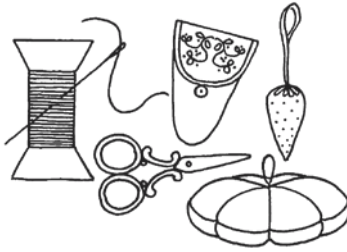


DOLLMAKING BASICS

FOR SEWING AND PATTERNS
HOW-TO'S FOR TRIMS,
MAKING NEEDLE LACE AND
AGING FABRIC



by
© Gail Wilson
www.gailwilsondesigns.com

Some of these tips are the kind people my age learned from their grandmothers. Some are ones that I have come up with on my own. All of the material is copyrighted and cannot be used without permission.

PATTERN BASICS

LAMINATE YOUR PATTERNS - I strongly recommend using Avery brand Laminating Sheets. Laminate **both** sides of each sheet of instructions before you cut out the patterns and you will have patterns that are permanent with good strong edges for drawing around. To laminate without horrible crinkles, peel off the backing, hold the sheet sticky side down in a U and touch the bottom of the U to the middle of the pattern page, then roll down the two sides gradually. Presto, no wrinkles.

CUTTING YOUR PATTERNS - I know this goes against everything your mother taught you, but you need to use your good 4" scissors (hopefully Ginghers - I do think they are the best) to snip out patterns accurately. I save an older pair just for this job. Snip is the operative word here. I am horrified when I see students in class cutting patterns with great big dressmaking size scissors. You must be mindful always of the scale of things, including your tools, when working on dolls. It is best to actually cut off the printed line so when you draw around the pattern, your pencil line will end up just where the printed line was. But, since this leaves a degree of possible error that you cannot really measure till it is too late, I prefer to ask that you aim for cutting right down the center of the printed line. All things considered, this will be the most accurate on average.

WHETHER OR NOT THE LINE IS FOR CUTTING OR SEWING - I always think it is best for meticulous work, to begin with **drawing** around each pattern. If it is a sewing line, then you are all set to sew, and if it is a cutting line, you will cut it much more accurately than if you pinned the pattern then tried to cut around it. Also, you should always use a sharp pencil tilted **toward** the pattern as you draw. The width of a dull pencil line can make a difference. So, that means that you need to be watchful - some patterns the lines are to sew on and some the lines are to cut on with a seam allowance already allowed for.

GRAIN LINES - These generally appear on all pattern pieces and denote the direction of the fabric to go parallel to the selvage. On any stuffed item, do not alter the grain (say switch from up and down to sideways) or the piece will be altered in size (see above for an exception).

ROUGH CUT - Sometimes it works better to pre-cut pieces of fabric as oversize pieces that will later be cut exactly, so that a rough cut does not need to be carefully cut along the edges and sometimes a scrap piece is just right to use up



COMMONLY USED ABBREVIATIONS & TERMS

RSright side	ZZzig zag
WSwrong side	SCANT . . .slightly less than
SAseam allowance	FATslightly more than
BTbacktack	
WBwaistband	

ROUGH CUT . .to cut out some pieces of fabric that will later be cut exactly, so that the rough cut needs to be a bit generous (bigger than the final piece)

BASIC SEWING TIPS

You will need good basic sewing skills. Some stitching is easiest to do by machine and some will need to be done by hand, and there will be enough to do by hand that it should satisfy your sewing by hand inclination. People sometimes think that handsewing is easier, but that is wrong. Good handsewing takes far more practice than good machine sewing and if you can drive a car and park it, you can sew by machine, even on small things. It is all a matter of mindset of lining up things and keeping in a smooth line.

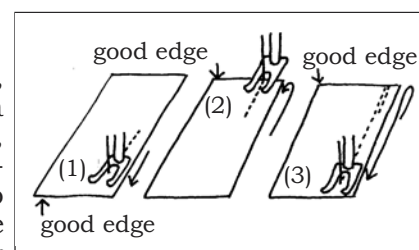
NEEDLES: You will need new needles for your machine that are intended for fine weight fabrics. Do not skimp on this detail or you will find old, used needles punching holes through your fabrics rather than sewing along nicely. Even if you do not have needles for fine weight, at least put in a new regular needle. Dull needles can also affect the tension of your machine and cause broken top thread and/or snarled bobbin thread, neither problems you wish to avoid.

STITCH & SEAM ALLOWANCE SIZE FOR CLOTHING: For this scale of sewing do 15-18 stitches per inch. It will be particularly important to watch all seam allowance sizes *as they vary*. This is not my way of making your work harder, but is due instead to the small scale and needing less bulk. **General rule** - Most seams are $\frac{3}{16}$ ", with most gathered areas at $\frac{1}{4}$ ", and curved places like neck seams, only $\frac{1}{8}$ ", but I have tried to have the measurements on the pattern pieces and I recommend keeping these near your sewing machine for quick reference.

