SCHOOL NEEDLEWORK

A BOOK WRITTEN FOR THE BEGINNER OF ANY AGE AND IN ANY SCHOOL

BY

OLIVE C. HAPGOOD

FORMERLY TEACHER OF SEWING IN BOSTON PUBLIC SCHOOLS

REVISED AND LARGELY REWRITTEN

BY

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Learn the sound qualities of all useful stuffs, and make everything of the best you can get, whatever its price . . . and then, every day, make some little piece of useful clothing, sewn with your own fingers as strongly as it can be stitched; and embroider it or otherwise beautify it moderately with fine needlework, such as a girl may be proud of having done. — JOHN RUSKIN

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PREFACE TO REVISED EDITION

No attempt is made to offer a course in clothing. It is assumed that the course for the school is prescribed with the desired emphasis on selection, cost, and suitability of clothing. Much help has been given in recent publications to both teacher and pupil along these lines. This book has a different purpose. Wherever sewing is taught, the stitches and processes of construction are naturally an important part of the work. The beginner is not conscious of the importance of establishing the right habits of work from the start; but standard, accuracy, and speed all depend on knowing what to do and the simplest way of doing it. The experienced worker often forgets the many stages through which the beginner must pass in the learning process and the help that is needed along the way. It is with these details for the beginner, in whatever school she may be, that this book has always been concerned.

ELLA J. SPOONER

PREFACE

The importance of instruction in sewing in the public schools is now generally recognized. As manual training comes into greater prominence, new methods and helps are necessary. The demand for them was felt by the author, and this book is the result of practical experience in the classroom. Its purpose is to assist both teacher and pupil; lightening the teacher's labors by saving constant repetition, and giving the pupil a manual for reference, with the hope that the information thus acquired will assist in fitting her for the duties of life. Simplicity with completeness has been the aim throughout.

The author wishes to acknowledge her indebtedness to the teachers who have so kindly assisted her, and to members of the school board for their advice and interest in the preparation of the work.

OLIVE C. HAPGOOD

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SCHOOL NEEDLEWORK

CHAPTER I

TOOLS FOR SEWING. HOW TO USE THEM

Tools Needed

A thimble which fits the middle finger of the right hand.

An emery bag, with which to clean and polish the needles.

A paper of needles of suitable length and size for the work to be done.

A pincushion with a supply of pins.

A needlebook in which to keep the needles when not in use.

A tape measure.

Thread, in colors and sizes suitable for the work to be done.

A pair of scissors.

A box or bag which is of a convenient size to hold these tools and the smaller pieces of work.

Help in choosing the right tools. For best results in sewing and for the greatest accomplishment it is necessary to use the right tools — those best suited to the work which is being done. The ability to choose these tools wisely is an important part of the training which the student should receive.

Needles

A needle is a small piece of steel pointed at one end and having an eye at the other end to receive a thread.

Needles are sold in papers of twenty-five. There are ten papers in a package; four packages contain a thousand needles.

Makes. Milward, John English, Roberts, and Crowley are but four of the many makes that may be obtained. These are of excellent quality, and at least one of these makes can be found at the small-wares counter of a department store.

Kinds. *Milliners' needles* are the longest sewing needles. As the name suggests, they are made of a convenient length for millinery work. Sometimes this length of needle is used for basting. In dressmaking, long lines of basting can be done more quickly with this length than with a shorter needle.

Sharps are a medium-length needle convenient for general work. Unless the fingers are very short this is the length of needle most generally used.

Ground-downs are shorter than sharps and are especially suited for general use for the person with short fingers. These needles are of a convenient length for fine work, especially for fine hemming.

Betweens are the shortest sewing needles made. They are a little shorter than ground-downs but their use is similar.

Special needles are manufactured for various uses.

Darners and *double-long darners*, as their names suggest, are two lengths used for darning. They have sharp points and long, slender eyes to carry the coarse darning material. The darners are convenient for mending small holes, while the double-long darners are more useful for the larger holes.

Crewel needles have long, slender eyes and sharp points. In a given size they correspond with sharps. They are especially convenient for featherstitching and for embroidery.

Carpet, or *tapestry*, *needles* are short needles with blunt points and long, large eyes for heavy thread or yarn. They are especially satisfactory for sewing on materials which have open meshes.

Chenille needles. The only difference between these and the carpet needles is that chenille needles have sharp points.

Glovers' needles are very convenient for work on leather. As the name suggests, they are for use on gloves. They are three-sided instead of round and have very long, sharp points.

Sizes of needles. The sizes of needles vary, and it is necessary to learn to choose the right size, for satisfactory results, ease of work, and speed. The small numbers represent the coarse needles and the larger numbers represent the finer ones. The following is a list of the sizes in which the different kinds of needles are made:

Milliners'	sizes 1 to 10
Sharps	sizes 00 to 12
Ground-downs	sizes 00 to 12
Betweens	sizes 00 to 12
Crewel	sizes 1 to 12
Carpet, or tapestry	sizes 17 to 26
Chenille	sizes 17 to 26
Darners and double-long darners	sizes 00 to 7

One needle with the proper care should last a long time. Since there are twenty-five needles in one paper, and since different sizes are necessary for different kinds of work, the individual supply would be unnecessarily large if a paper of each size were required. Economy and convenience suggest the use of a paper containing a variety of sizes. These assorted papers must be chosen carefully. Choose the assortment which has the numbers needed most often.

The following is a list of the assortment of sizes found in a single paper:

5 to 10	1 to 6
3 to 9	7 to 9
4 to 8	6 to 12

Usually it is wise to decide on the size of thread best suited for the garment, or part of a garment, being made; then

choose a needle which will easily carry that thread. For satisfactory results the following sizes are used most often:

For Six-Cord Thread	Needle Number
36–40	7
50–60–70	8
80–90	9
100–110	10–11

Thread

Thread is made of twisted strands of cotton, flax, or silk.

Thread made from flax is called linen thread and is very strong. Linen thread on spools for sewing is made in black and in white only. Colored linen thread is sold in skeins for embroidery, for sewing carpets, etc.

Thread made from silk is called silk or twist and is used for sewing on silk and wool materials.

Luster thread is made from mercerized cotton, is tightly twisted, and, as the name suggests, has luster. It is stronger than ordinary cotton thread of a corresponding number. In the fine numbers it is sometimes used instead of silk. The coarse numbers are so strong that they are used frequently instead of linen thread.

Machine thread. Years ago, when all sewing was done by hand, most of the thread was sold in skeins. It was not always smooth and free from knots. When the sewing machine was invented it was necessary to have strong, smooth thread in a convenient form on spools, therefore special machine thread was manufactured. We still find the name "machine thread" on some of our spools, but the same thread is used for both hand and machine sewing.

Six-cord thread. A piece of thread is made of strands twisted together. "Six-cord" means that two strands are

twisted together and then three of these double strands are twisted. This is the thread most commonly used.

Three-cord thread in the coarser numbers is used only for basting.

Yardage. Cotton thread is commonly sold on spools containing 100, 150, and 200 yards. It is necessary to notice the yardage when buying thread, to know that the price corresponds with the amount that is received.

Makes. There are standard makes of thread, some of which can be found at all stores. They are J. & P. Coats, Clark's O. N. T., Clark's Mile-End, Willimantic, etc.

Finish. Cotton thread is finished with either a soft or glazed finish. For hand and machine sewing, use the soft finished thread. For the chain-stitch, or automatic, machine use the glazed finish. Brook's glacé is an example of this kind.

Sizes. In black and white, cotton thread is made in sizes from 8 to 200, as follows: 8, 10, 12, 16, 20, 24, 30, 36, 40, and then every tenth number to 200. The smaller numbers are the coarser, and the sizes decrease as the numbers increase. The usual numbers for colored thread are 50 and 60, although a few colors are made in other numbers.

The Use of Some of the Tools

Opening a new spool. A new spool of thread can be unfastened by slipping a pin under the thread where it is caught in the wood. To unwind, hold the spool in the left hand, with the end of thread between two of the fingers. Unwind the required length. Cut the thread diagonally between the spool and fingers of the left hand which are holding the thread. Fasten the end in the cut provided for this purpose on the rim of the spool.

Length of thread. For ordinary sewing use a piece of thread the length of the desk, or about the length of the arm. The length of thread varies, however, with the type of stitch. For

overhanding, hemming, or any stitches where the thread kinks and knots, use a short length. For basting, use a thread slightly longer than that suggested for general use. It is easier and quicker to thread the needle often with the short threads than to pick out the knots in the longer threads.

If the thread kinks remove the needle and beginning at the end near the cloth draw the thread tightly between the thumb nail and forefinger. This removes the extra twists which have come in the thread during the sewing and prevents knotting.

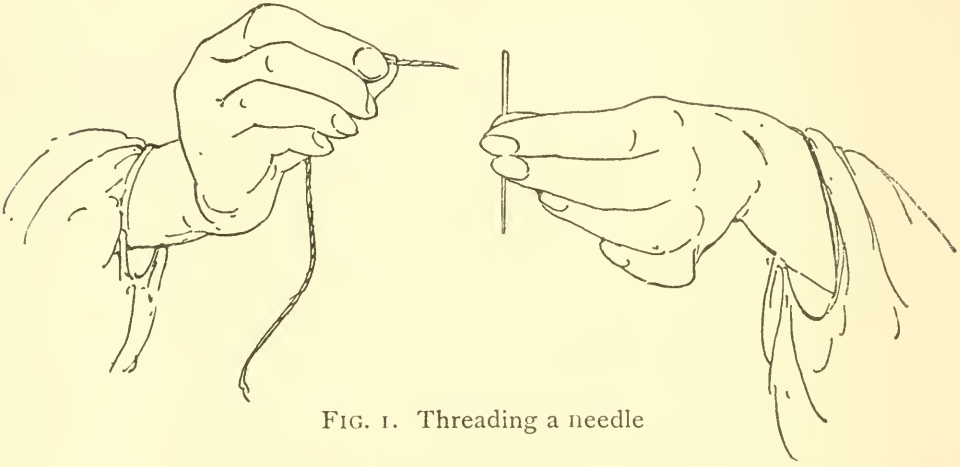

FIG. 1. Threading a needle

Threading the needle. When the thread was cut from the spool, it was cut diagonally. This gives a pointed end for threading the needle. Do not bite the end of the thread; it wets the thread and causes the work to become soiled, and it cracks the enamel of the teeth.

Hold the needle firmly between the thumb and forefinger of the left hand, with the eye above the fingers.

Take the end of the thread between the thumb and forefinger of the right hand about a half inch back from the pointed end and put the thread through the eye of the needle.

Needling the thread. For some it seems easier to hold the thread in the left hand and the needle in the right and place the

eye of the needle over the thread end. The chief advantage in this method is that the needle is in the right hand ready for sewing.

To thread darning cotton or embroidery cotton in a long-eyed needle. Cut the fuzz from the thread.

Pinch the end between the left thumb and forefinger several times to make a flat end for threading.

Insert the thread in the eye.

To thread zephyr. Hold the end of zephyr between the left thumb and forefinger, allowing one-half inch to show.

Lay the point of the needle on the cushion of the forefinger and over the zephyr.

With the left thumb fold the end of the zephyr closely over the needle.

Withdraw the needle and place the eye of the needle over the loop of zephyr.

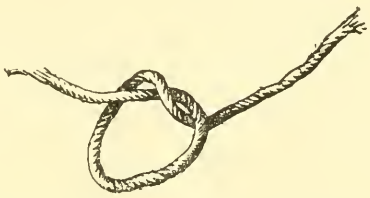

FIG. 2. A knot in the thread, before it is drawn up

To tie a knot. To make a knot, as in Fig. 2, wind the thread around two or three fingers, cross the ends, and put one end through the loop. Slip the loop from the fingers and tighten.

To tie a knot at the end of a thread. Hold the needle with the thread in the right hand.

Place the end of the thread to be knotted across the upper part of the cushion of the left forefinger.

Hold the thread in place with the left thumb.

Wind the thread around the end of the left forefinger once.

Press the left thumb and forefinger closely together and roll the loop of thread toward the end of the forefinger.

Place the second finger over the thread on the thumb.

Lift the forefinger out of the loop.

Draw up the thread with the right hand, and tighten the knot between the left thumb and middle finger.

To fasten the thread in sewing. Take two or three stitches in the same place, making a double stitch. If there is much strain on the fastening, make a double stitch and finish with a button-hole stitch. In some cases it is better to sew back over the last few stitches for a fastening.

The size of needle and thread to be used depends upon the quality of the work. Several sizes of thread may be used on

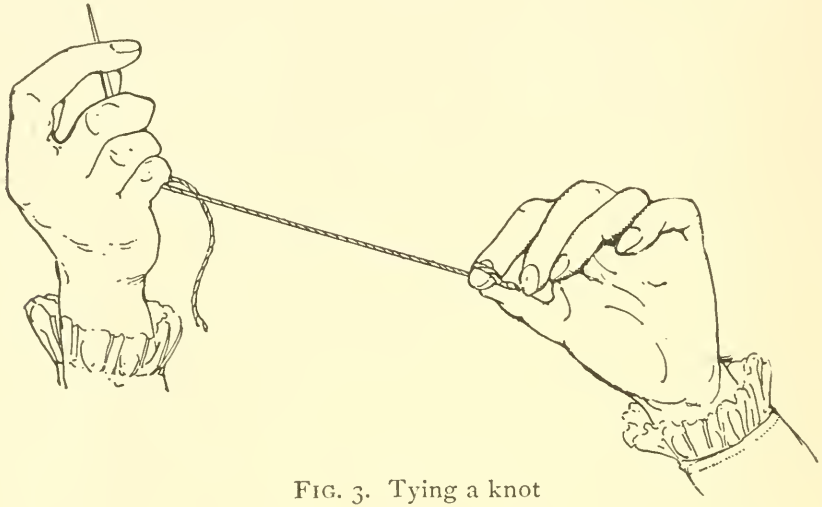

Fig. 3. Tying a knot

different parts of the same garment. In all cases, choose a needle that is of suitable size for the work to be done and for the thread which it is to carry.

The Thimble

Thimbles are made of celluloid, gold, silver, steel, aluminum, etc. The price varies according to the material from which they are made (see p. 146).

Size. The thimble should fit the middle finger of the right hand, for the right-handed person. It should be tight enough and high enough to prevent the nail pressing against the inside of the top. It should not be tight enough to cause a heavy pressure against the root of the nail.

Use of thimble. From the beginning form the habit of wearing the thimble when sewing, and learn to use it correctly. The top or back of the thimble should be pressed against the eye end of the needle to push it through. Whether the top or back should be used will depend on the relative length of thumb and middle finger and the length of the needle. Try both positions and determine which is more convenient. Never use the side of the thimble toward the inside of the hand.

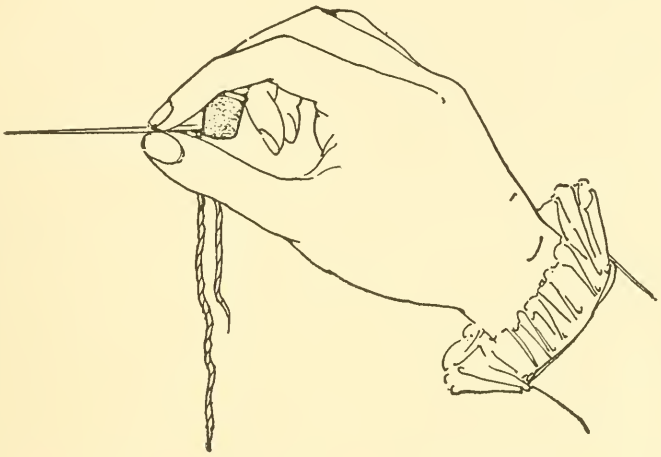

FIG. 4. The thimble and needle in position for sewing

Thimble drill. Practice is sometimes necessary to overcome the awkward feeling of the thimble and to help with its correct use.

