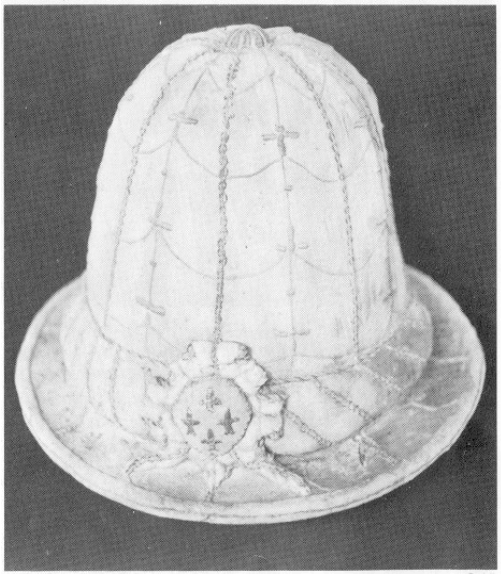
29. c.1600-10 Leather Hat Germanisches Nationalmuseum Nürnberg T1593

Hat is embroidered cream leather, with suede finish, now discolored to very pale grey. It is made of eight shaped of felt (to bottom dotted line ---). The felt is butted together to make a smooth surface and joined. One layer of linen, cut to the same shape, is put on top of the felt and another below. …Rows of stitching may be seen through the silk lining inside the hat. The felt brim is stitched to the crown and the foundation is then brushed down or soaked with glue size of some kind to make it stiff. The zig-zag edges of linen are stroked down over the felt. (Arnold, p94)

Leather hat from
German National Museum, Nuremberg, Germany



The paper inside the hat has Germanic writing on it, which can still be seen and read. From the written text, Dr Zutter-Zetta, curator of the textiles at the GNM, suggested that the paper was most likely old account receipts but was unable at this time to determine if they are household accounts or shop accounts.

The paper inside the hat was very interesting. One could wonder as to its function in the hat. I made a demonstration model of this hat so learners could see the layers of the hat. During my construction, it became somewhat apparent that the paper may have a very interesting task.

The construction process of this particular hat uses material pieces cut to fit rather than a single piece of felt, it used multiple pieces sandwiched between linen. The linen is covered by animal glue. Glue is also used to smooth the brim and lining together. So a good question becomes, why cut the felt when making a single felt tip is so much faster?

One answer may be that this is a very cheaply made hat with somewhat expensive trimmings. If one uses cut pieces of felt, one can then use left over bits inside the hat. Cabbage from linen and felt can still be effectively utilized and create their own revenue stream. To do this, though, there needs to be a foundation upon which to build – hence the paper Mâché foundation.

The suede is very, very thin in spots, one can see the linen though it. There is very little evidence of bugs throughout the rest of the hat, so it is unlikely that the suede was compromised by wild life and more likely that the suede was of a poorer quality. Additionally, the hat itself is very small and was likely worn by a child or very young adult. This may account for it still being in existence.

My interpretation of the process of building this hat:

1. Make the paper mâché tip using a hat block – let dry
2. cut linen, felt, and leather pieces
3. Pin the inside linen pieces to the paper mâché and block
4. soaked the felt in hot water
5. squish excess water from felt

6. dip felt in rabbit skin glue or apply glue with a brush or fingers
7. place on top of linen, off slightly from their butts
8. form and pin as needed
9. continue with felt
10. place second layer of linen on top of felt – pass these through the glue to add more support
11. add leather pieces

27. c.1575-1600 Silk Hat Germanisches Nationalmuseum Nürnberg. T1220.

Hat in brown corded silk lined with lightweight brown silk. Both layers are cut to the same shape. The pieces are daubed with wax along the cut edges to prevent fraying.

The brim is made of two layers of corded silk, without any stiffening. Brown silk thread is used for sewing. There are three joins on the top side of the brim. The crown is pleated up, lining and corded silk worked as one layer, and stitched to the edge of the top side of the brim. The underside of the brim is hemmed down over the lining with brown silk thread.

The hat band conceals the join of brim and crown and all the stitches, but it is just possible to see traces of wax on the raw edges of the brim. A fragment of wax was tested by Miss Erika Weiland in the textile conservation workshop.

Silk Hat Germanisches Nationalmuseum Nürnberg

The hat is mounted on a wire frame to keep its shape. This appears to be of nineteenth century origin, made of iron at the bottom, possibly eighteenth century clavichord wire at the top. Presumably this is a replacement for an earlier foundation, either of wire, which may have rusted away, or cardboard, which may have been worm-eaten. Perhaps this was an early attempt at making a high crowned hat with soft pleats. Other hats of this period have bases of stiffened felt, or layers of paper and card soaked in gluesize, with the silk arranged in firm pleats on top.