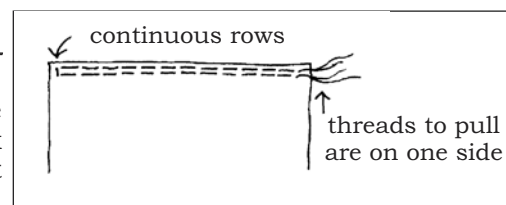
BY HAND: Hems and such can use the usual stitches, but if you are hand stitching the clothing construction, use only a very small backstitch, not a running stitch. Only a backstitch can simulate a machine stitch in tinniness and strength. To do this, use only a single strand of thread not more than 18 inches long to prevent tangles and knots. I really recommend running your thread through beeswax to keep thread smoothly sewing - it really works. Cotton thread is best, even on silk, or if you can find it, use the Italian cotton Aurifil as its fine weight (use 50 weight) is just right for silk while still being a good thread. Stitch length is $\frac{1}{16}$ " or less, averaging 19-20 per inch. Check backstitching frequently on backside to be sure you don't have skipped places. Using a small quilting needle is helpful.

HINT FOR CONCEALING THREAD ENDS WHEN MACHINE SEWING:

To aid in tidiness and not leaving thread ends showing, particularly at pantaleet, sleeve, and other hems where thread ends would show, always begin and end a little away from edge by stitching toward edge about $\frac{1}{2}$ " away (1), then at edge, turn (2) and continue on with seam (3). Some machines can handle this by backing up, but some gobble up fabric so turning the work instead is preferable. Do the same at the other end in reverse. See inset at right. If you will be crossing lace to do this, it is sometimes better to end your forward stitching somewhere near but not at the end of the lace and finish off by leaving long machine thread tails that you thread into a hand needle and sew the rest by hand so your machine does not chew up the lace. Another hint is to use Aleene's Tacky Glue to stick down thread ends or lace ends. Only use enough glue and in such a way that it does not show. You would be doing this on fabrics and laces that were already dyed or have gone through any water treatment. Using a toothpick to apply is good and stay in say a seam allowance or other hidden place. I don't like to advocate gluing things instead of fine sewing, but every once in awhile it is a good trick to know and I would rather neat than strict adherence to perfect sewing is all that is acceptable. Sometimes things happen and besides, we are working extra small here and need allowances.



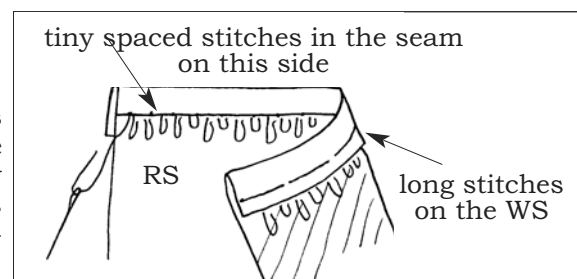
GATHERING: Use the longest machine stitch you have and sew two **continuous** rows of stitches trying to stay within the allotted seam allowance. Begin and end with long thread tails to pull up and when you get to the end of the first row, do not end and begin again - rather just turn the work so the threads are continuous. This makes it easier to pull just the one set of threads and have them be more in your control.



OPTIONAL ZIG ZAG: Here and there for this doll as well as in my other dollmaking, I recommend the use of zig zagging to finish edges. While it is not historically correct, I use it for speed, ease and also sometimes because of scale, since turning in another layer would make the item too thick. I use the word optional so you can decide whether or not to do it. You could always overcast by hand, which *is* historically correct.

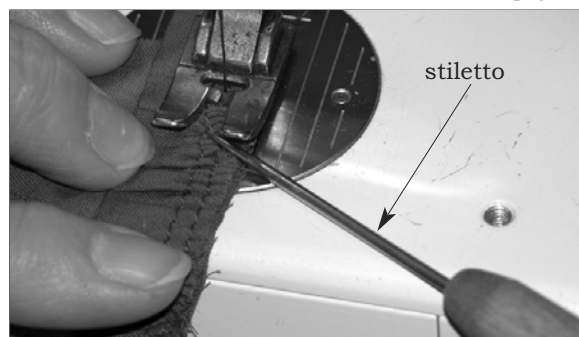
STITCH-IN-THE-DITCH:

The example illustrated here is for a waistband or cuff, but it works the same for securing bias trim or anywhere there is a seam (the "ditch") through which you can tack something (the "stitch"). Tiny stitches are taken on the RS in the ditch of the SA and long stitches are formed on the back where they do not show. Use a single matching thread.



USING A STILETTO:

With all the gathering and lace application not to mention the fineness of fabric and the small scale, one of the most important tools to own and learn to use is a stiletto. This tool allows you to adjust gathers as they go under the presser foot and to push things along while you sew. It is also most helpful when trying to sew past and through lace.