Use a needle and thread of convenient size.

Place the thimble on the middle finger.

Hold the point end of the needle between the end of the thumb and forefinger of the right hand.

Place the thimble against the eye end of the needle.

Push the needle forward between the right thumb and forefinger.

With the left hand push the point back into its former position.

Repeat until it can be done easily.

Scissors and Shears

There are many kinds of shears used in garment making (see p. 144).

Requirements. For the work in sewing it is necessary to have shears or scissors suitable for the work done. They should have good points and an edge sharp enough to cut easily.

Makes. There are many makes, but it is wise to buy a good quality of steel, that can be sharpened and used for years.

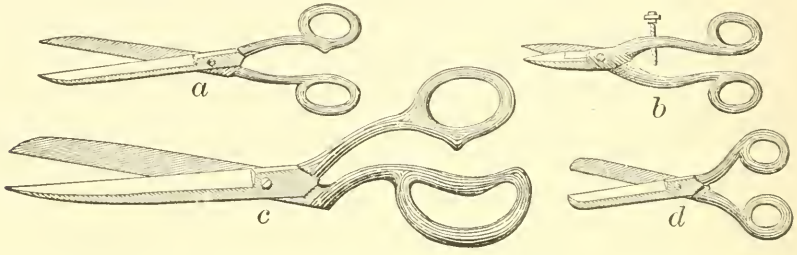

Fig. 5. *a*, scissors; *b*, buttonhole scissors; *c*, shears; *d*, pocket scissors

The Universal, Wiss, and Keen Kutters are but three of the satisfactory makes that can be bought.

Use. Do not cut against pins or anything hard that will notch the edge of the blades. If there are two sizes of handle ring, place the thumb in the smaller and the last two or three fingers in the larger. This brings the narrow, pointed blade down against the table when cutting. If the rings are both the same size, determine the position by the shape of the blade. The narrow, pointed blade should be down when cutting. When using the shears or scissors always point them *away* from the body. When cutting around a pattern keep the shears at the right of the pattern, for convenient use.

Learn to cut with a long, even stroke.

Shears at least six inches in length should be used for garment cutting.

Cloth

Cloth is a fabric woven on a loom from yarn made of cotton, flax, silk, or wool (see Chapter VII).

Cotton is the cheapest and silk the most expensive in price. From cotton are made many qualities of unbleached, half-bleached, and bleached cloth. Muslin, long cloth, cambric, nainsook, batiste, percale, gingham, and chambray are all made of cotton.

Flannel, cashmere, broadcloth, serge, and many others are made from wool.

Linen cloth is made in all grades, from the finest linen lawn to heavy canvas; it is used for collars, cuffs, handkerchiefs, tablecloths, napkins, towels, etc.

Silk is made into dress-silks, ribbons, satins, velvets, plushes, etc.

Cloth is woven with two sets of threads, the warp and the woof.

The warp threads are those which are put on the loom first. They are the lengthwise threads and are usually stronger and more tightly twisted than the crosswise threads.

The woof threads are the crosswise threads woven over and under alternate warp threads. These threads are sometimes called the weft or filling threads.

To distinguish between warp and woof threads. It is often necessary to determine which are the warp threads in an irregular piece of cloth from which the selvage has been removed. Ravel out one of each set and test the strength. The stronger is the warp. Hold the edge taut in the position to tear. Without actually tearing, determine the strain necessary to break the threads. Test the other set of threads in the same way. Again the stronger is the warp.

The selvage is the self edge formed on the two sides of the cloth as the weaving progresses by the turning of the woof threads around the outside warp threads.

The bias is a diagonal line of cloth.

The true bias is the diagonal of the square formed by the warp threads on one side and the woof threads on the other.

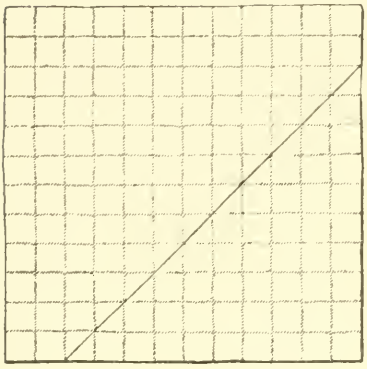

FIG. 6. A line showing a true bias

To find the true bias, fold the cloth on the diagonal, with the warp threads exactly in line with the woof threads underneath. Crease the diagonal fold, open out the material, and cut along the crease.

The garment bias is any diagonal that is not the true bias.

To prepare cloth for cutting. Cloth is woven with the warp and woof threads at right angles to each other. In the finishing processes, however, the cloth is frequently pulled out of shape, and the direction of the threads is changed. If this condition exists, pull the cloth until the warp and woof threads are perpendicular to each other. This is done by stretching the cloth diagonally toward what seems to be the shorter side.

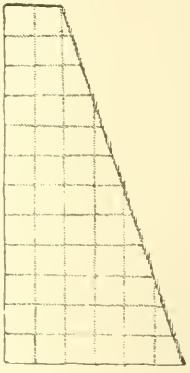

FIG. 7. A line showing the garment bias

A raw edge is an edge that has been cut or torn.

A fold is made by doubling one part of the cloth over the other.

To tear a piece of cloth, cut in for about an inch following a thread of the cloth. Take a corner on each side of the cut edge firmly between the thumb and forefinger of each hand, roll the edge away from the body, and tear quickly and steadily. A fine material must be torn carefully, or the direction may change and the material be spoiled.

Measurements needed in Sewing

The following illustration represents a three-inch rule:

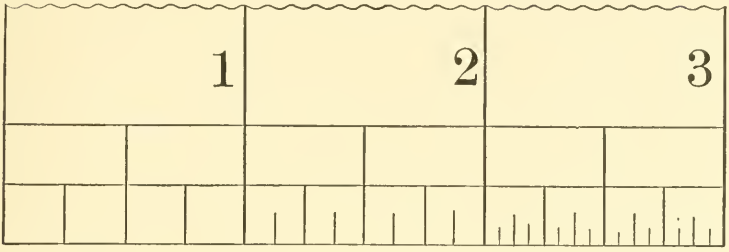

Fig. 8. A measure showing the fractions of an inch

The divisions are similar to those found on the tape measure, but their arrangement varies.

The first inch is divided into halves and quarters, the second into eighths, and the third into sixteenths.

Careful measuring is a good beginning for satisfactory sewing.

Fractions of a yard:

3 feet, or 36 inches, in a yard.
18 inches in one half of a yard.
9 inches in a quarter of a yard.
27 inches in three quarters of a yard.
$4\frac{1}{2}$ inches in an eighth of a yard.
$2\frac{1}{4}$ inches in a sixteenth of a yard.

A cardboard gauge and its use. There are many parts of a garment which must be measured carefully in the making. If the same measurement is used many times for a hem or seam, the results will be more satisfactory; and time will be saved if a gauge is used instead of the tape measure.

Use a piece of cardboard with a square corner and straight edge. Measure from the corner the amount needed — the width of the hem, seam, or whatever is to be measured.

Mark accurately with a pencil the point measured.

At the point marked, cut a gash in the cardboard, perpendicular to the edge, making the gash at least one-fourth inch.

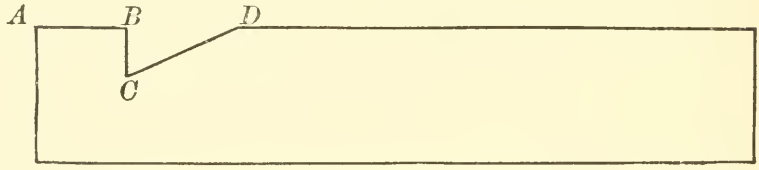

FIG. 9. A cardboard gauge

On the side of the gash away from the corner cut a diagonal line to the end of the gash.

AB represents the desired measurement;

BC, the gash at the point marked for the measurement;

CD, the diagonal line to the end of the gash.

CHAPTER II

STITCHES USED IN PLAIN SEWING

Stitch and space. There is always confusion in the naming of stitch and space. In one way it is an unimportant point, but, on the other hand, unless there is a consistent use of the terms, directions are not clear. For convenience, then, in the

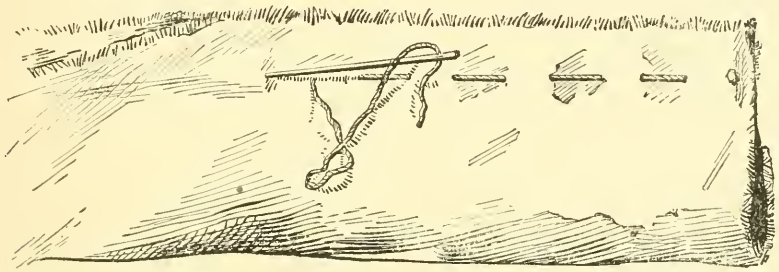

FIG. 10. Even basting stitches. Needle inserted for a stitch

following directions, that which is taken up by the needle when it is placed in the cloth will be called the stitch. The distance between the points at which the needle is inserted in the cloth will be called the space.

BASTING

Use. Basting is a large stitch used to hold materials in place until the permanent stitch is made. It is used for seams, hems, etc.

Position of the work, hands, and needle. For even basting, the position of the hands is the same as for the running stitch (see p. 18).

For uneven basting, place the work on the table. Brace the little finger of the right hand on the table. Point the needle

toward the left and take the stitch. As the work progresses, the cloth is raised slightly from the table with the left hand.

The convenience of the method of holding the work, whether in the hand or on the table, will determine in every case whether the even or uneven basting is to be used.

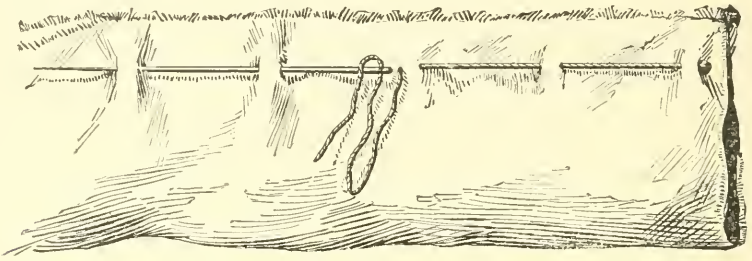

FIG. 11. Uneven basting stitches. Needle in position

The direction of working is from right to left.

Method of beginning. Begin with a knot. Use a knot and backstitch if the basting is a preparation for fitting.

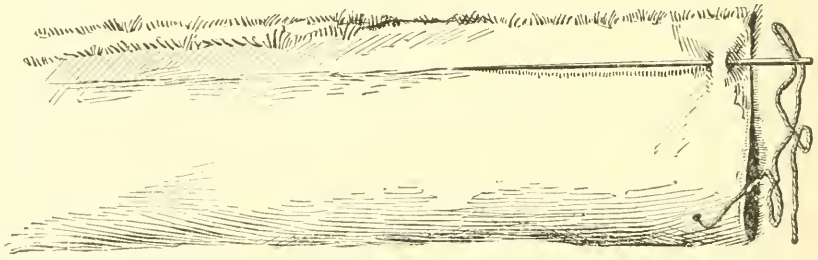

FIG. 12. Needle in position for beginning a line of uneven basting

Method of finishing. Take three or four short stitches parallel or perpendicular to the last stitch and leave a half-inch end of thread.

The appearance of even basting on the right side is an even stitch and space, each about one-fourth inch long. For uneven basting, the space over which the thread passes is about three eighths of an inch and the stitch one eighth of an inch long.

The length of the stitch and the space may vary with the materials and the use of the stitch on the garment.

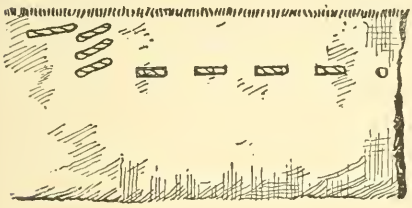

FIG. 13. Showing the method of finishing a line of basting

Tailor basting is used frequently. In this there is a short stitch slanting toward the left, and the thread covering the space between the stitches slants in the opposite direction.

Combination basting is a variation of the uneven basting, two or three running stitches and a long space between. This is used when the material must be held firmly only at intervals.

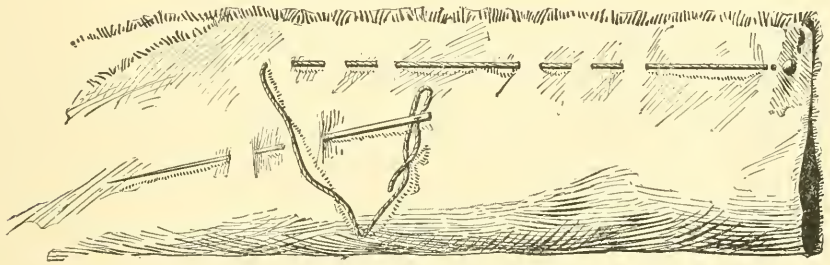

FIG. 14. Combination basting

RUNNING

Use. Running is a series of small, even stitches used for joining parts of a garment where there is little strain and the material is sheer, for gathering, and for hand tucking.

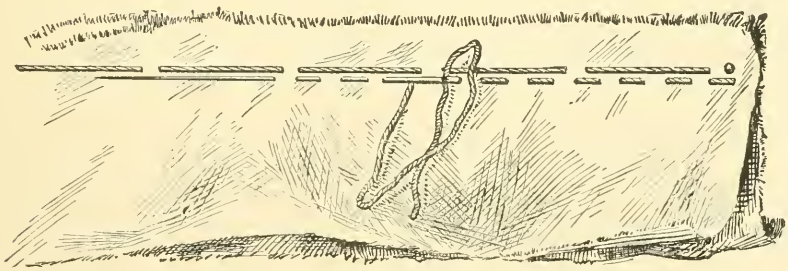

FIG. 15. Running stitches

Position of the work, hands, and needle for fly-running. Hold the work between the thumb and forefinger of the left hand and place the needle with the thimble against its eye end, hold the needle firmly near the point, with the right forefinger at the back of the cloth and needle. Hold the cloth between the hands firmly, with not more than a half-inch space between the two hands. The stitches are taken with a weaving motion of the right hand while pushing the needle forward.

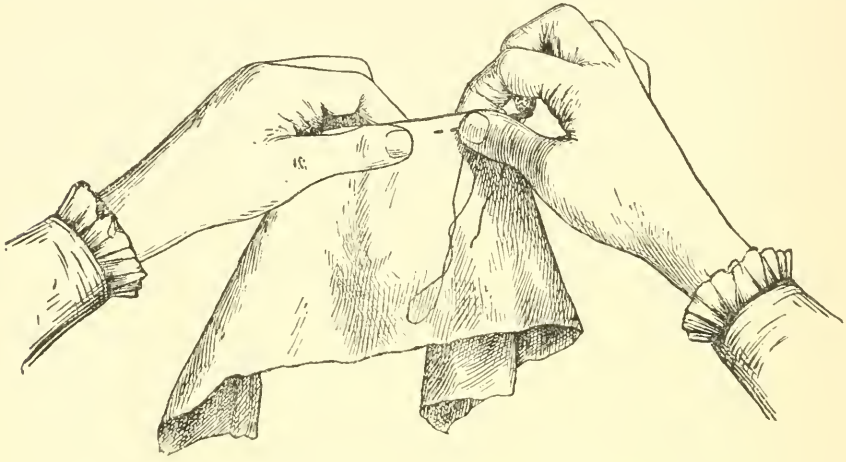

FIG. 16. Showing the position of the hands, cloth, and needle for fly-running

For the best results the needle should not be removed from the cloth until the line of running is finished or until the end of the thread is reached.