Four circles of brown silk gathering threads are put into the hat and pulled up, making 43 pronounced folds or pleats. The silk may have been damped slightly to keep its shape.(Arnold,p 94)

One of the most glaring item of this hat's description that Arnold did not mention is the felt hat tip inside the hat. Once the metal support had been removed along with some padding and extra paper, one could clearly see a bright orange felt tip. Made of a size and form consistent with other round tipped pleated hats of the period in England. The top of the silk currently skims along the top of the round tip.

What this hat had that is slightly different is the slouchiest of the external fabric itself. Arnold speculates that the hat may have originally had a wire frame or other materials. But one can find pictorial evidence that the "balloon" hat was worn in England, Poland, and Germany. Thus, it seems likely that the felt tip inside the hat is in fact the appropriate foundation. According to Dr. Zutter-Zatter curator of textiles at the GNM, the inside felt had not been dated but the threads holding the brim on seem to be original.


Lady Kystan - 1580

If one used a firm silk, it will stand quite nicely when pleated, with a minimum of support. The orange felt tip inside this particular hat would have provided sufficient support.

Arnold also suggested that this may have been an early attempt at a pleated tall hat, but the pictorial evidence indicates that the "balloon" style was worn contemporaneously with the round tipped pleated hat and flat tipped pleated hat.

The brim has no stiffening of it's own and allows the hat to be very flexible. There is not wiring around the brim or crown. The silk of the brim is still quite stiff. It may have some starch or sizing in it, but as it has not drawn bugs, it seems unlikely.

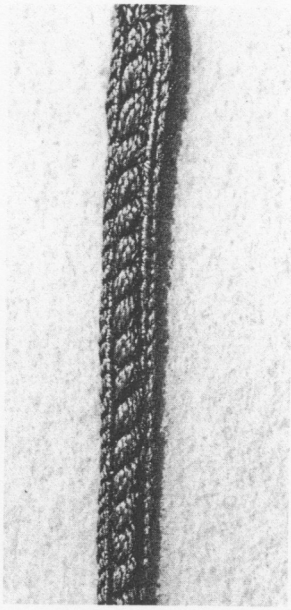
Many silks of the 16th C were much more tightly woven than silks today, for this reason it is likely to speculate that the silks used for this hat had plenty of body on their own without the need for starch or glue sizing.
The wax on the edges were of bees wax. A common wax in this era. The surprising thing according the Dr Zutter-Zatter is that the wax was very clean.

Additionally, where one can see behind the hat band to the lining of the silk, one can see additional pleating of the lining. This may also have assisted the hat in looking fluffy.

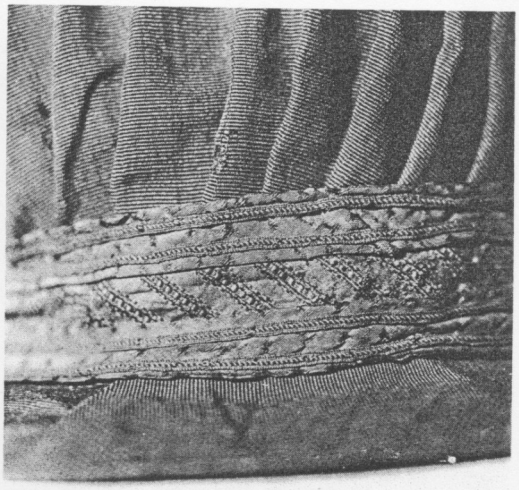
The head plate of this hat is very round, with no wiring or other restrictions, the wearer's head could be any shape from an "old world round" to a "long oval" without any issues. The only change would be in the apparent brim shape. On a round headed person, the brim would be flat while on a long oval person, the brim would develop a slight swoop along the side. The may account for some of the apparent brim differences one sees in artwork of this period.

The hat band is made of a tablet woven trim. “Waffen und Kiftumkunde” 1985

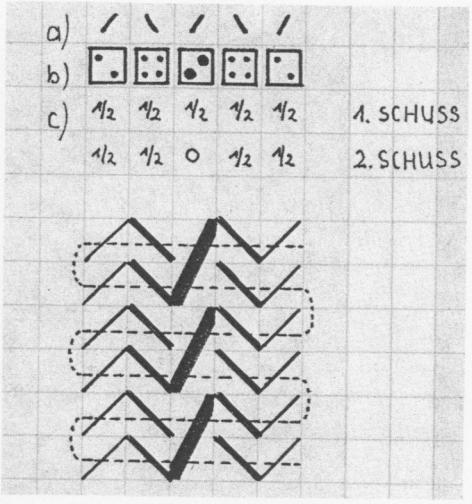
14. Herrenhut (Kat.-Nr. 4)