**USING FRAY PREVENTER:**

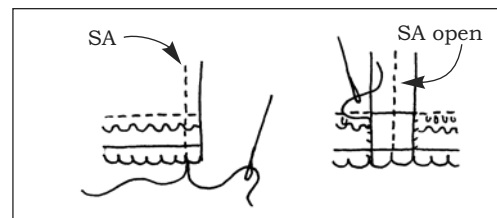
GW Fray Preventer should never be confused with Fray Check. Never use Fray Check on doll items. It has a tendency to bleed beyond the line you wish it to be on. For people scale, this is fine, but for dolls it does not do well. You can get my Fray Preventer from my website, or make your own from Aleene's Tacky Glue and enough water so it will paint on easily but not be runny. I add other ingredients to keep the mixture stable, but just water will do. In a pinch, you can use Elmer's as it is basically similar to Aleene's but already thinner. Since most doll sewing will not meet with repeated washings, this will work just fine, dry clear and not spread. Fray Preventer is one of the most important discoveries for working small. You will find it referred to over and over, both for doll bodies and doll clothing.

USING A GW DOLL SCALE RULER:

You will usually find one of these very narrow "tape measures" made from paper and clear tape in my patterns if I feel the doll should have one. Accurate measurements cannot be made, especially in places like a small doll's waist, with a people size tape measure. Once you get used to this important tool, you will reach for it all the time and since they are easy to lose, I have them on my website with several on one page for you to cut out and cover with protective clear tape.

WORKING WITH OUT OF THE ORDINARY FABRICS AND LACE**WORKING WITH LACE:**

This is a general tip for whenever you might be working with lace. When you figure out the length of a piece you will be cutting for lace, paint a line of Aleene's Tacky Glue or my Fray Preventer where you will be cutting. When glue is dry, cut on the sealed line and lace will remain nicely in tact there and not fray. If you cannot do this ahead, after you have sewn on lace, daub some glue on the cut ends. You can even "repair" the frayed cut ends this way after they have begun to fray, before they get worse and leave unsightly threads showing.

**TIP FOR SEWING OFF A LACE TRIMMED EDGE:**

This is a good tip if you think your sewing machine will not handle a backtack at the end of a seam. Sew off edge with no backtack and leave long thread tails of about 3". Thread one tail at a trim into needle, then use this to secure end and continue up the SA neatly tacking it open and securing cut lace ends as well.

BATISTE AND OTHER ULTRA-FINE FABRICS:

Paint overdyer is not only good for adding an aged appearance, it crisps up the fibers so the fabric will cut, fold and sew in a neater way with less fray on the edges and with crisper folds (even on folds made by fingerfolding). For a doll of this scale fine batiste is a must for undies and even some of the styles of outer garments where an all-white look is the point. This batiste is also great for linings where the other material used would simply be too much bulk. Silks, especially 12-14 mme weight silk (habotai or plainweave) and silk taffeta are excellent choices for this doll and are not harder to work with if you will first draw all pattern pieces onto the silk and then paint on a line of GW Fray Preventer or slightly watered down Aleene's Tacky Glue on all cut lines. This will make the silk not fray and sew up beautifully. Avoid slippery silks. Silk also overdyes well with Rit dyes and so you can buy a white and make up otherwise hard-to-find colors.

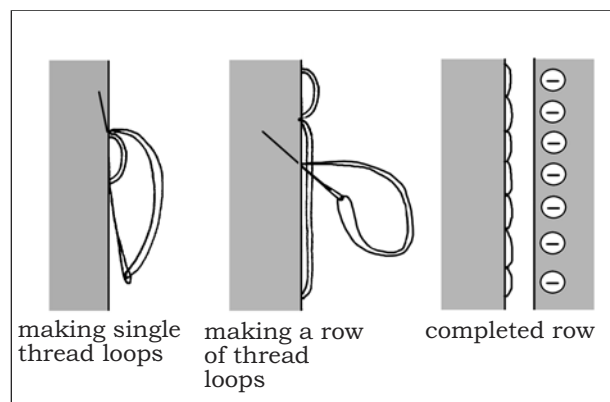
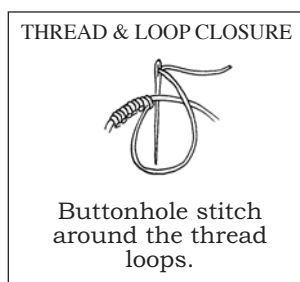
WORKING WITH SILKS:

You need not be afraid to work in silk. If you follow the tips below, it can be no different than working with any other fabrics. And its drape and quality are worth the extra steps.

The easiest way to sew with silk is to rough cut the silk pieces for the small things and then iron them onto freezer paper. Draw on all the patterns using a Micron pen. Let ink set, then paint my GW Fray Preventer* on the drawn ink line with a #4 round brush making sure it is soaking through but not overly spreading. Then you can cut on the drawn lines and viola - no fraying. Then it is like sewing with any fine material - use a new extra fine needle for best results and a good quality thread (it does not have to be silk). On larger pieces, simply draw on the pattern with the Micron pen and then use the fray preventer on the lines before cutting. Freezer paper will help to stabilize the fabric if you have trouble drawing your pen across the texture of the material. Paint overdyer also helps to "crisp" up the fabric and help prevent fray as well as adding the look of some age (amount is up to you).