The direction of work is from right to left.

Method of beginning. For gathering, begin with a knot and a backstitch to avoid the possibility of the knot's pulling through. In other cases use a concealed knot or a double stitch.

To make a joining, finish the old thread with a double stitch on the wrong side and begin the new thread with a knot.

If the double stitch is unsatisfactory, as in sheer material, leave the old thread and cut it close to the material on the

wrong side. With the new thread start back from the end and by sewing over the last stitches make a secure joining.

Method of finishing. The usual method is to finish with a double stitch on the wrong side.

The appearance of running stitches is the same on the right and wrong sides — even stitches, and spaces with the length determined by the use and the material on which they are placed.

For gathering, an uneven running stitch is sometimes used: a short stitch is taken and the thread passes over a slightly longer space.

Backstitch

Backstitching, sometimes called hand stitching, is a series of fine stitches with the appearance of machine stitching on the right side.

Use. Backstitching is used to join seams, bindings, and facings, also to fasten tapes, etc.

Position of the work, hands, and needle. Hold the work diagonally along the cushion of the left forefinger. Pointing

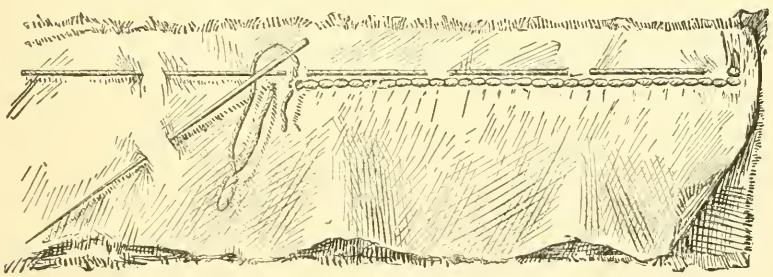

Fig. 17. Backstitch

the needle toward the left, take the stitches as follows: forward underneath the length of two stitches, then back on the right side the length of one stitch, then insert the needle for the next stitch.

Work from right to left.

Method of beginning. Begin with a knot concealed, or leave an end of thread to be held with the first four stitches.

Method of finishing. Finish with a double stitch on the wrong side.

The appearance on the right side is of fine machine stitching.

On the wrong side there is a series of overlapping stitches.

The correct tension of the thread is important for satisfactory results. If the thread is pulled too tight, the threads of the cloth are separated. If the thread is not tight enough, the stitches appear uneven, and the seam is not held firmly.

Half-backstitch

Use. This stitch is made more quickly than the backstitch and should be used only where less strength is needed.

The position of the work and needle, the direction of working, the beginning and ending are the same as the backstitch.

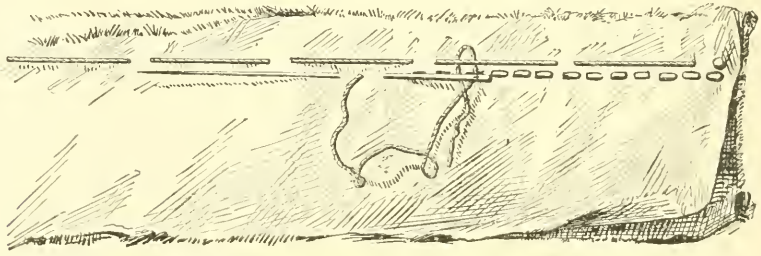

Fig. 18. Half-backstitch

The length of the stitch on the wrong side is different. This is the length of three stitches instead of two. The space on the right side over which the thread passes before the needle is inserted for the next stitch is the length of one stitch.

The appearance on the right side is that of the running stitch with space and stitch of equal length.

On the wrong side there are long, overlapping stitches which are not only unattractive in appearance but lack strength.

Combination Stitch

This is a very useful stitch, giving a satisfactory appearance on both the right and wrong sides. It starts with running stitches and adds a double stitch at intervals.

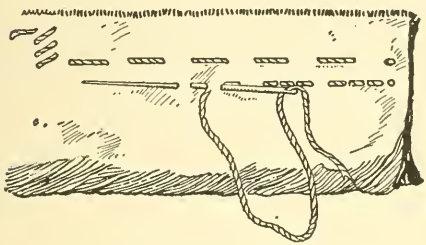

Fig. 19. Combination stitch

Position of work, hands, and needle. Hold the work as for the backstitch, take two running stitches, then a double stitch, which is made by passing back on the right side one space before inserting the needle the length of the running stitch.

Method of beginning and finishing. The beginning and ending are the same as for the backstitch.

The appearance on the right side is of three adjoining stitches, then a space the length of one, then three stitches.

The appearance on the wrong side is of running stitches with every other one a double stitch.

Increase the number of running stitches between the double stitches when greater speed and less strength are required.

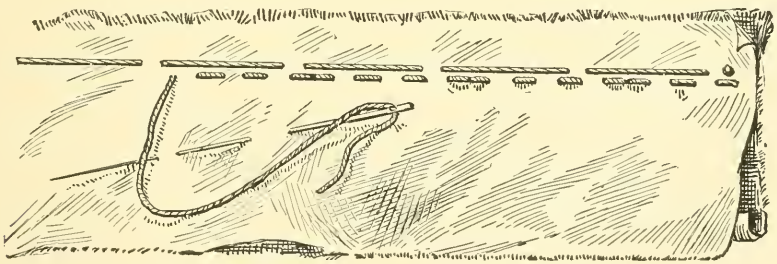

Fig. 20. Running and backstitch

Sometimes a backstitch is used instead of the double stitch but with less satisfactory results. The backstitch is not as strong as the double stitch, and the appearance on the wrong side is less attractive. This is called the running and backstitch.

Overhanding, or Top Sewing

Use. Overhanding is a close, shallow stitch on the edge, used to hold two or more finished edges together. It is used

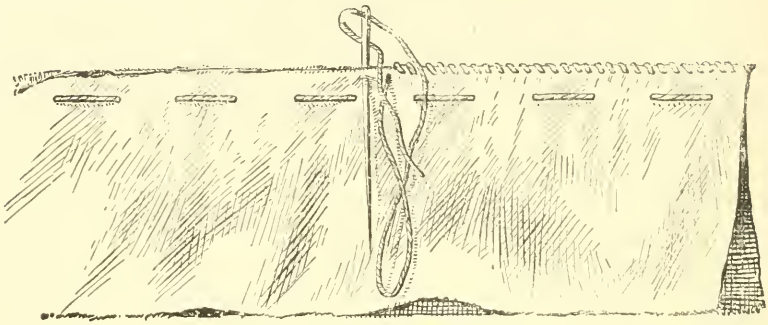

Fig. 21. Overhanding or top sewing. Needle in position for the stitch

to join selvedges or folded edges; for napery hemming; for joining lace or a rolled edge of embroidery to a finished edge on a garment.

Position of the work, hands, and needle. Hold the work horizontally along the upper part of the cushion of the left forefinger with the left hand parallel with the body.

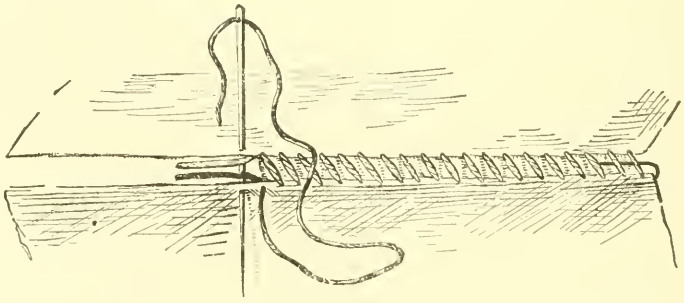

Fig. 22. Method of joining the thread in a line of overhanding

Point the needle directly toward the body. The needle should be perpendicular to the edge of the seam.

In general, work from right to left, but satisfactory results may be obtained by working from left to right.

Method of beginning. Never use a knot. Insert the needle in the part of the seam nearest the body. Leave a half-inch

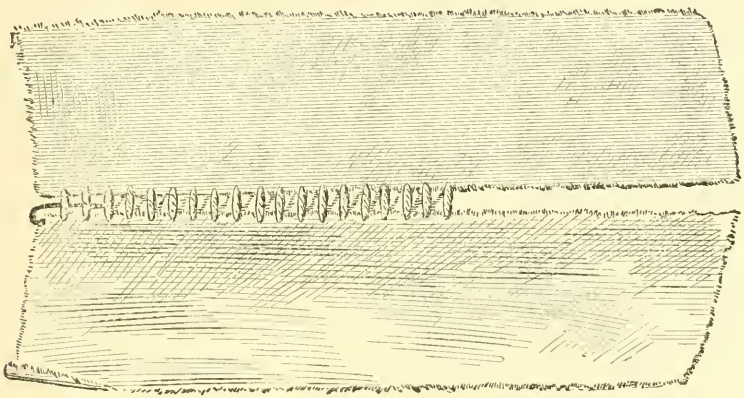

FIG. 23. An overhanded seam opened, to show the appearance of the stitches on the right side in relation to the wrong

end of thread. Lay this end of thread along the seam and sew over it with the first three stitches to hold it securely.

Joining. With the old thread take a stitch through the back part of the seam. Unthread the needle, leaving an end. Insert the needle with the new thread in the nearer piece of cloth, opposite the old thread end. Leave a half-inch end.

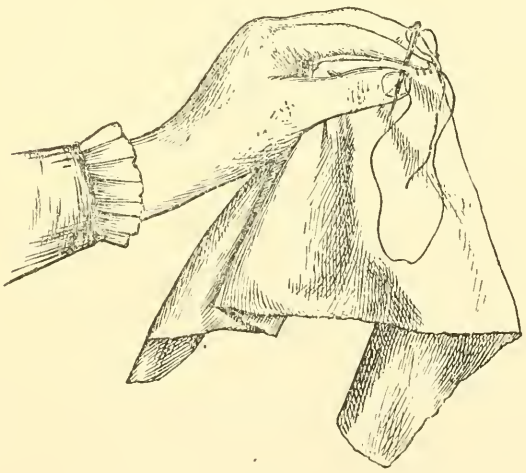

FIG. 24. The position of the work for overhanding

Hold the ends of both threads in place along the seam with the left thumb and sew over them with three stitches.

To fasten the thread, turn the work and sew over the last three or more stitches, according to the strain on the seam.

Overhanding is usually done on the wrong side, giving the appearance on the right side of parallel stitches perpendicular to the line of the seam.

On the wrong side the thread slants between the stitches.

The correct tension of the thread is important for good

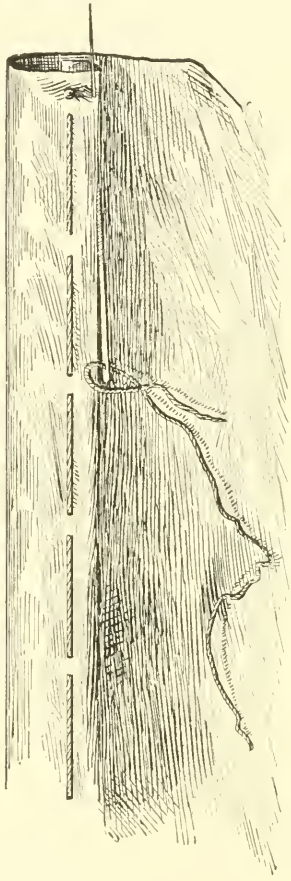

FIG. 25. The position of the hem and needle for the beginning of a line of hemming is shown

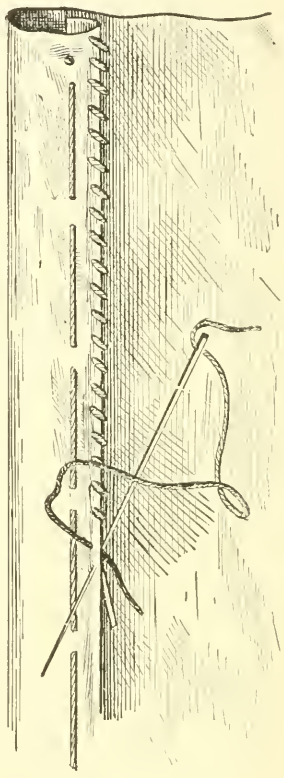

FIG. 26. The position of the hem and needle for the hemming stitch. A method of joining is shown

results. If too tight, a ridge is formed; if too loose, the stitches are uneven and the seam is unattractive.

Care is necessary to avoid deep stitches. They form a ridge, and the seam cannot be creased flat.

Hemming

Use. Hemming is a series of small, slanting stitches used in finishing hems, facings, etc.

Position of the work, hands, and needle. Hold the work in a vertical position across the cushion of the left forefinger with the fold of the hem toward the inside of the hand. Point the needle toward the left shoulder in taking the stitch.

Method of beginning. There are many ways of beginning a line of hemming. The place on the garment and the kind of material will determine the method to be used.

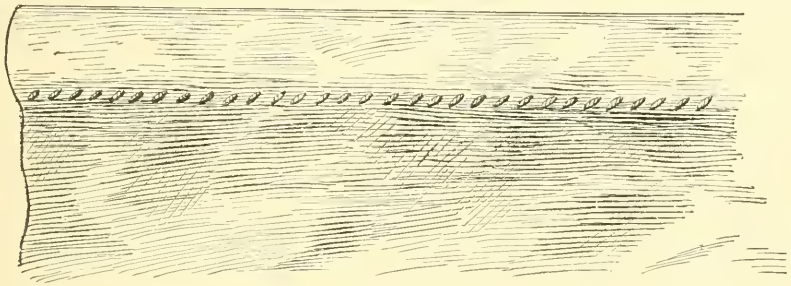

Fig. 27. The appearance of a line of hemming on the right side

1. If the material is heavy, use a knot concealed under the edge of the hem. Avoid this method with sheer material.

2. Point the needle away from the body and slip it in the first turn of the fold of the hem, a fourth of an inch back to the beginning of the hem. This thread end will be held by the first hemming stitches.

3. Take a stitch through the folded edge of the hem leaving a fourth-inch end of thread. Sew over this end with the first hemming stitches.

To make a joining, leave an end of the old thread, leave an end of the new thread, sew over both with the first three stitches.

Method of finishing. To finish, take a double stitch in the folded edge of the hem.

The appearance on both the right and wrong sides is of small slanting stitches.

For attractive appearance of hemming there should be uniform slant, space, and size of stitch.

Vertical hemming. When a plain, folded edge of a binding is hemmed down over a line of gathers, the needle is inserted directly in line with the end of the previous stitch, instead of leaving a space as in the first type of hemming described.

