th c.  
Textile Museum,  
Washington, DC

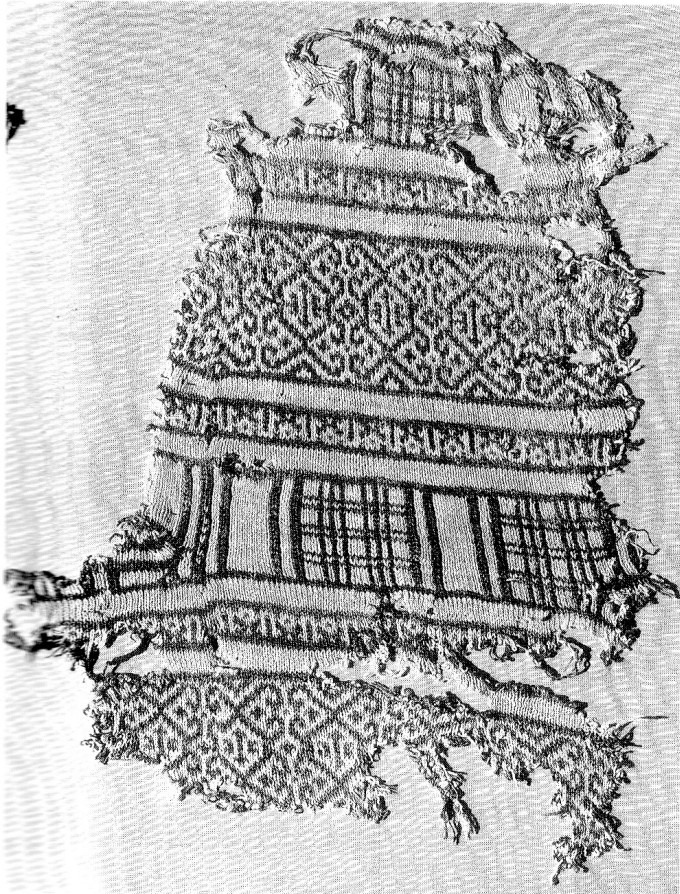


Fig. 5 (above left):  
 Knitted Fragment, 1100-1300 AD  
 Victoria and Albert Museum, London

Fig. 6: Above Right:  
 Knitted Tube (Possibly Infant Sock), 11th-13th c,  
 Musée d'art et d'histoire, Geneva

Fig 7: Below Left:  
 Knitted Fragment, 1000-1200 AD  
 Detroit Institute of Arts



## Appendix 2: My Trials and Progress



Top left and right: Five-diamond toe, increased every round. Not cone-shaped at all.

Middle left: Four-diamond toe increased every other round. Finally, the proper shape.