WORKING WITH TRIMS AND NOTIONS

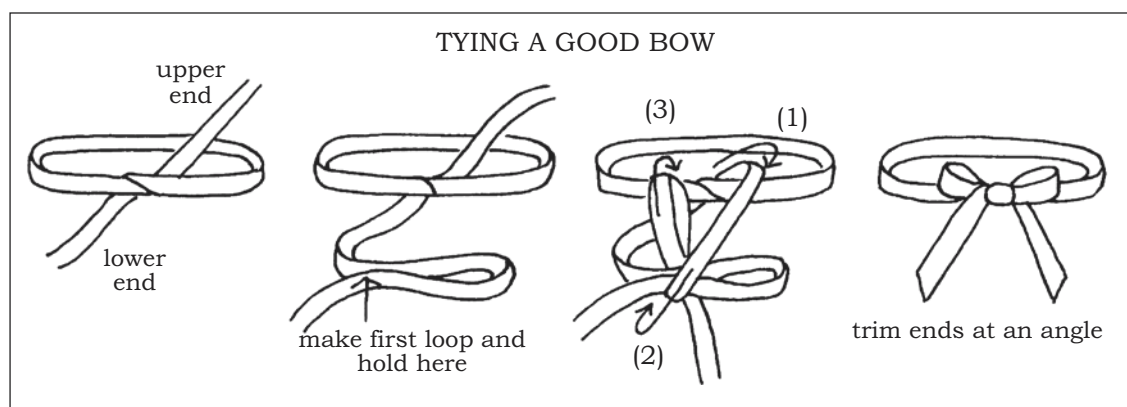
BUTTON AND THREAD LOOP CLOSURES: Sometimes in doll work, buttonholes are out of the question, so thread and loop closures are good substitutes. Single thread loops can be made in place by stitching a series of buttonhole (or blanket) stitches around 2-4 threads which form a loop that fits over the button snugly as shown in left illustration. If you need a whole line of loops (for buttons as shown below right or for lacings), you can make a long multi-thread loop, then tack individual loops with a single stitch at proper intervals. Make sure to use thread colors that do not call attention to themselves - they are not the main attraction. A general rule of thumb when trying to match thread to cloth is go a bit darker.



HINT FOR TYING A TIGHT KNOT:

This is one of those very simple things that I have been forever grateful someone pointed out to me. There are so many times when you need to keep the beginning of a knot or bow tight while you continue finishing it off. In cartoons you would ask someone to put their finger on it. But this is inconvenient and at this scale not practical. Simply moisten (spit on your finger works great) the area of the two ends where the tightness needs to be and the dampness will prevent slipping. You can also wind the beginning half knot one extra turn and this will also keep it from slipping.

TYING A GOOD BOW: I have hardly ever met anyone who could tie a good, straight bow (with both ends hanging down). I am not sure why this is exactly, except that most people only ever tie things such as people shoe laces, which really don't matter. This problem came to light as I tried to get people who work for me to do this on dolls and little bears, where the details do count and no one could do it. Here is a diagram to show you how. Keep in mind that the ribbon needs to be kept flat with no twists. Also, to tie a good *small* bow, you start with a bigger bow then make it smaller by stages. Another hint is to practice on something larger first. When you do get a good bow, it may be a good idea to tack it permanently so it cannot come undone as it will be even harder to re-tie it once you trim off the ends to a reasonable length. The final touch is to trim the ends to an appropriate length at an angle - cutting at an angle prevents most fraying. You may wish to dot on some white glue on the cut ends to keep them fresh looking. So, the hints are these. Always make the first loop with the *lower end* (where it says to *hold here*) and bring the *upper end* down over the lower. This is the key to ending up with both ends hanging down below the two loops.



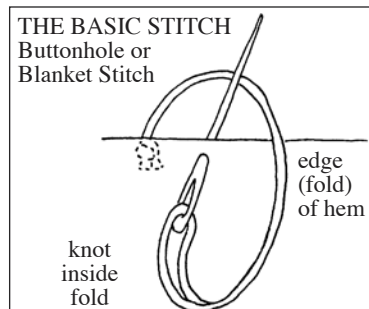
BASIC GW NEEDLE LACE INSTRUCTIONS:

I am borrowing my instructions for simple handmade lace which I now use with lots of my dolls, because it is so scale-appropriate for dolls in this scale and smaller. It has the added advantage of being made right on the edge of the place calling for lace which saves the tedium of careful applying in tight places. I have designed this way of making lace because it is hard to find commercially and in a good quality. All you need to make this lace is regular all cotton sewing thread in an appropriate color (this means it is infinitely matchable to your doll's needs) and a small sewing needle (recommended is a size 8 embroidery). It is not hard to do and at this small scale, does not take long.