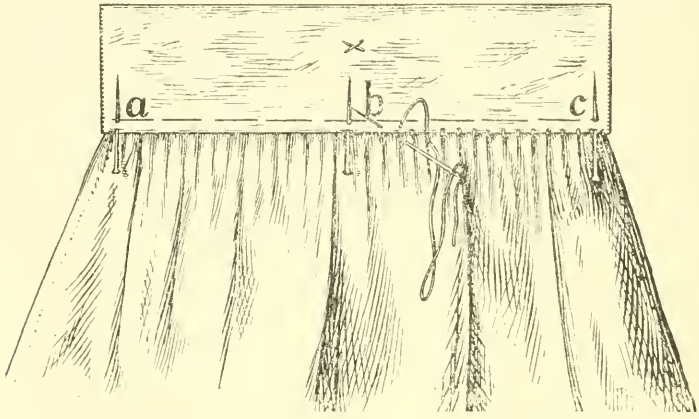

FIG. 28. Vertical hemming showing the position of the needle and the appearance of the stitch on the wrong side

By placing the needle this way, every plait of fullness is evenly confined, with the stitches in line with the plaits.

The stitch on the wrong side is perpendicular to the edge of the binding (Fig. 28).

OVERCASTING

Use. Overcasting is a stitch made over a raw edge to prevent its raveling.

Position of the work, hands, and needle. Hold the work horizontally along the cushion of the left forefinger.

Point the needle toward the left shoulder for uniform slant on both the right and the wrong side.

In general, work from right to left, but satisfactory results may be obtained by working in the opposite direction.

Method of beginning. Begin with a knot on the wrong side.

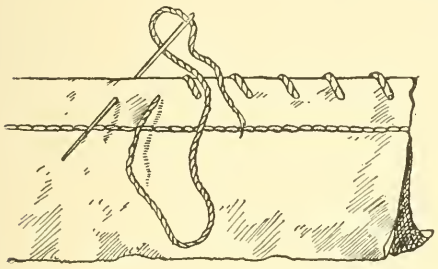

FIG. 29. Position of the needle in taking the overcasting stitch

Method of finishing. Finish with several stitches, one over the other, placing the stitches parallel to the edge which has been overcast.

Appearance. The depth of the stitch depends on the raveling quality of the cloth. Usually the stitch is as shallow as the quality of the cloth will allow. In general, the space between the stitches is two times the vertical depth of the stitch. There should be a uniform slant and depth of stitch with even spaces between the stitches.

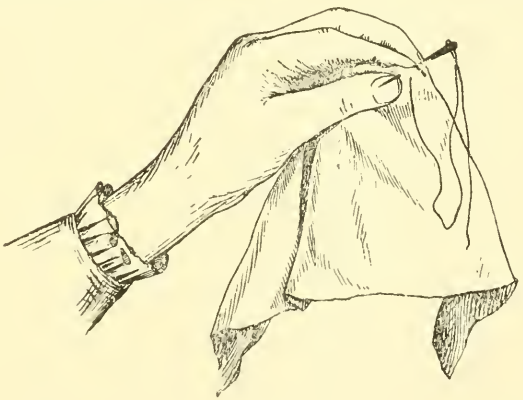

FIG. 30. Position of cloth, hand, and needle for the overcasting stitch

Overcasting "with the bias." When overcasting bias seams, overcast in the direction of the inward slant, as from the bottom of a skirt toward the top. By working in this direction, the edge is more easily and quickly finished without fraying the ends of the warp threads.

CATCHSTITCH, OR HERRINGBONE STITCH

Use. A stitch used to hold a seam or hem flat against the garment and to prevent the raveling of the raw edge; used especially on outing flannel and flannel seams and hems.

Position of the work, hands, and needle. Hold the work across the left forefinger with the hand parallel with the body. With the thread above the needle to avoid the loop of the blanket stitch, point the needle toward the body and take a short stitch, the required distance from the raw edge, which may be used as the center axis of the line of stitches.

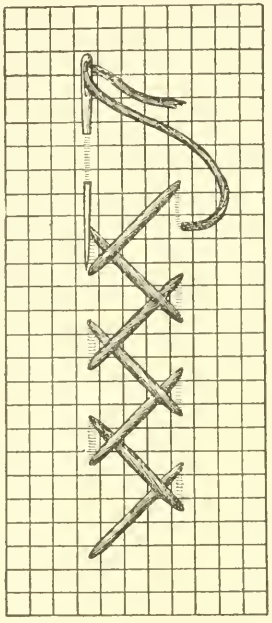

FIG. 31. Catchstitch, or herringbone stitch

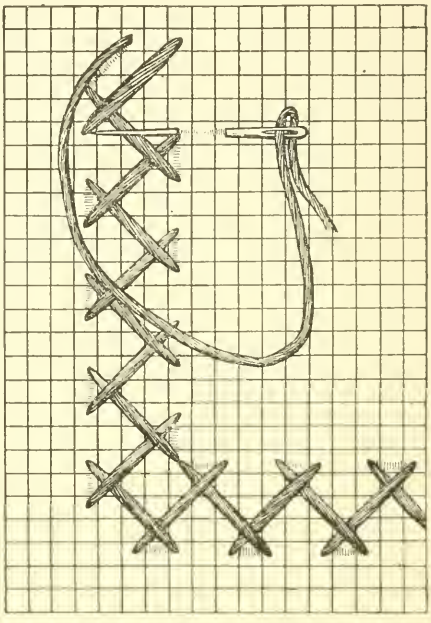

FIG. 32. Catchstitch. Turning a corner

Diagonally across the center axis take another stitch, and continue alternating across the center axis.

Keep the horizontal and vertical spaces between the stitches even or the appearance of the line will be unsatisfactory.

The progress of the stitch is away from the body.

Method of beginning. Begin with a knot concealed.

Method of finishing. Finish with a double stitch on the side where there is more than one thickness, so that the double stitch will not show on the right side.

Appearance of the stitch. On the wrong side there is the appearance of diagonal threads crossing each other at the ends. The slant of these threads should be uniform.

Another position of the work. The work may be held along the cushion of the left forefinger. Point the needle toward the left in taking the stitch.

The progress of the stitch is from left to right.

The raw edge is not always used as the center axis of the stitches but as a guide, beside which one row of stitches is placed.

Buttonhole Stitch

Use. The buttonhole stitch is a stitch with a heavy purl used to finish the raw edges of a buttonhole.

Position of the work, hands, and needle. Hold the raw edge to be covered along the upper part of the cushion of the left forefinger. In taking the stitch, point the needle directly toward the body; push the needle partly through the cloth and brace it firmly with the left thumb and forefinger. With the right hand take the threads at the eye of the needle, carry them around under the point of the needle in the direction in which the stitches are being made; drop the loop at the back of the needle. Push the needle through and draw up the thread in line with the stitch and on a plane with the cloth.

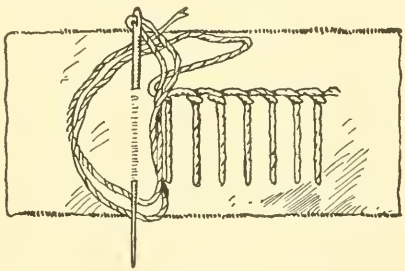

Fig. 33. Buttonhole stitch with the needle in position

The progress of the stitch for a right-handed person is from right to left, and for a left-handed person in the opposite direction.

Method of beginning. Begin with running stitches, which will be covered later. Never use a knot.

Avoid a joining. If one is unavoidable, leave an end of the old thread; with the new thread take the first stitch up through the purl of the last stitch made. Hold the two thread ends along the raw edge and continue with the buttonhole stitch, covering the ends with at least two stitches.

Method of finishing. Finish with a double stitch on the wrong side.

Appearance of the stitch. The stitches should be exactly perpendicular to the edge, of an even depth, and with the space of one thread between. The purl should be tight, even, and exactly on the edge.

Suggestion. In tightening the purl, place the left thumb nail on the lower part of the stitch to avoid strain on the cloth.

CHAPTER III

ORNAMENTAL STITCHES

Blanket Stitch

The blanket stitch is an ornamental stitch used to decorate or finish a raw edge. The directions for the stitch may be given under two headings. The blanket stitch used in embroidery, frequently called "buttonholing," is blanket stitching made a given distance from the edge. The cloth is then cut to the purl of the blanket stitch. Because this is really not made on the edge, it may be called "the inclosed blanket stitch."

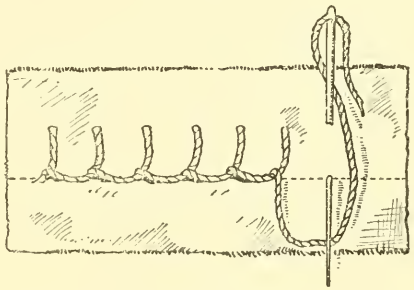

Fig. 34. The inclosed blanket stitch. The dotted line represents the stamped line

When the raw edge of a blanket, holder pad, or mat is to be finished, the stitch is made directly over the edge. This may be called "blanket stitch on the edge" from the method used in making the stitch.

Purl. The crossing, or twisting and crossing, of the threads on the edge of the blanket stitch and buttonhole stitch is called the purl of the stitch.

The inclosed blanket stitch. This stitch is made a convenient distance in from the edge. These stitches are usually placed close together to make a firm, even edge when the cloth is cut away.

Position of the work, hands, and needle. With the right side of the cloth up and the raw edge toward the body, hold

the line to be blanket-stitched along the cushion of the left forefinger, beginning at the left-hand end of the line.

Method of beginning. Begin with several running stitches toward the left along the line to be covered, ending at the point for the purl of the first blanket stitch.

Hold the thread down under the left thumb to form a loop.

Insert the needle above the line at a point the required depth of the blanket stitch and out at the purl line.

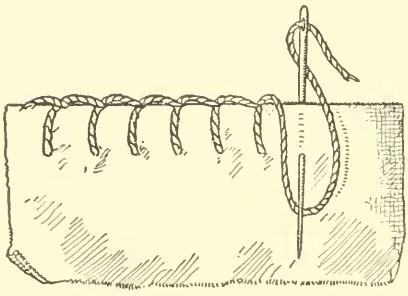

FIG. 35. The blanket stitch on the edge

Draw up the loose thread, lift the thumb, and tighten the purl.

The progress of the stitch is from left to right.

Joining. With the old thread take two or three running stitches toward the right near the purl line. With the new thread take two or three running stitches near the purl line, toward the left. Bring the needle to the right side, between the last two blanket stitches, exactly on the purl line.

Method of finishing. To finish, place the needle at the right of the last stitch to complete the purl, and put the needle through to the wrong side. Slip the needle along under the completed stitches to hold the end securely.

Blanket stitch on the edge is used to finish raw edges. There is usually a short space between the stitches. A variation in the depth of the stitches frequently adds to the decorative effect (see Fig. 36).

Position of material, hands, and needle. Work on the right side of the material. Hold the raw edge along the upper part of the cushion of the left forefinger, with the bulk of the garment over the palm of the hand. Insert the needle the required depth from the raw edge. Point the needle toward the body.

Leave a half-inch end of thread after taking the first stitch.

Hold this end between the middle and forefinger of the left hand.

Insert the needle under the thread end, pointing it toward the left. This makes the purl of the first stitch and places it on the edge.

Hold the thread down under the left thumb to form a loop.

Insert the needle for the second stitch, the required distance from the first. In taking the second stitch, place the needle back of the thread end and hold it in place along the raw edge.

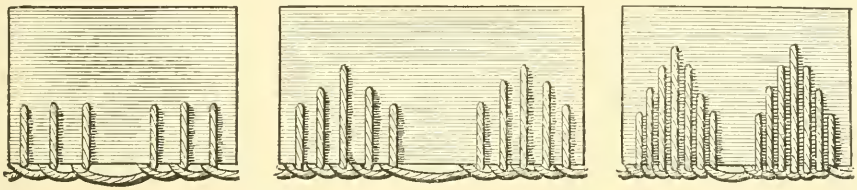

FIG. 36. Variations of blanket stitch made by changing the space between stitches and the length of stitches

Draw up the thread in a straight line toward the raw edge.

Raise the left thumb and tighten the purl on the edge.

The progress of the stitch is from the left toward the right.

Method of finishing. To finish, take one or two stitches around the purl of the last blanket stitch and slip the needle along the edge under the last few stitches.

HEMSTITCHING

Use. Hemstitching is used to ornament and hold securely hems, tucks, etc., when they are so placed that a number of threads can be drawn for the ornamental stitches.

There are many ways of hemstitching, all of which give attractive results.

Two methods will illustrate the possibilities. Method I is perhaps the simplest and Method II the quickest.

Method I

Preparation. Draw the required number of threads.

Baste the turned-in edge of the hem exactly in line with the edge of the space from which the threads have been drawn.

The progress of the work is from left to right.

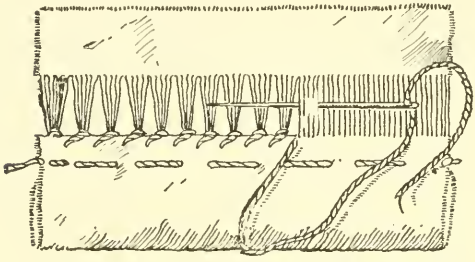

FIG. 37. Hemstitching. Method I, showing the first stitch

Position of the work, hands, and needle. Hold the work along the cushion of the left forefinger, the wrong side up, with the outer edge of the hem toward the palm.

Decide on the number of threads to be taken up in each group.

Method of beginning. On heavy material, begin with a knot concealed or a double stitch in the fold of the hem.

Pointing the needle toward the left as for a running stitch, pick up the threads of the first group on the needle.

Pull the thread down close to the edge of the open space.

Take a shallow overhanding stitch in the fold of the hem at the right of the first group.

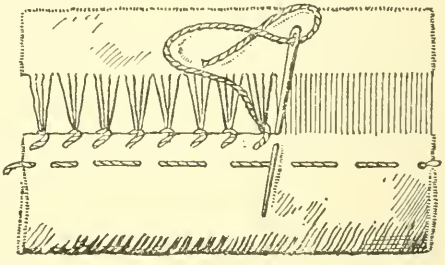

FIG. 38. Hemstitching. Method I, showing the second stitch

Continue toward the right. After the first few groups it should not be necessary to count the number of threads in each group.

Method of finishing. Finish with a double stitch in the fold of the hem.

Method II

Preparation. Same as in Method I.

The progress is toward the body.

Position of the work, hands, and needle. Place the hem across the cushion of the left forefinger, the outside fold toward the left, and the right side up. Pointing the needle toward the body, take up the required number of threads for the first group.

Draw the thread through.

With a second stitch take up the same threads and insert the needle in the fold of the hem exactly in line with the space between the first and second groups. Continue.

Method of beginning. Begin with a knot concealed or a double stitch in the fold of the hem.

Method of finishing. Finish with a double stitch on the wrong side in the fold of the hem.

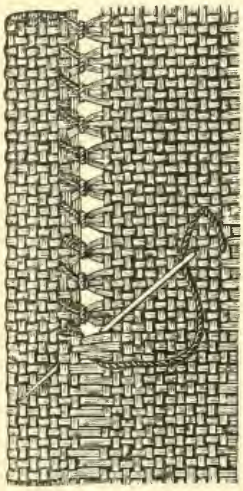

FIG. 39. Hemstitching. Method II

Good hemstitching requires a close, even tension of thread; groups of uniform size; no loose threads between the groups; and a good proportion between the open space and size of groups.

Number of threads. For single hemstitching, draw four threads and take up four threads in each group. This will be satisfactory for many materials, but not in all cases. The tendency is to draw too many threads.