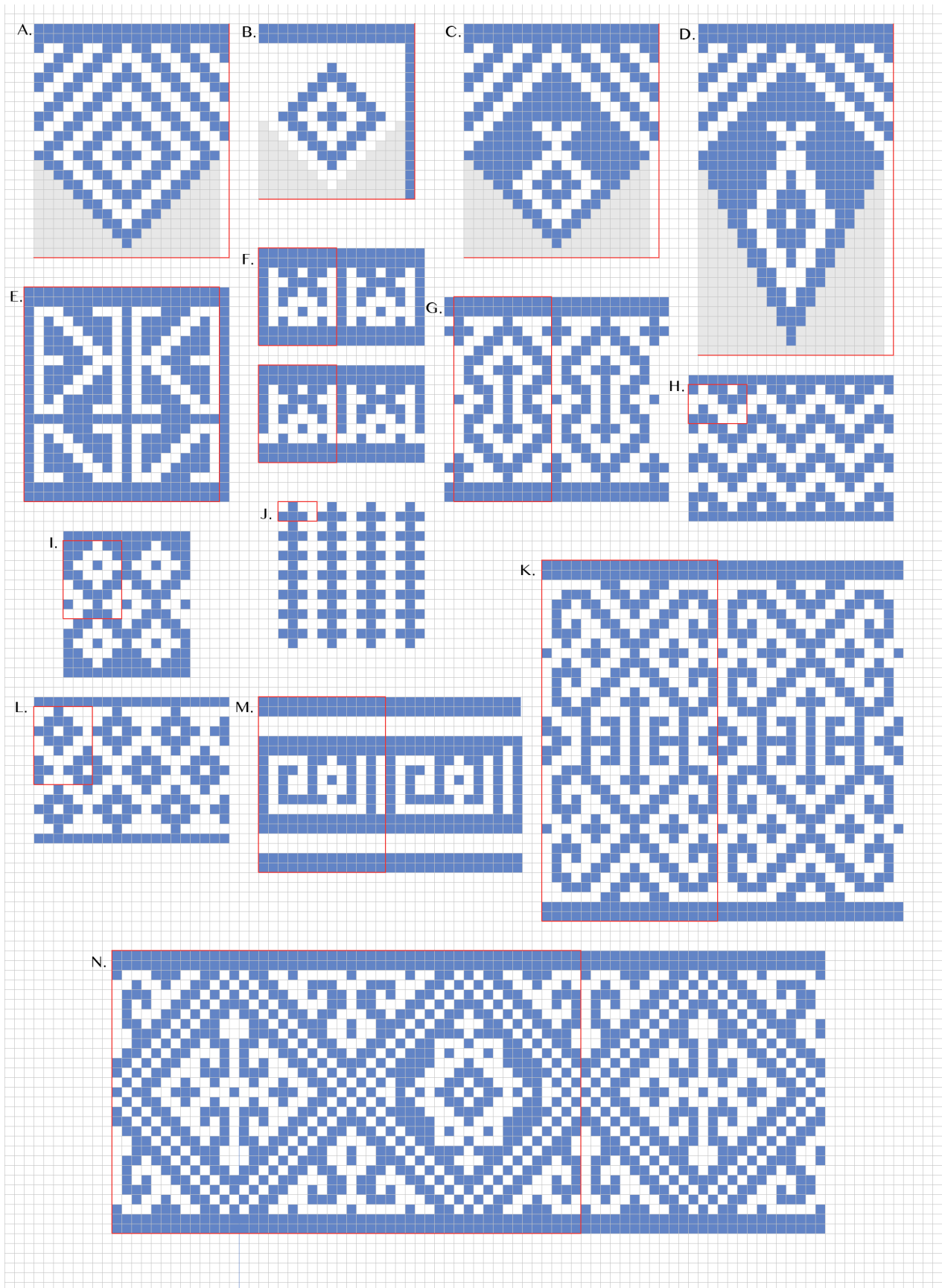
Middle center: The sock immediately after turning the heel. The heel-pocket created by short rows are evident.

Middle right: Beginning the zig-zag section of the leg.

Bottom left: The inside of the second stocking, showing the non-working yarn being carried.

### Appendix 3: My Charted Designs

Red boxes indicate pattern repeats.



## Endnotes

1. Ellen Perlman. "Medieval Muslim Egyptian Stockings." (<http://home.earthlink.net/~urtatim/Muslimstockings.pdf>), 1.
2. Richard Rutt. *A History of Handknitting*. )London: BT Batsford Ltd, 1983), 31.
3. Chris Laning. "Medieval Islamic Stockings." (<http://www.ravelry.com>), 3.
4. Susanna Lockheart. "Egyptian Socks at The Textile Museum: A Study of Extant Knitted Items." ([http://scanothernlights.org/results/2007/Egyptian\\_Socks\\_NoPhotos.pdf](http://scanothernlights.org/results/2007/Egyptian_Socks_NoPhotos.pdf)), 3.
5. Richard Rutt. *A History of Handknitting*. )London: BT Batsford Ltd, 1983), 35.
6. Richard Rutt. *A History of Handknitting*. )London: BT Batsford Ltd, 1983), 36.
7. Chris Laning. "Medieval Islamic Stockings." (<http://www.ravelry.com>), 4.
8. Richard Rutt. *A History of Handknitting*. )London: BT Batsford Ltd, 1983), 35.
9. Paul André, ed. Collection Bouvier. *Tissus d'Égypte - témoins du monde arabe - VIIIe-XVe siècles*. (Thonon-les Bains, Haute-Savoie, Musée d'art et d'histoire, Genève; Institut du monde arabe, Paris: Editions de l'Albaron, Société du livre, 1993), 266, 267