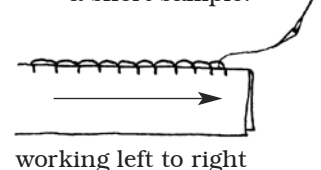
HOW TO MAKE SIMPLE HANDMADE LACE

The illustration shows the basic stitch you will use throughout. That's it - it is just variations using this one stitch (like a chain stitch in crochet) that makes the design. I used two strands of the thread, but you can use just one for even finer lace and if you are crocheting based on this concept, you should only use one. Although I also design handmade lace that I use in lots of my finished dolls, I do not crochet myself, and being a person who thrives on "how to do things directly and as simply as possible", I came up with this way so I could do it where ever needed and a lot more neatly than trying to sew lace to tiny edges. Most of my dolls are in the small but even a big doll needs small lace compared to people lace. I believe that in doll-making, quality is all in the details. Out of scale fabrics and lace can ruin the whole look. This lace, once you learn it, can be used on any small doll and you will quickly see how you can alter the pattern and make it wider or even narrower. By making use of regular sewing thread, you can also make it in a wide range of colors to match just about anything. For the paint overdyed batiste, I find Metrocene (Mettler) color 781 all cotton thread the perfect match. Before you begin on a real garment, please try just a few inches to see what you think. One of the nicest parts of this handmade lace, besides its scale, is it is applied directly to the fold of the hem edge so it looks very authentic. In some cases, you will need to know if you are going to do this lace before proceeding with the garment. **HINT:** *To keep your thread behaving place it on some beeswax (or Thread Heaven) with your finger on top and pull through to coat thread. Also, periodically, let needle hand down loose so it will untwist. You will want magnification and good light.*

- (1) Always work on a fold or a finished seam edge. Use double thread (or you can use single for daintier still) and make a small knot in one end to hide in the fold. Sew a row of buttonhole stitches (see illustration on previous page). You should strive for about 10-12 stitches per inch. If you go too close together, it will be hard to see and do the final row that will make scallops. The depth of the stitches into the fabric are just barely there, maybe 1/16th at the most. Too deep and it will look "toothy". I sew from left to right doing this but you may be more comfortable right to left. So in the illustration above, row #1 is going left to right. You will basically sew 3 rows in this sample. (Once you get the idea, you can add or subtract rows and start thinking up your own variations).
- (2) Flip over to do row #2, so you can work in the same left to right direction. Before you begin, do a miniscule stitch on the very end to anchor before moving on to row #2. This row you do not sew through fabric, rather you just do the stitch through each loop. Do not pull up too tightly.
- (3) Row #3, the last row. Flip work back over so you continue to work left to right, and again, do an anchoring stitch, actually a double one - one on top of the other so it has height - before continuing on to row #3. This row you do three (here is where you can vary) of the stitches on **each loop**. This will get crowded so you need to pay attention and also you will need magnification here. The very crowdedness is what makes a scallop or the final decorative edge of the lace. If you remember making thread loops for dress hooks or even button loops back in home ec, it will be like that on each loop.

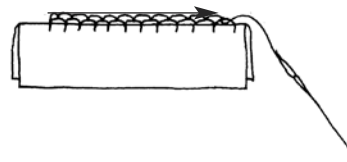


(1) Illustrations are for a short sample.