Double hemstitching, as the name suggests, is an open space with a line of hemstitching on both sides.

The kinds of double hemstitching are double-bar and rickrack.

Number of threads. For double hemstitching, draw at least two threads more than for single hemstitching. Take up one or two extra threads in each group.

Double-bar. Hemstitch, according to directions, the hem side of the open space.

On the other side hemstitch in the same way, taking up the corresponding groups.

Take a shallow stitch in the edge of the material between the groups.

Rickrack. Draw the required number of threads as for the double-bar. Hemstitch along the hem side of the open space.

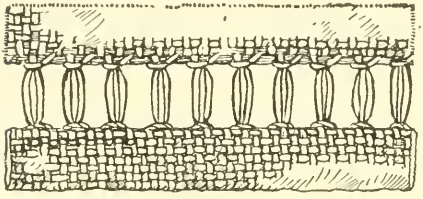

FIG. 40. Double hemstitching. The right side of the double-bar

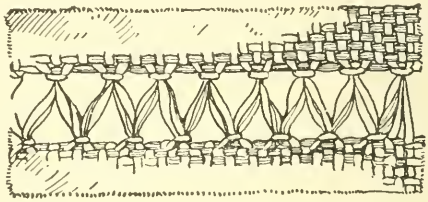

FIG. 41. Double hemstitching. The right side of the rickrack

On the other side of the open space take one half of group one with the first stitch.

Take a shallow stitch in the edge of the material at the right of the first half group.

With the next stitch take the other half of group one and half of group two.

Each stitch after the first is made up of the second half of one group and the first half of the next succeeding group.

Take a shallow overhanding stitch in the material at the right of each group.

FEATHERSTITCHING

Featherstitching is a series of blanket stitches arranged in such a way that all stitches are a given distance from a center axis and their slant is uniform throughout.

All stitches at the right of the center axis are blanket stitches made from left to right.

All stitches at the left of the center axis are blanket stitches made from right to left with the thread thrown toward the left.

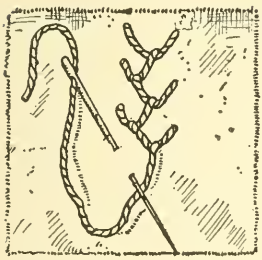

FIG. 42. Single feather-stitching, showing the position of the needle and thread for the blanket stitch made from right to left

These blanket stitches may be parallel to the center axis or they may be diagonal to it.

The number of stitches on each side of the center axis may vary.

Position of the work, hands, and needle. Hold the work across the cushion of the left forefinger.

Point the needle toward the body.

Hold the thread down under the thumb and make a blanket stitch.

To make a blanket stitch from right to left, place the thread in a loop toward the **left.** Hold the thread under the thumb. Insert the needle, letting the point pass over the thread loop. In continuing the blanket stitches, alternate the direction of the stitches.

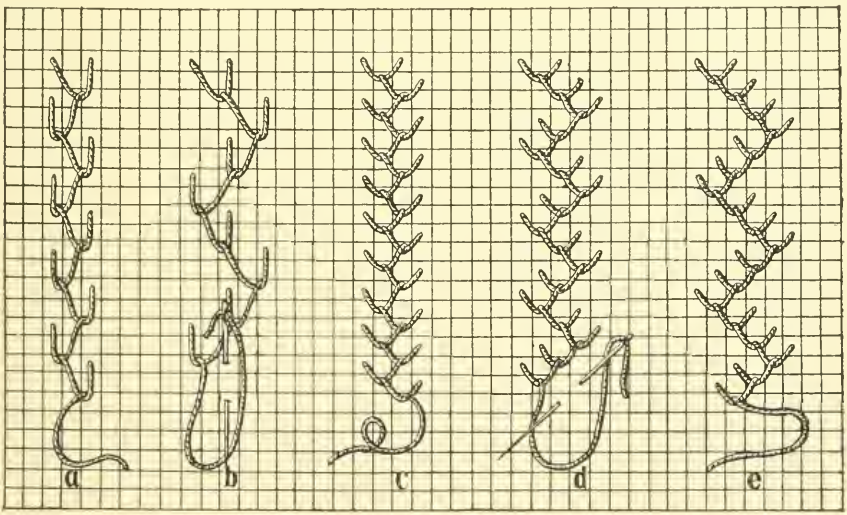

FIG. 43. *a*, single featherstitching, with the blanket stitches taken on a line with the threads of the cloth; *b*, double featherstitching, taken on a line with the threads of the cloth; *c*, *d*, and *e* are taken with stitches diagonal to the threads of the cloth

The progress of the work is toward the body.

Method of beginning. Begin with a knot or double stitch on the wrong side.

Method of finishing. Finish by completing the purl of the last stitch, and on the wrong side a double stitch.

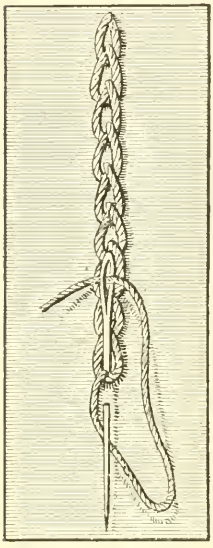

FIG. 44. Chain stitch

Cotton Aida canvas and colored silkateen are excellent materials to use for the first featherstitching.

CHAIN STITCH

Use. The chain stitch is a variation of the blanket stitch used for decoration.

Position of work, hands, and needle. Hold the work across the cushion of the left forefinger.

The progress of the stitch is toward the body.

Bring the needle through to the right side.

Hold the thread down under the left thumb to form a loop as in the blanket stitch.

Insert the needle at the right of the place from which the thread comes from the cloth.

Pointing the needle toward the body, take a short stitch.

Continue in this manner, always inserting the needle inside the loop of the last stitch.

Method of beginning. Begin with a knot on the wrong side or with a double stitch.

Method of finishing. To finish, put the needle through to the wrong side just below the last loop, and finish with a double stitch on the wrong side.

Variations. Change the slant of the needle, keeping the slant uniform throughout or alternating it as in the zigzag chain. Other variations are made by changing the position of the needle in relation to the loop.

Outline Stitch

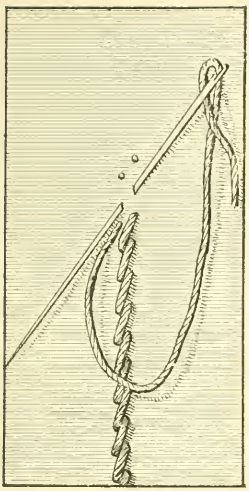

Fig. 45. Kensington outline stitch

Use. As the name suggests, the stitch is used for decorative outlining.

There are two kinds of outline stitch, Kensington and crewel.

Kensington outline is the one most often used.

Position of the work, hands, and needle. Hold the work across the cushion of the left forefinger, and point the needle slightly toward the left.

Parallel with this and one space above it take the second stitch. Continue.

The progress of the stitch is away from the body, following the stamped line.

Method of beginning. Begin with running stitches to be covered by the first Kensington stitches.

The appearance on the right side is of a series of regular overlapping stitches.

On the wrong side there is a series of short slanting stitches with a small space between.

In many cases better results are obtained by pointing the needle directly toward the body when taking the stitch. If no space is left between the stitches, the result is more attractive. This method makes a stitch that is the reverse of backstitching. In taking the Kensington stitch the thread falls naturally at the right of the needle.

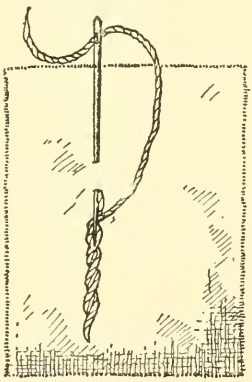

Fig. 46. Kensington outline stitch, showing the needle pointing toward the body in taking the stitch

Crewel outline stitch. This is made like the Kensington stitch but with the thread at the left of the needle instead of the right.

Embroidery Knots

Use. Embroidery knots are used for ornamentation, either with other embroidery stitches or alone. There are several ways of making these knots. The material out of which they are made and the effect desired will determine the method.

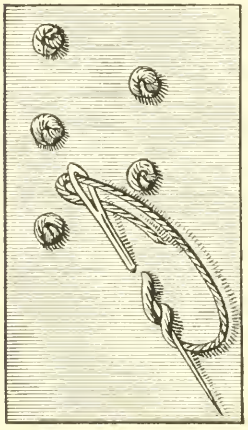

Fig. 47. Embroidery Knot I

Embroidery Knot I

Position of work, hands, and needle. Hold the work across the cushion of the left forefinger and point the needle toward the body.

Take a small backstitch, leaving the needle halfway through the cloth.

Take the cloth end of the thread and wind it twice around the needle.

Hold the coil firmly under the left thumb and draw the needle through to complete the stitch.

Insert the needle at the back end of the backstitch and bring it out at the point where the next knot is to be placed.

Method of beginning. Begin with a double stitch on the wrong side, and draw the needle through to the right side at the place for the embroidery knot.

Embroidery Knot II

Position of work, hands, and needle. Hold the cloth across the left forefinger.

Place the thread to the left and hold it with the left thumb.

Loop the thread toward the right and away from the body, crossing the under thread at the left of the point from which it comes from the cloth.

Hold the loop firmly.

Insert the needle a few threads back of *a* (Fig. 48), ending the stitch at *a*. Pass the needle through the loop.

Draw the thread out straight from the cloth.

Insert the needle again at *a* and take a stitch forward to the place for the next knot.

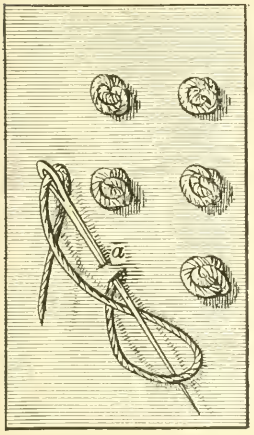

FIG. 48. Embroidery Knot II

The same appearance can be obtained by making a buttonhole stitch and drawing it up to form a knot.

Method of beginning. Begin with a double stitch on the wrong side and draw the needle through to the right side in position for the first knot.

Embroidery Knot III (French Knot)

Position of the cloth, hands, and needle. Lay the cloth on the table. Point the needle toward the left, holding it in place between the right thumb and forefinger, beside but at the back of the place from which the thread comes from the cloth.

Wind the thread over and around the needle three times.

Place the right forefinger over the coil of threads on the needle.

Draw the needle back until the coil is near the point of the needle.

Insert the needle a short distance to the left.

Draw the needle through to the wrong side, gradually releasing the coil which forms the knot.

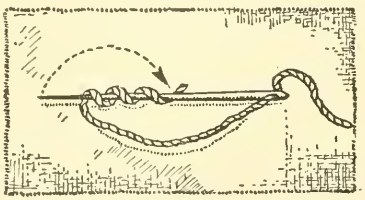

FIG. 49. Embroidery Knot III, or French Knot

Method of beginning. Begin with a double stitch on the wrong side and bring the needle to the right side at the place indicated for the knot.

The size of the knot can be increased by using a coarser thread, or by winding the thread more times around the needle.

Cross-stitch

Use. Cross-stitch is a decorative stitch usually made in colors for the purpose of decoration. If the cloth is coarse the threads can be counted and even cross-stitches made without difficulty. Unless the material is sufficiently coarse to avoid eyestrain, Penelope or a similar cross-stitch canvas should be used as a guide for the stitches.

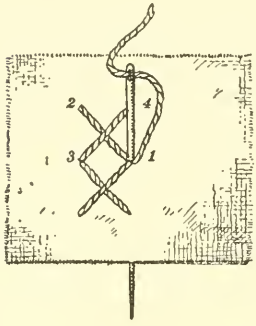

Fig. 50. Cross-stitches made in a vertical line

Use of cross-stitch canvas. Determine the place on the cloth where the design is to be worked. Crease through the center of this place, in both directions, creasing exactly with a warp and a woof thread.

Cut a rectangular piece of canvas, at least an inch larger than the design.

Find the center of the canvas.

Place the center of the piece of canvas exactly over the point where the warp and woof thread creases intersect.

Place the threads of the canvas exactly in line with the creases. Baste along both creases.

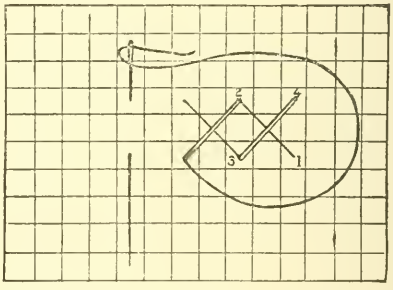

Fig. 51. Cross-stitches made in a horizontal line

If the design is large, several lines of bastings should be made, matching threads of canvas and warp and woof threads of cloth with each line. Baste around the outside edge of the canvas. It is better to begin as near the center of the design as possible and work toward the outer edges.

When the design is finished, draw out the threads of the canvas.

Directions for the stitch. Never use knots. Leave an end of thread and hold it in line with the first cross-stitches.