16. Nachbildung der Borte (Kat.-Nr. 4)



15. Kat.-Nr. 4

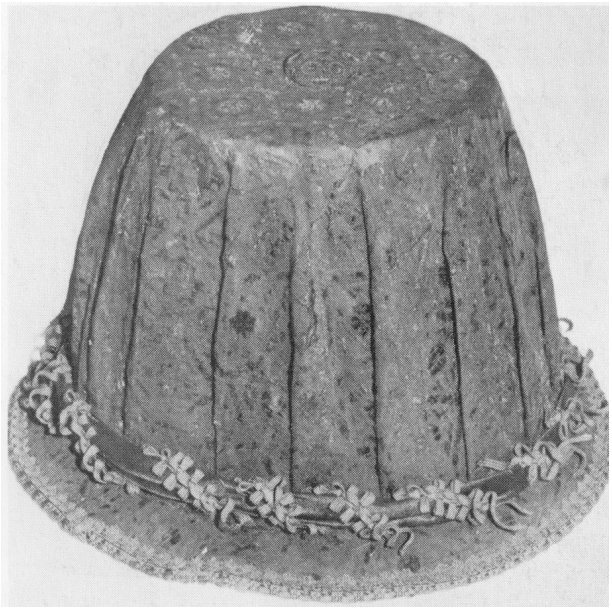


17. Diagramm zu Kat.-Nr. 4

bindige, punktförmig gehackte seidene Schrägstreifen (10 mm br.) gesetzt. Jeder dieser Streifen ist mit zwei parallel laufenden brettchengewebten Borten besetzt. Die Borte wurde mit fünf zueinander geordneten 4-Lochbrettchen gewebt. Die Mittellinie ist durch die Verwendung von zwei mehrfachen Kettfäden, die über zwei Schüsse flotten, hervorgehoben, eingegrenzt durch eine ‚Schnur' aus den vier Fäden eines Brettchens. In die beiden äußeren Brettchen sind jeweils zwei Kettfäden eingezogen. Der Bindungsrapport umfaßt zwei Schüsse.

The short crown pleated hat as seen at the Museum of London:

Arnold briefly discusses this hat in her book, Patterns of Fashion. She comments that this hat has a hard foundation and that it is covered in black silk.



Additionally, this hat has had some updating with the hatband and gimp around the brim.

It has a 6 gauge spring metal hoop at the tip. According to Oriole Cullen, Curator of Dress & Decorative Arts Museum of London, this too is thought to be a later addition. The cover fabric and foundation seem to be original.

Upon closer inspection, this particular hat tip can be seen to be made of formed felt with heavy glue sizing. It is unclear if the hat was made over a block or if the tip and stock were originally separate pieces as time has felted the whole area. Without significant invasive analysis, it is hard to tell.

The brim on this hat is heavily sized linen. The sizing is made from animal glue. What's left of the lining is a pale blue/grey silk through which one can see the felt form on which the hat is made. There are silk threads still attached to the button thread on the top, which seems to indicate that the button originally held the lining to the top of the hat.

The really interesting thing about this hat is the use of mixed medium in the underlying construction. When one reads about hat construction, one thinks that hat foundations would be made from the same materials but as I've discovered, that's just not true☺

Stiffening materials used in 16th C hats. AKA – Hat skeletons

Hats of the 16th C vary all the way from knitted and felted hats to tall stiff hats with large plumes and great jewelry. The taller formed hats of this period are stiffened in a variety of ways including glue sizing, starch, felts, hairy paper, and other materials.

Felt

There are many different styles of felting, but there is only one way to do it! Wool, water, pressure, friction and heat. Just try putting some wet bunnies in the sun to run around and you will find out that it is nearly impossible to pull apart the felted mats.

How felting works:

When the hydrogen bonds are broken by the moisture and heat, the wool's structure can be re-shaped. The heat dries the wool and new hydrogen bonds are formed on the wool structure as the water escapes. The new hydrogen bonds maintain the wool in the new shape. High humidity can cause these hydrogen bonds to be broken again.

Knitted woolen garments which shrink in a hot machine wash can be said to have felted, but have actually been "fulled". Felting differs from fulling in the sense that fulling is done to fabric whereas felting is done to fibers that are not in fabric form. Modern fulling is an example of how the fibers bond together when combined with the movement of the washing machine, the heat of the water, and the addition of soap.