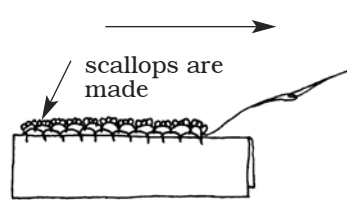


working left to right

(2) work is flipped over so you can still work left to right



(3) a final flip over of the work for row #3



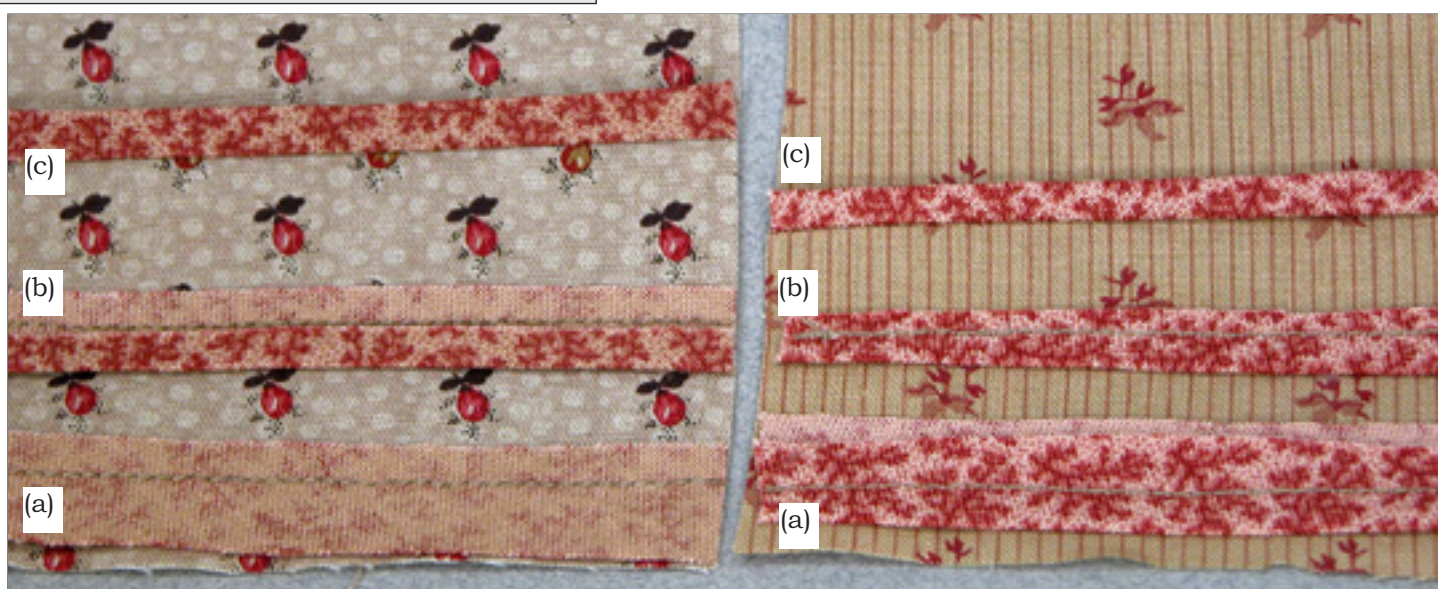
scallops are made

HINT: *This can also be turned into a perfect edge trimming by not making so many rows and using a colored thread that contrasts with the fabric it is on.*



Try a sample of the easy handmade lace.

OPTIONS FOR MAKING BIAS TYPE TRIMS:



This photo has been borrowed from a doll in which all-cotton prints were used for trim. What I most often like to use is plain silk which I easily dye to a rich black brown, a common trim color and it is nice to use for its fine weight. (See recipe below for dyeing silk). On the **left** the trim is made using a strip in a single layer which creates less bulk. On the **right** is an alternative (trimming for dummies), but it is made of a folded piece and thus is a bit bulkier so can only be used with super fine weight fabric such as silk. The reason the folded way on the right is easier is that the width of the trim can be controlled by your presser foot whereas the single layer method on the left requires careful ironing in close quarters. Bias cuts should be used in any application where the trim follows a curve, otherwise straight cuts are used. Note that sometimes I like to use bias even where not needed for its characteristic of not fraying, thus ease in working. Harder to cut though.

Less Bulk Steps (on left):

- (a) Cut a strip (bias or straight) that is 5/8" wide (this is a good width for a doll of this size). Sew SA 1/8" away from one edge.
- (b) Iron up raw edge to seam.
- (c) Iron up and slip stitch the folded edge to the garment.

Simpler Method Steps (on right) :

- (a) Rough cut strip wider than needed (say about 1"), iron in half longways RS out and sew SA the desired measurement from the folded edge.
- (b) Trim SA close to stitching.
- (c) Iron up and slip stitch the folded edge to the garment.

Hint: I keep about one-half to one yard of overdyed silk in black brown for use in bias trims, bonnet making, etc. on hand at all times.

SIMPLE DYE RECIPE FOR A BASIC "BLACK" (BROWN-BLACK):
(There are dyeable plain flat weave silks on my website just for this purpose. Of course you could dye the silk another color using Rit colors.)

To about 3 quarts to one gallon of boiling water, add 1/2 tsp of Rit Black and 1/2 tsp of Rit Dark Brown. Swish in a half yard of silk at a time until black looking. If not getting dark enough after a minute of stirring in a simmering boil, remove fabric and thoroughly stir in 1/2 tsp more of each color. Colored silks can also be used to get a good brown-black.

USING PAINT OVERDYE - THE BEST WAY TO AGE ALL FABRICS (& LACES, ETC) :

PREPARATIONS:

Before digging into your fabrics and patterns, you will need to determine which fabrics and any accompanying laces and strings, etc. might need to be overdye. Even if you do not want a grungy effect, new whites are far whiter than old whites were when new, so overdye is desirable as a means of simply taking the edge off of new. Overdyeing in this way should be done **before** cutting fabric. Lots of people do not follow through with this step because they feel afraid or that it will be hard or that results might be bad. Better to stick with the devil you know (the white) than to try new (they say). Some say they prefer it, but I don't really believe it. Give it a try. It is quick and you can make adjustments even when the fabric is dry. It takes less time to just do it then it does to keep fretting about whether you should do it.



WHAT IS THE PAINT OVERDYE?

Paint overdye is simply a paint and water mixture that adds the effect similar to expectations of tea dye, but better and more under your control. Length of time in the mixture does not affect depth of color. It can also be a color (blue, green, etc.). You can order the paint overdye I have developed from my website, or mix your own.

MIXING YOUR OWN PAINT OVERDYE: You will need a water base paint (acrylic or house - latex) paint mix in a caramel/khaki color for an antiqued look. If you want to do colors, you can, but they will always be pastel due to the water to paint ratio. You should do some experiments in other scrap cloth first to see if you are happy with the color results of your color mix. The mix can be used several times and stored in a jar. (It will start to smell funny, but it still works fine - keeping it in your frig helps).

PAINT TO WATER RATIOS: 1 tablespoon (2 paint pots) to 1½ cups of water for a **light wash** of color or 2 tablespoons to 1½ cups of water (or if you only have 1 tablespoon, use half the water as for light) for a **darker aged look**. Keep in mind that wet things look more than twice as dark as dry.