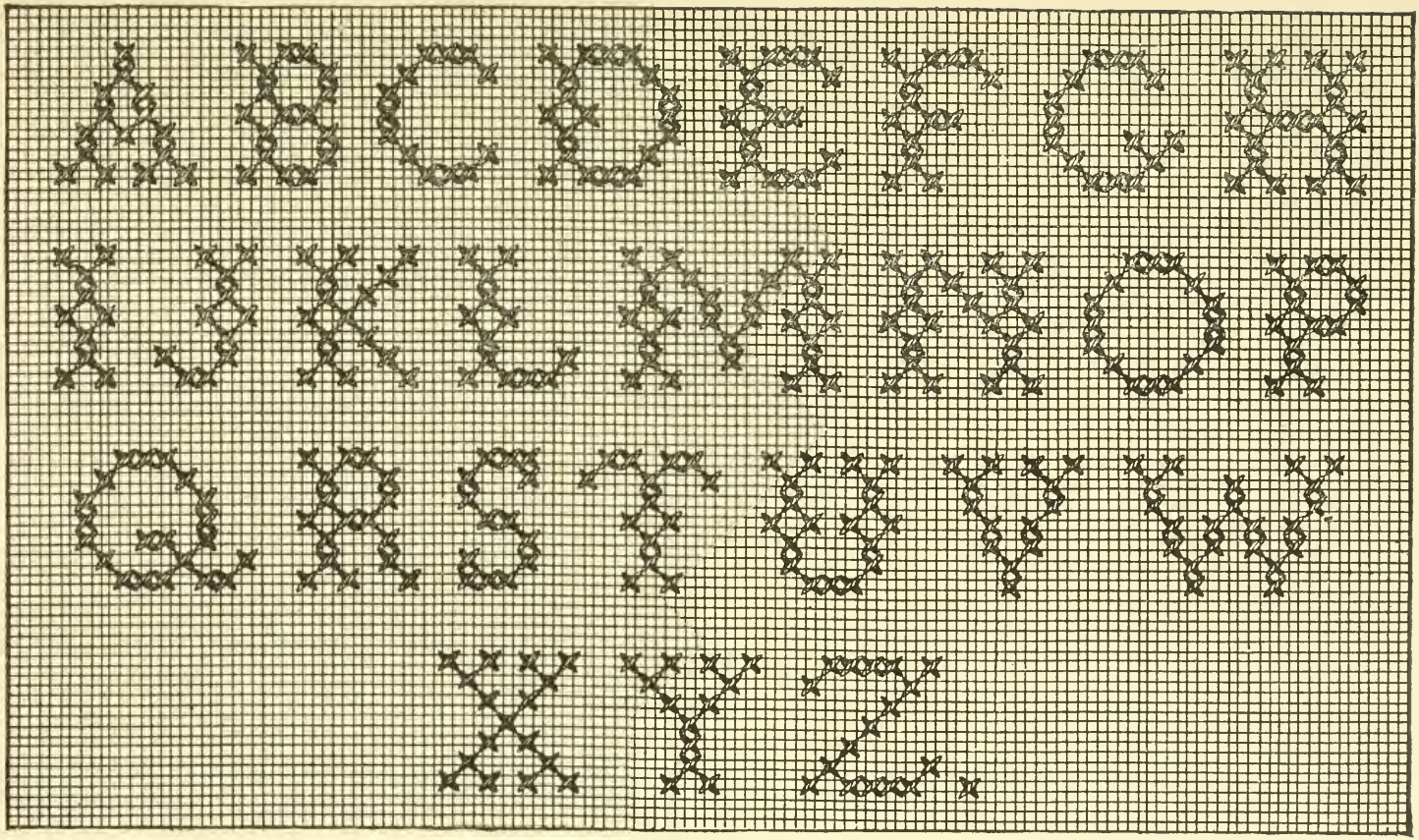

FIG. 52. Cross-stitch alphabet

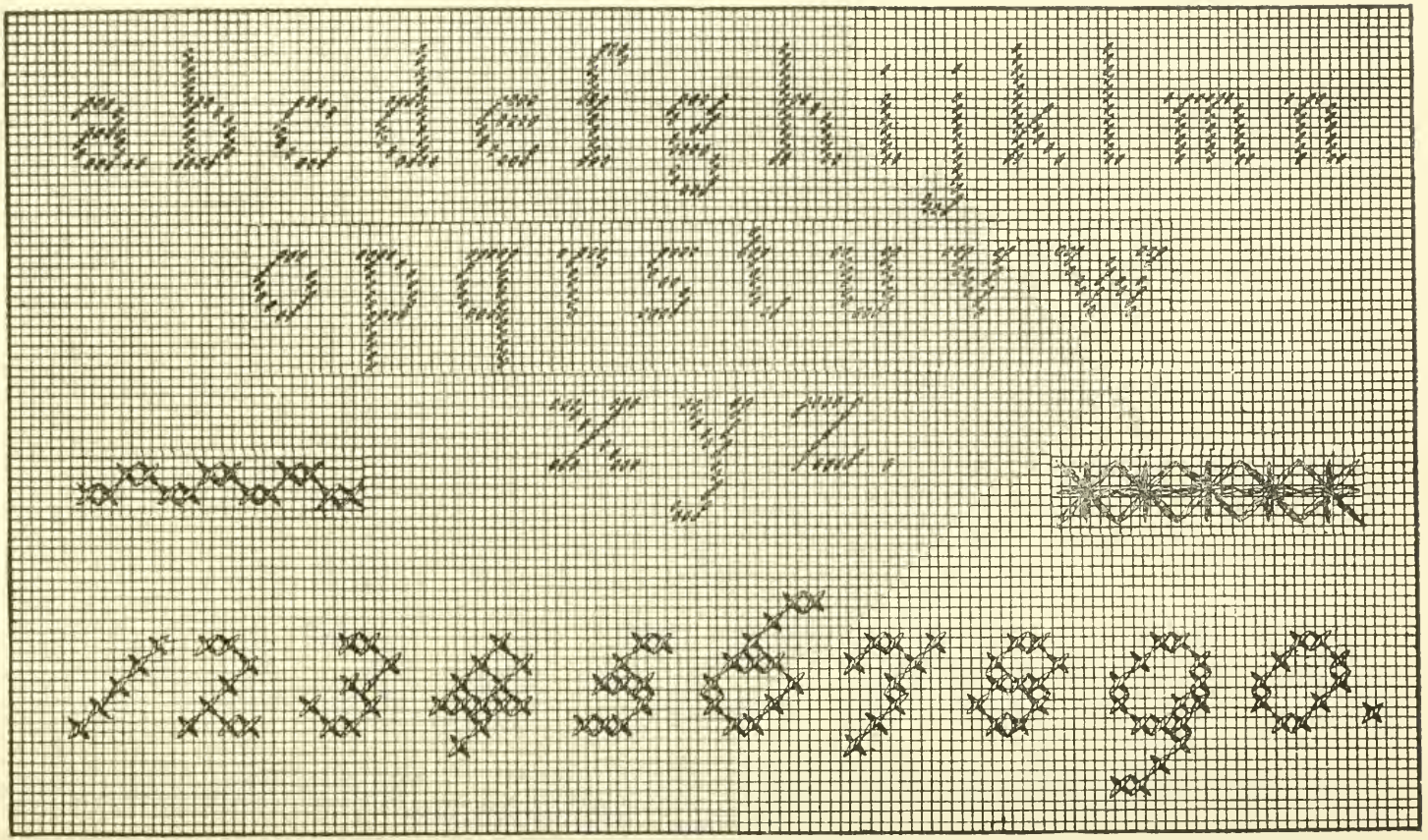

FIG. 53. Cross-stitch alphabet and figures

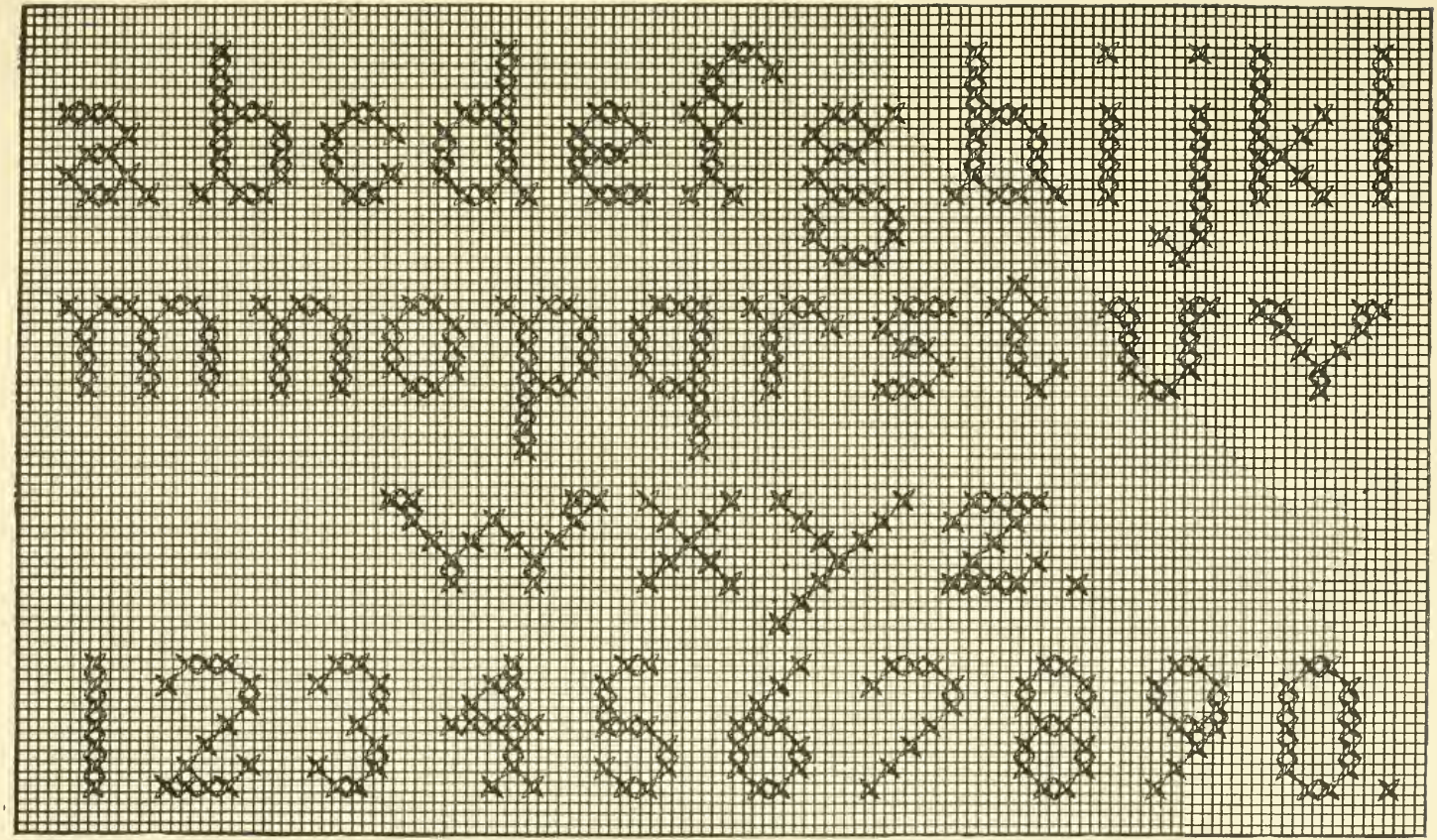

FIG. 54. Cross-stitch alphabet and figures

To make the stitch, draw the needle through to the right side in the lower right-hand corner of the square for the stitch; diagonally across on the right side, put the needle down through the upper left-hand corner. Bring the needle up through the lower left-hand corner, across, and down through at the upper right-hand corner. Bring the needle up through at the lower right-hand corner of the square for the next stitch. Continue.

Fasten the thread on the wrong side, by slipping the needle under several completed stitches. The upper stroke of the stitch should slant in the same direction throughout the design.

CHAPTER IV

PROCESSES OF CONSTRUCTION

The processes of construction are those processes by which pieces of cloth are made into a garment.

Seams

A seam is a joining of two pieces of cloth in the construction of a garment.

There are several kinds of seams used in plain sewing. Choose the one that is best suited to the material and the one most satisfactory for the part of the garment where it is used.

Pinning a seam. It usually saves much time and avoids mistakes to pin the entire length of the seam before basting. Place the pins perpendicular to the edge, through the two thicknesses. This holds both pieces evenly and makes it possible to baste before removing the pins.

Basting a seam. Time is saved by basting where it is needed. Place the basting beside the line that is to be stitched, not on it. Never stitch on a line of basting. This wastes much time when the basting is removed.

The plain seam. Place the two right sides of the garment together. Pin and baste. A quarter of an inch from the edge, place a line of stitches to hold the seam permanently. Backstitch, half backstitch, combination stitch, running, or a line of machine stitching may be used. The strain on the seam and the quality of the cloth determine the choice of stitch.

Finish. Cut the frayed or uneven edges from the seam and overcast the raw edges. If the seam is to be pressed open

when the garment is laundered, overcast the two edges separately; if not, overcast the two edges together.

Overhanded seam. Place the two right sides together; place the two folded edges or two finished edges together; pin, baste, and overhand (p. 22).

French seam. Place the two wrong sides of the garment together, pin, and baste. Stitch the width of the presser foot from the edge. Remove basting. Cut the seam down to one half the width of the finished seam.

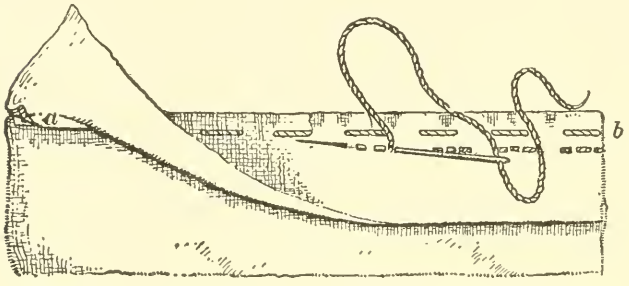

FIG. 55. A French seam: *a*, shows the place of the inclosed seam; *b*, the finished seam

Crease along the line of stitching on the wrong side of the garment.

Fold the right sides together and crease along the line of stitching.

Baste and stitch the required distance from the edge.

In a well-made French seam the line of the first stitching is exactly on the edge of the finished seam. The seam is of an even width. No threads show along the line of the seam on the right side. This means careful creasing. Hand stitches may be used instead of machine stitching. Choose the stitch best suited to the type of material used and to the strain which comes on the seam when the garment is worn.

Felled seam. These are of two kinds: the flat fell, finished either on the right or on the wrong side; and the standing, or French, fell, which resembles the French seam in appearance.

Flat fell on the wrong side. Place the two right sides of the garment together, pin, and baste.

Stitch the width of the finished seam plus one turn from the edge.

Remove basting to allow for proper creasing of the seam.

Open the two parts of the seam and trim one side to a little less than the width of the finished seam.

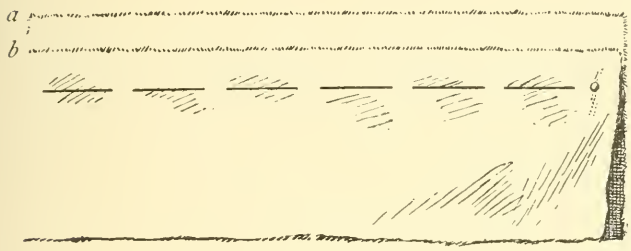

FIG. 56. Flat fell in the process of making: *a* is the edge of the wide side, which is folded down over *b* after the first line of stitching is completed

Crease carefully along the line of stitching on the right side of the garment.

Fold the wide side down over the narrow side, making an even crease.

Baste the turned-in edge of the seam to the garment as a hem.

Join the folded edge to the garment with hemming or machine stitching.

Remove basting.

If the garment is not a fitted garment with traced seam lines, place one edge of the seam the width of one turn below the other. By this method time is saved in cutting down one edge.

Flat fell on the right side. Reverse the previous directions by placing the two wrong sides of the garment together.

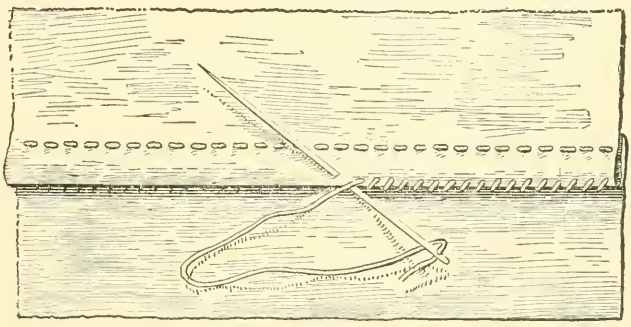

FIG. 57. Flat fell on the wrong side, made with hand stitches

Cut, crease, fold, and baste as before.

Finish with a line of machine stitching along the folded edge.

French, or standing, fell. Place the two right sides together, with one edge the width of the finished seam plus one turn below the other.

Pin and baste.

Fold the wide side with two turns down over the narrow side.

Baste.

Stitch near the fold of the turned-in edge through the four thicknesses of seam, thus completing the seam with one stitching.

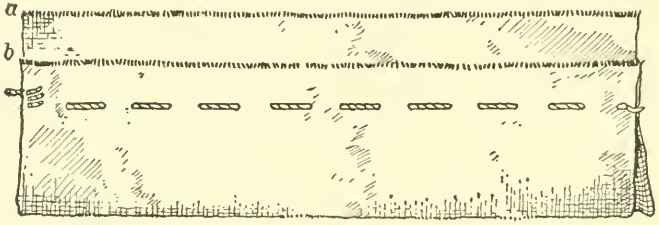

FIG. 58. A French fell in the process of making: *a* represents the wide side, which is folded with two turns down over *b*

Use of seams. The plain seam can be used on any part of the garment where the standing edges are not too bulky and where the unfinished edges are not objectionable. It is used especially on heavy materials. It may be used on drawers, petticoats, etc.