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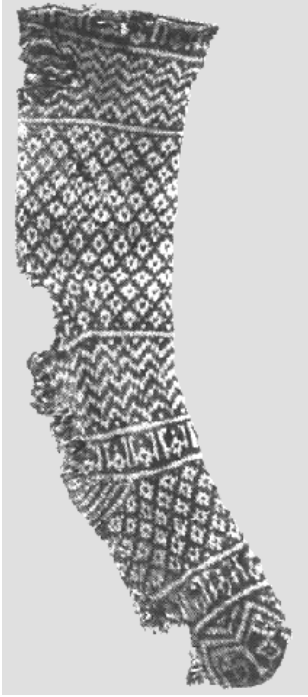
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Lockheart, Susanna. "Egyptian Socks at The Textile Museum: A Study of Extant Knitted Items." [http://scanothernlights.org/results/2007/Egyptian\\_Socks\\_NoPhotos.pdf](http://scanothernlights.org/results/2007/Egyptian_Socks_NoPhotos.pdf). (Accessed 2 January 2013).

Perlman, Ellen. "Medieval Muslim Egyptian Stockings." <http://home.earthlink.net/~urtatim/Muslimstockings.pdf>. (Accessed 2 January 2013).

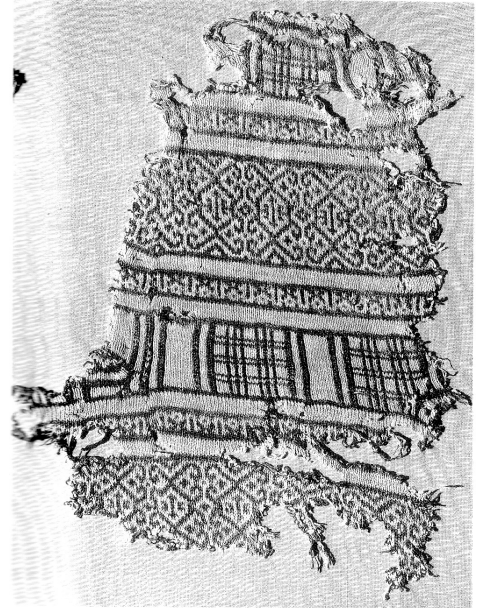
Rutt, Richard. *A History of Handknitting*. London: BT Batsford Ltd, 1983.

## WALK LIKE AN EGYPTIAN: ABSTRACT

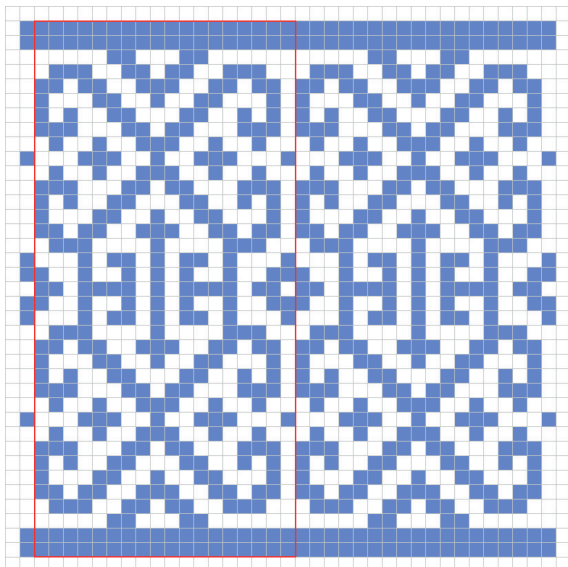


Medieval Egyptian stockings are some of the earliest known knitting, appearing some time between the 11th and 15th centuries. They are made from a fine cotton yarn, dyed with indigo. They fall into two categories: mostly white with blue decorative stripes, or blue with wide white patterned bands. This project represents the latter.

I looked at museum pictures and made my own knitting charts based on the designs of many extant socks and fragments of knitting. I incorporated several of the designs as a sampler of the variety and beauty of the patterns.



I knit these stockings using modern materials, in order to focus on methods and techniques. I also chose to increase and decrease the number of stitches in the stocking as I worked, in order to better fit my leg. I see this project as the beginning of a body of work, wherein I slowly acquaint myself with more and more of the tasks (spinning, dyeing, etc) that would have gone into the making of these stockings.



# WALK LIKE AN EGYPTIAN:

AN EXPLORATION OF MEDIEVAL EGYPTIAN STOCKINGS