MIXING HINTS:

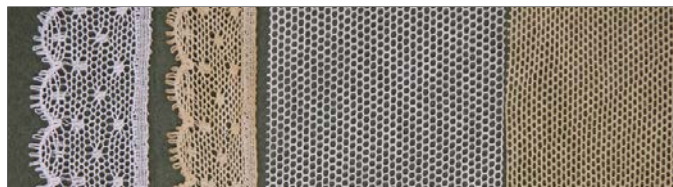
- If you mix up your paint overdye in the water and let it sit for a few hours - you will get much better results than if you do it totally fresh, although if you mix very very well, you can do it immediately.
- Paint overdye **must be mixed with a brush** - no sticks or spoons or even shaking a container - only the bristles thoroughly mix the paint and the water. Keep brush handy for frequent stirrings, always swabbing the bottom of the container because the paint settles out quickly.

THE PROCEDURE:

- (1) You will need a small container that holds a quart or two depending on how much you are mixing. Use a 1" wide flat brush (I keep a cheap pastry brush or this job) to swab out **all** of the paint from whatever you measured it in. Use the brush to mop the bottom of your container where the paint settles and also use it to just generally stir. This mixture will settle out fast, so keep the brush handy to stir it often while in use. If you keep the dye mix in a jar, note that shaking doesn't always do enough mixing - *you need to use the brush*. If you end up with blobby areas, it is fine, you can redo easily, but it means you did not mix well and you must use a brush to mix with.
- (2) Dip dry fabric (wet will take less color) to be overdye into mix and **squish around** into the fabric *really* well. Keep scrunching it until it is evenly wet, then hold up over container to see if there are any blob spots and if so, work into the fabric with a scrubbing action like doing handwashing. Redip and scrunch until it seems even. Then squeeze out all excess water in your hands (don't wring, just squeeze) until it is not dripping. If too dark, dip in clear water and squeeze out again. This mix will make the fabric a bit "crispy" when dry, but not unworkably so - in fact one plus is that the fabric will ravel less on the raw edges. It can be ironed once dry. It is permanent and fairly colorfast, as opposed to many other forms of dye. This mixture may be kept and reused several times. **Do not use on already sewn up doll clothes**. You should also do the same for any lace, strings or ribbons such as those for drawstring ties and any other fabrics that may be too new looking, bright or have too much light/dark contrast in the print.
- (3) Once you have squeezed out most of the water (so it is now just really "damp" and not dripping) smooth with hands on an old towel and let dry flat - any creases cause irregular drying that can be undesirable, so try to keep it flat. Let it air dry, **do not speed up drying** with any heat. It will dry very quickly - unless it is humid, it is often ready to use in 20 minutes. You can hang it to dry if you are ready to turn it 90 degrees a few times every few minutes, because if you don't, the sheeting action of water leaves the color behind and in high spots making it very uneven. Do not drape it as I did my first trial over the side of the bathtub as it left a wonderful stripe there (the high spot) when dry. Keep your lace as flat as possible too.
- (4) Once dry, iron fabric(s) and trims to ready them for cutting and sewing.

CORRECTIONS:

If, as it is drying, you see that you got it too dark or there are big irregularities you don't like, simply take it to the sink as soon as possible (the longer you wait, the more permanent it gets, but some color can even be removed when fabric is dry if freshly dry), and with a bit of dish soap and water, give it a mild scrub. Rinse and try again, using more water to paint if you had it too dark. If it was too light, you will need more paint per water amount to achieve, not just a longer soak in the mixture.



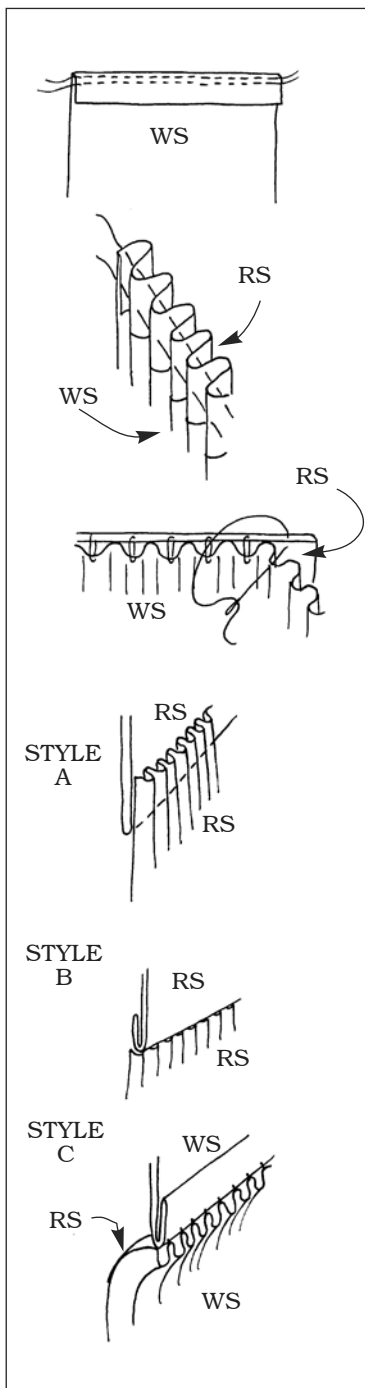
Before and after paint overdye.