Overhanded seam. The overhanded seam can be used only with finished and folded edges.

French seam. The French seam is a double seam and gives a nicer finish than the plain. It has many uses where the bulk of the standing edge is not objectionable. It should not be used on very heavy material where a wide seam is necessary. It is satisfactory for the finish of curved lines. It may be used on slips, drawers, nightgowns, waists, skirts, etc.

Flat fell on the right side. The flat fell on the wrong side finished by hand when sufficiently narrow is a very dainty and attractive seam. It is not satisfactory on a deep curve. It is used on drawers, slips, etc. that are finished by hand.

When hemmed down by machine the flat fell has a more tailored effect. On underwear, the line of stitching on the

right side becomes discolored unless very carefully laundered. In many places where it can be suitably used, the flat fell on the right side is a better seam to use and is more easily made. It is attractive for petticoats, pajamas, tailored shirt waists, and skirts.

French fell. The French fell is seldom used in home sewing except for joining ruffles, etc. to garments.

Flannel seams. Flannel does not crease easily, therefore when it is used for undergarments it is necessary to finish the seams according to the needs of the material. Outing flannel, although made of cotton, is usually finished with the same type of seam as flannel. The following are some of the most common plain and decorative finishes for flannel seams:

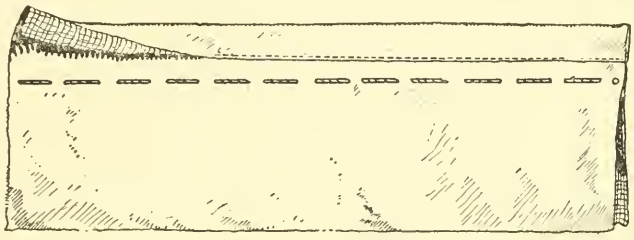

FIG. 59. French fell completed

1. The plain seam with overcast edges may be used, but with heavy material a flatter finish is less bulky and more attractive.

2. Stitch or backstitch the seam on the wrong side of the garment at least one-fourth inch wide.

Cut the seam an even width and remove all ravelings.

Turn the seam toward the back of the garment.

Cut down the under part of the seam at least one sixteenth of an inch to prevent its showing beyond the upper edge when the seam is finished.

Baste the seam flat to the garment.

Catchstitch the edge of the seam to the garment, without taking the stitches through to the right side.

3. Stitch or backstitch the seam on the wrong side of the garment at least one-fourth inch wide.

Cut the seam an even width and remove all ravelings.

Press the two parts of the seam open.

Overcast the two raw edges.

Hold the seam flat with a line of catchstitches along the center of the seam.

4. Prepare the seam as in No. 3.

Press the seam open and baste flat to the garment.

Catchstitch the two raw edges of the seam to the garment.

5. Prepare the seam as in No. 3.

Press the seam open on the wrong side.

Overcast the two raw edges.

Baste the seam open and hold in place with a line of featherstitching on the right side.

6. Make a flat fell on the wrong side, one-fourth inch wide.

Hem down by hand.

Hold the seam flat and decorate it by a line of featherstitching on the right side.

Use of flannel seams. Use 1 and 2 on light-weight materials for petticoats, etc. Use 3 and 4 on heavy material. Use 5 and 6 on infants' gertrudes and garments where a flat seam and decoration are desired.

Materials for flannel seams. On outing flannel, use thread for stitching, overcasting, and catchstitching; use silkateen for featherstitching.

On flannel, use sewing silk for stitching, overcasting, and catchstitching; use hard-twisted embroidery silk or knitting silk for featherstitching.

Hems

A hem is an edge finish made with two turns of the material. The first, or narrow turn, is wide enough to inclose the raw edge. The width of the first turn is determined by the quality of the material and the method used for joining the hem.

Creasing of hems. Even measuring and creasing of hems is the first important step toward a well-made hem.

For plain hems, the narrow turn is creased first. This may be done in several ways.

Creasing on the table. Place the garment on the table, wrong side up, with the raw edge away from the worker and the garment over the edge of the table in the lap.

With the right thumb and forefinger make a narrow turn to the wrong side of the garment.

Hold in place.

A short distance to the left make a corresponding turn with the left thumb and forefinger.

Hold in place.

Still holding the right-hand end firmly under the right fingers, crease with the right thumb nail the space from left to right.

Continue toward the left.

The second turn should be turned, measured, and creased in the same way.

Baste to hold in place.

For large garments. If the garment is too bulky to make this method convenient, place it on the table with the raw edge toward the body. This position is less convenient for basting the hem.

Creasing in the hands. Narrow hems, or the first turn of wider hems, may be creased in the hands. Hold the garment with the wrong side up and the raw edge diagonally across the inside of the first two fingers of the left hand. The surface of these two fingers takes the place of the table, and the turning and creasing are done according to the directions already given.

Creasing by side-plaiting. On thin or loosely woven cloth a turn that is creased on the table may be badly stretched. To avoid this result, hold the raw edge up with the wrong side toward the worker. Make the first turn toward the wrong side with the right thumb and forefinger. Hold firmly.

A short distance towards the left make a corresponding turn with the left thumb and forefinger.

Hold firmly in place.

Crease between the two hands by folding the turned-in edge into small plaits, and pinching them in place with the right thumb and forefinger.

Hems on material which does not crease. When turning a hem on material which will not crease, as thin cheesecloth,

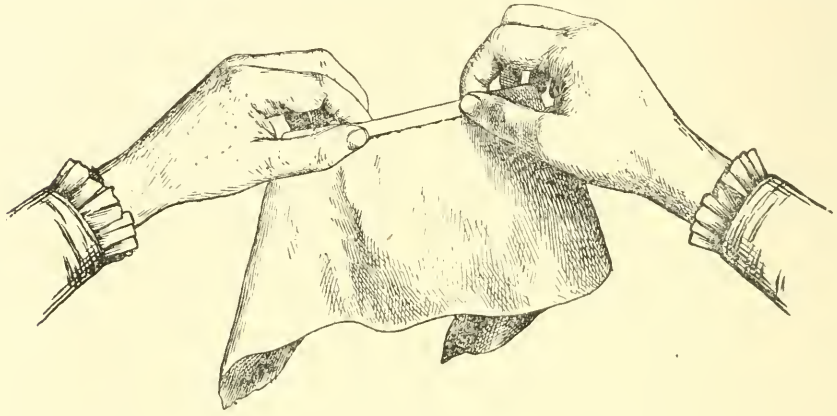

FIG. 60. Position of hands and cloth for creasing a hem in the hands

outing flannel, etc., time is saved and results are much more satisfactory if the first turn of the hem is basted before attempting to make the second turn.

With heavy material of this type three lines of basting are necessary for satisfactory results: one, to hold the fold of the first turn; a second, to hold the fold of the second turn; a third, to hold the first turn in place for hemming.

A hem on an outward curve. When a hem is turned on a curve of this type there is fullness along the line of the first turn.

Confine this fullness by plaits or gathers. If plaits are used, they must be small. A plait extending the width of the hem makes a point at the lower edge. On light-weight material

with a small amount of fullness use gathers. Crease both turns of the hem. Gather through the fold of the upper edge. Pin, baste, and press before hemming.

Gathering and Placing of Gathers

The stitch used most often for gathering is the running stitch. The size of the stitch depends on the quality of the cloth and the amount of fullness to be confined in a given

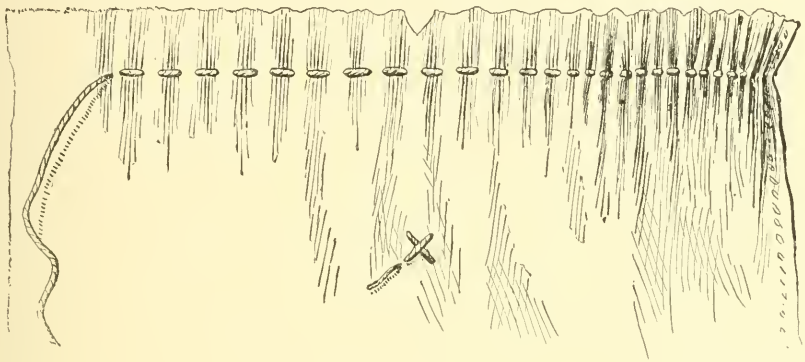

Fig. 61. A line of gathering. The center marked by a notch on the edge and a cross-stitch near the edge

space. Fine material and a small amount of fullness require fine running stitches. On the other hand, heavy cloth and much fullness require longer stitches.

The stitch and space may be of equal length, or the space may be longer than the stitch (see p. 19).

For gathering, start with a knot and a backstitch. The double stitch will prevent the knot from pulling through when the gathers are drawn up.

The center of the edge to be gathered should be marked with a small notch on the edge or a cross-stitch with colored thread.

In some cases a double gathering thread may be necessary, but in general a single thread is much better, as a single thread is less likely to knot.

Use a size of thread that is strong enough to avoid the possibility of breaking with the strain of adjusting the gathers.

Use a thread a little longer than the space where the gathers are to be confined.

If this space is too long for the usual length of thread, divide the edge to be gathered into halves, quarters, or as many sections as is necessary.

Place small notches or cross-stitches at the points of division.

Gather each section with a separate thread.

Stroking of gathers. Draw up the gathers into a close mass. Place a common pin in a vertical position at the end of the line of gathering, close to the last stitch.

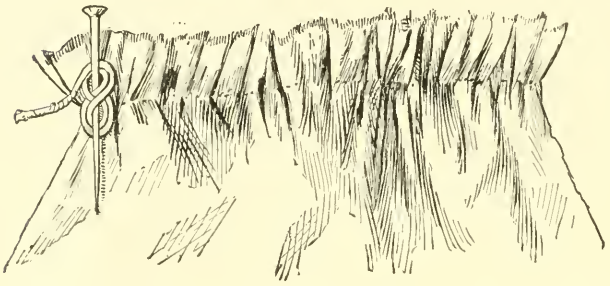

FIG. 62. The gathering thread drawn up and fastened around a pin

Wind the thread across the pin several times (Fig. 62). With the right side up, begin at the left-hand end of the line of gathers.

Hold the work between the left thumb and forefinger, keeping the thumb below the gathering thread (Fig. 63).

Place the eye of the needle under the gathering thread (Fig. 63).

Press the needle toward the thumb, marking with the needle the crease of a little plait.

Pinch the plait tightly between the left thumb and forefinger.

Continue in this way, creasing in every space.

Substitutes for stroking. In many cases stroking requires too much time, and shorter methods of adjusting gathers are necessary. These give less attractive results, but are satisfactory for many garments.

1. Place a second row of gathering parallel to the first line with a space of one-fourth inch between the two rows.

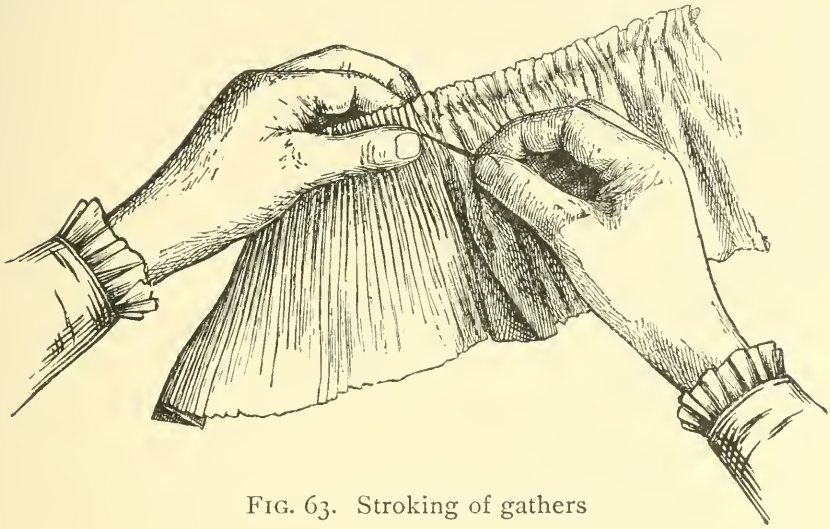

FIG. 63. Stroking of gathers

Draw up the two threads evenly, until the gathers are in a close mass that can be arranged easily and quickly.

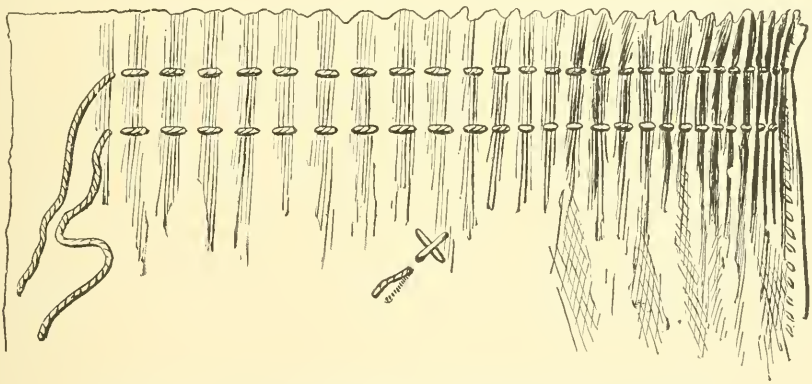

FIG. 64. Double gathering, a substitute for stroking

Wind the thread around a pin placed close to the last stitch and at right angles to the line of gathering (Fig. 64).

Starting at the knot end of the line of gathering hold the upper edge of the material between the left thumb and fore-finger. With the right hand pull the gathers down smoothly.

Little plaits between the two rows of gathers will be made. Pinch these plaits firmly between the left thumb and forefinger.

Continue pulling the gathers and pinching the plaits throughout the entire length.

2. In thin, stiff material where there are short lengths to be gathered, many stitches can be taken on the needle at once.

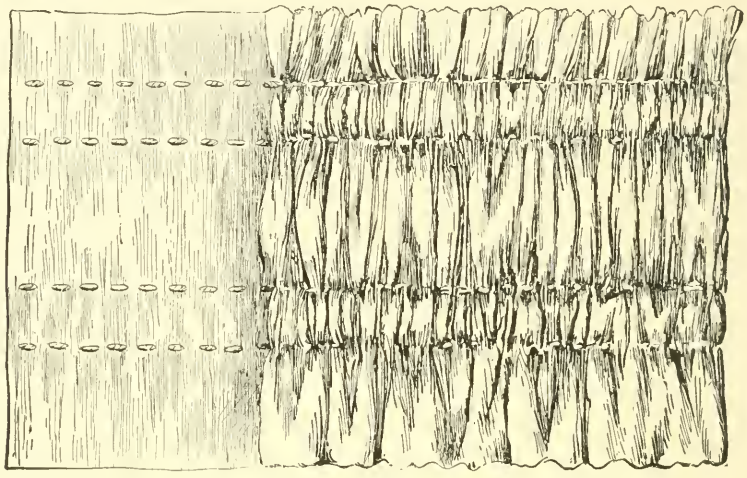

Fig. 65. Shirring

Before drawing the needle through, pinch the mass of material close together.

Pull the gathers into place and press the little plaits thus formed between the left thumb and forefinger.

Gauging. If a very even arrangement of the tiny plaits formed by the gathers is necessary, the second row of gathers must be placed very carefully with stitch under stitch and space under space. This is called gauging or gauged gathering (Fig. 64).