This is the definition from Wikipidia:

> *Felt is a non-woven cloth that is produced by matting, condensing and pressing fibers. While some types of felt are very soft, some are tough enough to form construction materials. Felt can be of any opaque color, and made into any two-dimensional shape, size or thickness.*
>
> *Felt is the oldest form of fabric known to humankind. It predates weaving and knitting, although there is archaeological evidence from the British Museum that the first known thread was made by winding vegetable fibers on the thigh.[citation needed] In Turkey, the remains of felt have been found dating back at least to 6,500 BC. Highly sophisticated felted artifacts were found preserved in permafrost in a tomb in Siberia and dated to 600 AD.*
>
> *Many cultures have legends as to the origins of feltmaking. Sumerian legend claims that the secret of feltmaking was discovered by Urnamman of Lagash.[citation needed] The story of Saint Clement and Saint Christopher relates that while fleeing from persecution, the men packed their sandals with wool to prevent blisters. At the end of their journey, the movement and sweat had turned the wool into felt socks.[citation needed]*
>
> *For a long time, the economy of what is now Canada was based on the fur trade, the hunting of beaver (and, to a lesser extent, other animals) for the felt industry in Europe. This led to a very basic colonization, organized by fur trade companies, until governmental measures were taken to ensure a real economic and demographic development.*
>
> *Feltmaking is still practiced by nomadic peoples in Central Asia, where rugs, tents and clothing are regularly made. Some of these are traditional items, such as the classic yurt, while others are designed for the tourist market, such as decorated slippers. In the Western world, felt is widely used as a medium for expression in textile art as well as design, where it has significance as an ecological textile.*

There are several starches and glues from which one might choose. When creating a “period” piece, I prefer rabbit skin glue as it is easy to work with, has no smell, and doesn’t leave much residue when working with it. When 100% authenticity is not an issue, I like to use mundane liquid starch.

Creating a felt hat tip form-the 16th C process:

Shear your sheep
Make medium weight felt using only sheep's’ wool
Or
Pluck your angora rabbit
Make rabbit fur felt
Or
shear your goat
Make goat hair felt

Hat felt was rarely mixed medium and when the felt was to be covered with fabric, felt was most frequently made of wool felt.

You will need:

1. 100% wool or bunny felt – you could purchase felt as a flat piece, make your own felt, purchase hat blanks or recycle 100% wool hats from the thrift store.
2. A hat block with the correct shape – you can rent the at Lacis in Berkeley for $7/week
3. Liquid starch or glue
   Optional: Orvis soap
4. Hot water
5. String
6. Large pot
7. Rubber gloves

- Soak the wool felt in hot water. Gently massage the felt until it is completely soaked. Squishing the fabric is OK, but do not wring it.
  - Tip - I find it useful to wear rubber gloves for this process as it allows me to work in hotter water.
- Once the felt is well soaked, remove it from the water and add 2 cups liquid starch or glue to your water. Put the felt back into the hot water and continue to massage it until starch/glue seems worked through the felt.
- Squish excess water from felt and place over hat block, press into shape.
- Use a string or large rubber band to secure the felt at the bottom of the hat block
- Put about 1 cup of undiluted liquid starch or glue into a spray bottle. Once you have your felt stretched and secured onto the hat block, spray liberally with starch.
  - Tip - I find it useful to gently massage the starch/glue into the fibers. Begin at the tip and work you way down.
- Let dry completely. Usually a day will do it.

How to make one type period buckram:
Mundane buckram is actually linen or with glue sizing added to it as a coating. Period buckram is basically the same thing. It uses linen with a glue sizing and can have many layers to it depending upon what the use will be.

You will need:

1. A wooden or metal frame large enough for a ½ yard length of fabric
2. ½ yard of 100% linen
3. 1 quart of period type glue – I like rabbit skin glue which one can find at most art stores.
4. Paint brush or spray bottle

Attach the fabric to your frame, paint or spray the glue sizing onto the fabric and allow to dry completely. Use two layers to create a 2ply thickness.

The uses for buckram can apply to almost any stiffened flat material that will be cut to shape a hat. You could also use flat paper with glue sizing, hairy paper and so on.

Creating Paper Mâché for a round tip:

You will need:

1. Heavy weight paper – linen if possible cotton will work
2. Form upon which to create tip
3. Glue or paste – I like rabbit skin glue for this
4. Rubber gloves

Begin by tearing your paper into strips and smaller pieces. Make sure to tear not cut, tearing allows the edges to feather slightly which helps them stick to one another.

Dip your pieces into the glue and wipe off excess – I pull the piece between two fingers to do that. Start at the top and work your way down over your tip. I find it works well to put plastic over my block so that glue doesn't build up on the block. Finish adding strips and bits, let dry and remove from block.

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