CARTRIDGE PLEATING (OLD FASHIONED GATHERS)

Cartridge pleating is a method of gathering that allows large amounts of fabric to be attached to a confined edge such as a skirt to a waistband or a very puffy sleeve to its armhole. The edge that the gathers or tiny pleats will be attached to must be a fold or finished edge. It was done almost without exception in clothing construction before machine sewing and even when the amount of gathering is not more than normal, it made a far more elegant drape and a wonderfully tidy appearance to where the join was between the gathered piece and the piece it was attached to. It is perfect for dollmaking and also appropriate for an authentic look. Contrary to perception, the handsewn cartridge pleats (gathers) were extremely durable as well and allowed for much easier alteration in clothing, a fact not lost on the seamstresses of old who, more often than not, were re-constructing clothing rather than starting from scratch.

Historical Note: *The term cartridge pleating is one applied well after the technique had been in use for at least a couple of centuries. It was simply how one gathered things. It is unknown exactly when the term "cartridge" became popular, but if you can picture a cowboy or soldier's cartridge belt (a series of undulating loops to hold ammunition), you can see why the term is relatively new to the technique. Nevertheless, the method is authentic even if the terminology is not.*

Cartridge pleating is all sewn by hand, but is not hard and the look is worth it. Really the only tricky part is calculating how long the stitches must be to pull up all of the fabric to the edge it is being attached to. Realizing that tiny stitches make more pleats, means they will take up more space, and longer stitches make fewer pleats so take up less running space. It works well in situations like tiny armholes, to end up with a nice looking full gathered sleeve top and for nicely draping very full skirts.



First step is to fold and press over to the WS, an appropriate amount of fabric along the edge to be gathered. For dolls this should be anywhere from 1/4" to 1/2" depending on the size of the doll or the location (sleeve or waist). For doll scale (not people scale) use a matching thread (to minimize threads showing) with a tidy knot, and sew a running stitch (for smaller dolls use about 8 stitches per inch - that is 8 showing on one side) starting by leaving your knot on the WS and then stitch along next to the folded edge of the fabric. At the end of where the pleats (gathers) will be, and making sure you are ending with the last stitch going out the WS, simply turn around, and sew a parallel line of stitches that line up perfectly with your first row, stitch for stitch - otherwise you will not get a clean row of undulations or gathers. You will then pull up the gathers to fit the length of the edge you are joining to and secure. It should look like a row of tiny logs.

To sew the pleats to the edge of say the waist or the armhole, you need to consider one of three methods. In doll scale, which you use is important for fit and placement of bulk. Sample Style C shows the method whereby the pleats are sewn so that the end of the edge you are sewing to (this would be a fold) so that the pleats head straight out being supported by their undulations against the folded edge. This was done particularly on ladies gowns where a very full shape was desired and a sharp angle between the tight waist and the full skirt, which would spring out from the waist seam. Style B shows a clean vertical drape of pleats or gathers from the edge they were sewn to, and Style A is where the pleats or gathers are applied to a flat, not folded edge, the edge simply hangs down behind the gathers. In this style, the gathers or pleats are fully on the outside of the piece they are attached to. Once you have decided on the style you are using, you will hand sew through either the front undulations or the back undulations to attach to the edge you are attaching to. Small even stitches taking just enough fabric to securely grab and hold but not enough to show are a must. Note that some instructions, and indeed some historic examples, actually tell you to stitch in a way where the stitches are bound to show, but in the examples where I have seen this, the stitches were small and so perfect as to be awe-inspiring and, importantly, none were on dolls this small in scale. I feel it is better to not have the stitches be the thing that draws your eye, so better to make them invisible.

CARTRIDGE PLEATING DOLL SLEEVES: Since armhole openings are so small, you can sew the bodice in two layers (one a lining), sewing the neck opening and the two armhole openings on the seam lines, then trim a SA, clip curves and turn RS out. Only pleat in the same area as you would gather the tops of sleeves not edge to edge, leaving the edges nearest the underarm seam free of pleats. You will apply the cartridge pleated edges of the tops of the sleeves to this seamed edge, whereas usually you are applying to a folded edge. Use Style B to attach. Fold over to the WS, 1/4" of the raw edge of the top of the sleeve. Pull up the cartridge pleats so the top edge of the sleeve (along the fold) matches the distance around the armhole. Place the RS of the sleeve up to the RS of the armhole seam and stitching tiny overcast stitches, catch the front edge of each pleat to the very edge of the seam. Before you sew too far, open it up (as it will be on the doll) and look to see how you are doing. In areas where there are no gathers, you will join as neatly as possible using similar overcast stitches.

WAISTS: You can use either Style A or B, but I recommend Style A since it is easier because you can fit and pin the dress skirt to the bodice and then simply apply in place. You also gain the advantage of not having to fold up the two layers of the bodice to make the edge for Style B, thus saving bulk.