Shirring is made by placing several rows of gatherings in parallel lines (Fig. 65).

Joining a gathered edge to a plain edge. The line of stitches used to join the gathered to the plain edge should be placed

exactly on the line of gathering, otherwise the time spent in the careful arrangement of the gathers will be wasted.

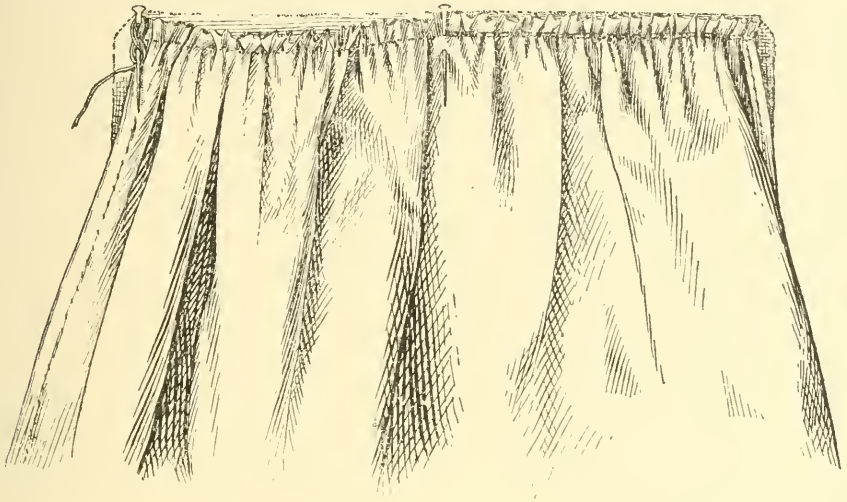

FIG. 66. Joining a gathered edge to a plain edge

BIAS STRIPS FOR BINDINGS AND FACINGS

Use of the bias. The bias is used most often for bindings, facings, and ruffles. The ends of the warp and the woof threads along the sides of a bias strip can be stretched apart

FIG. 67. Bias strips placed in a line before joining

or pressed closely together. For this reason a bias strip is used most often to finish a curved edge.

To seam bias strips together. The piecing of true bias strips should be with two edges cut with the woof or with two edges cut with the warp threads.

Cut the strips the required width. Place the two right sides together, strips at right angles to each other, woof or warp edges together, and the sides of the strips meeting a seam's width down from the edge (see Fig. 68).

To join bias strips with a French seam, place the two wrong sides together, strips at right angles to each other, warp or woof edges together, and the sides intersecting the width of two seams from the edge.

Stitch one seam's width from the edge as for a plain seam.

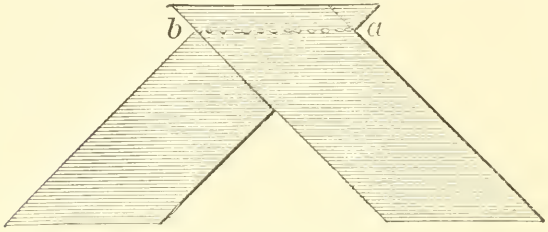

FIG. 68. Two bias strips joined with a plain seam

Turn, crease, and baste.

Finish the second line of the French seam. The sides should be together at the line of the second seam.

To piece garment bias strips. Select one strip with an end with the warp or woof threads to prevent the stretching of the seam. Place the wrong side of this strip against the right side of the second strip. Cut the end of the second strip to match the first. Place the two right sides together, with the ends even and the sides intersecting a seam's width down from the end. Seam. The strips in this case will not be at right angles to each other.

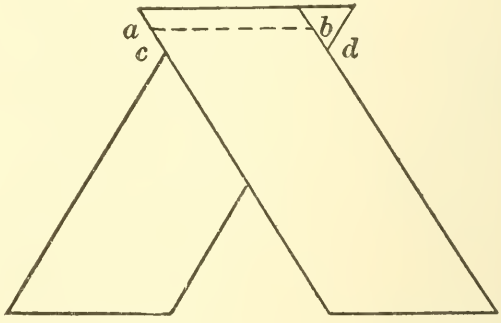

FIG. 69. Two bias strips placed together for a French seam. *ab* is the line of the first stitching and *cd* the line of the second

BINDINGS

A binding is a strip of cloth used as an edge finish, usually extending as a fold beyond the edge of the garment, with the second line of stitches directly over the first.

When a binding is used to hold the gathered part of the garment in place it is sometimes called a *band.*

If there is any strain on the binding, as a skirt binding at the waist, a collar band or a cuff, the length of the binding should be cut with the warp threads.

If there is no strain on the binding, it may be cut with the woof threads or on the bias.

A binding joined to the garment by hand. Place the right side of the binding against the right side of the garment. Pin, baste, and backstitch. Crease the binding well along the right side of the seam.

Fold the binding with two turns toward the wrong side.

Pin the ends, centers, and as many points between as is necessary.

Baste and hem.

The underneath line of backstitches should be covered by the fold of the hem. No hemming stitches should show on the right side.

For the method of joining a binding to a gathered edge by hand see page 26.

A binding joined to the garment by machine. Place the right side of the binding against the wrong side of the garment.

Pin, baste, stitch, and crease.

Fold the binding with two turns to the right side.

Pin, baste, and stitch along the folded edge.

Caution. The first stitching should be covered entirely by the fold of the binding. The second stitching should be directly beside the first but on the garment side.

To prevent the reaming, or twisting, of a binding, notch at the center on the two sides before joining to the garment. In making the second turn of the binding, pin the ends and center notches together. Pin at intervals to make sure that the ends of corresponding woof threads match on the finished binding.

The split binding. This is not an edge finish, but is a strip joining two parts of a garment; a belt joining the bib

to the body part of an apron, strip joining ruffle to lower edge of French drawers, etc. are examples.

Directions. Cut two strips of cloth the required length, with seam allowances at sides and ends. The width of each strip should be the finished width plus two seams.

If handmade, place the right side of the smaller part of the garment against the right side of one strip.

Pin and baste.

Place the right side of the other part of the garment against the right side of the same strip.

Pin and baste.

Place the right side of the second strip against the wrong side of the smaller part of the garment, the edge along the line of the first seam.

Baste and backstitch through the three thicknesses.

The small part of the garment is now between the two strips. From this point the construction is that of a handmade binding.

Backstitch the second seam.

Crease and baste both seams along the creased line.

Make a narrow turn along the free edge of the binding.

Pin, baste, and hem to the garment.

Split binding by machine. Reverse the directions of split binding by hand, and follow directions for machine-made binding.

Facings

A facing is a strip of cloth used as an edge finish. It extends up on the garment its full width from the first stitching on the edge.

Facings may be cut with the woof or warp threads, on the bias, or they may be fitted.

A fitted facing. This is one in which both the warp and woof threads of the facing match the corresponding threads of the garment.

Methods of Joining a Facing to a Garment

A facing on the wrong side. Place the right side of the facing against the right side of the garment, edges together.

Pin and baste.

Stitch or backstitch a seam's width from the edge.

Crease the facing to the wrong side, creasing carefully on the outside of the facing along the line of the stitching.

Baste or pin along the line of the first stitching to hold the crease and to prevent reaming.

Make a narrow turn along the other edge of the facing.

Baste and join the edge to the garment by hand hemming or machine stitching.

A facing joined to the right side. Place the right side of the facing against the wrong side of the garment, edges together.

Baste and stitch a seam's width from the edge.

Crease carefully along the line of stitching when folding the facing to the right side.

Baste along the creased line.

Make a narrow turn along the upper edge of the facing.

Pin, baste, and stitch along the turned-in edge.

Facing a curved edge. For the facing, use a true bias strip of the required width and length.

Facing an inward curve. Place the edges of the facing and of the garment together.

Pin the inside edge of the facing to the garment to see how much is necessary for a smooth facing.

Hold in the fullness on the outer edge of the facing, pin, and baste. Continue the steps as in the preceding directions.

If too much fullness for a smooth facing is required by this method, substitute a fitted facing.

Facing an outward curve. When placing it against the garment, stretch the outer edge of the facing slightly. To

finish the inside edge of the facing, distribute the extra fullness evenly.

Pin, gather if necessary, and baste in preparation for the stitching.

False hem. This name is frequently applied to a facing finished on the wrong side of the garment.

Split hem. This is a name frequently applied to a facing which covers the joining of a ruffle to the garment.

Directions. Cut the facing the required width.

Prepare the ruffle and adjust the gathers.

Place the right side of the ruffle to the right side of the garment.

Pin and baste.

Place the right side of the facing against the wrong side of the ruffle.

Baste and stitch a seam's width from the edge.

The ruffle is now joined to the garment and is between the garment and the facing. From this point the directions are for the facing on the wrong side.

Tucks

A tuck is a fold made and sewed in a garment for ornament or to provide material for lengthening the garment if necessary.

Tuck allowances. Each tuck requires an allowance of cloth two times its finished width.

Creasing for the first tuck. Begin with the lowest tuck of the group.

Measure up from the lower edge of the hem, the width of the hem, plus the space between the edge of the tuck and the stitching of the hem, plus two times the width of the finished tuck.

Make a crease, being sure that this crease is in line with a thread of the cloth. This crease is the edge of the first tuck.

Baste.

Finish with a line of stitching or running the required width of the tuck from the creased edge.

Creasing for the second tuck. Fold the first tuck down in position and measure for the second.

From the crease of the first tuck to the crease of the second is three times the width of the tuck plus the space between the finished tucks.

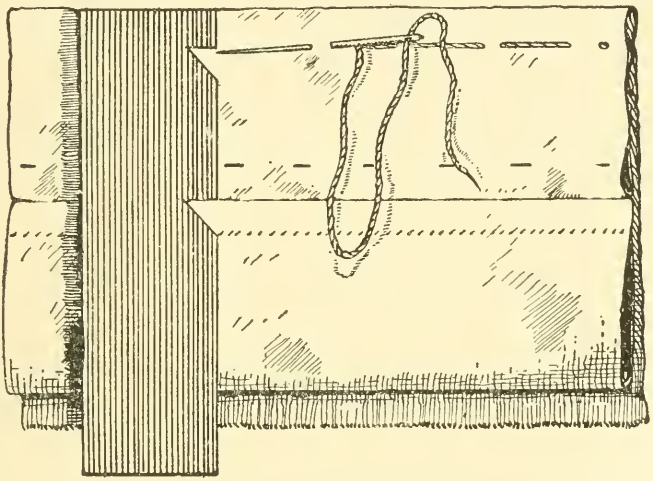

FIG. 70. Measuring and basting the second tuck

Measure, crease, baste, and stitch or run each tuck.

Example. If there is to be an inch hem, with a half-inch space between hem and tuck, the finished tucks one-eighth inch and the space between the tucks one-fourth inch, the following measurements should be made:

From the crease of the hem to the crease of the first tuck:

Hem plus space plus two times width of tucks equals one and three-fourths inches; or

$$1'' + \tfrac{1}{2}'' + 2 \times \tfrac{1}{8}'' = 1\tfrac{3}{4}''.$$

From the crease of one tuck to the crease of the next:

Three times the width of tuck plus space between tucks equals five-eighths inch; or

$$3 \times \tfrac{1}{8}'' + \tfrac{1}{4}'' = \tfrac{5}{8}''.$$

In making hand-run tucks, work on the under side of the tuck. For machine-made tucks, stitch on the upper side of the tuck.

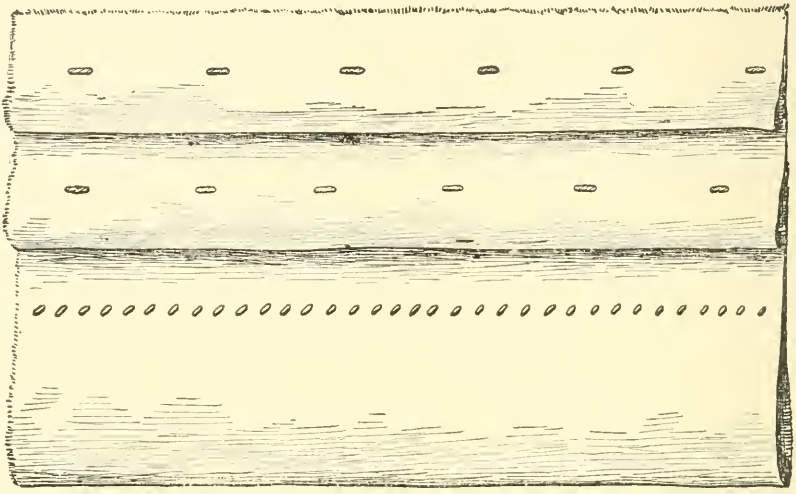

FIG. 71. Two tucks basted and folded back in position

RUFFLES

A ruffle is a strip of cloth added to a garment for decoration, fullness, or length.

Ruffles are cut in different ways according to the effect desired.

A straight ruffle is usually cut with the woof threads. The woof threads are soft, and the ruffle gathers easily and hangs in attractive folds. The depth of the ruffle is with the warp threads. These threads are the stronger and take the strain which comes in wearing and in ironing.

Sometimes to save time in piecing, or to save material in making, a ruffle is cut with the warp threads. It gives a stiff, bunchy effect, and is less attractive and less durable.

A bias ruffle is one cut with the true bias. It is used most often for plaids and stripes, as a decorative effect is obtained by this change of line.

The amount of fullness required in ruffles is as follows:

For a straight ruffle on a straight edge, one and one-fourth to one and one-half times the space to which the ruffle is to be joined.

For a bias ruffle on a straight edge, one and one-fourth times the length of the space.

For a straight ruffle on an inward curve, one and one-sixth to one and one-fourth times the length of the space.

For a straight ruffle on an outward curve, one and one-half to one and three-fourths times the length of the space.

For a straight ruffle around a square corner, two times the width of the ruffle.

Methods of adjusting the fullness of a ruffle (see p. 56). Ruffles are joined to garments in many ways. The effect desired, the place on the garment, and the material used, determine the method.

Ruffles joined to garments by seams. An overhanded seam may be used to join a ruffle to a garment, if the top of the ruffle is rolled and gathered and if the garment has a finished edge.

The overhanded seam is used to join a lace ruffle to the finished edge of the garment.

A plain seam is frequently used, but to give a flat finish and a more attractive effect the seam is usually covered on the right side with bias facing, finishing braid, insertion, or a tuck of the material. On the wrong side the seam is covered with a facing which may be wide or narrow, straight or bias.

1. For a plain seam on the right side of the garment covered with a strip of bias seam tape, place the wrong side of the ruffle against the wrong side of the garment. Pin and baste.

Stitch on the first line of gathering.

Crease the garment and ruffle open on the wrong side, and on the right side crease the seam flat against the garment.

Place the bias seam tape with the lower folded edge just over the stitching of the seam. Baste and stitch along the lower and upper edges of the bias.

2. Two rows of stitching may be used instead of the three rows in No. 1. Place the wrong side of the ruffle against the wrong side of the garment. Pin and baste.

Place the lower edge of the wrong side of the bias seam tape against the ruffle side of the seam, with the folded edge of the tape just over the first row of gathering.

Stitch through the folded edge of the tape, ruffle, and garment seam.

Crease the garment and ruffle open on the wrong side. Stitch the upper edge of the bias tape to the garment.

The directions for No. 1 and No. 2 may be reversed and the finishing seam made on the wrong side of the garment.

A French seam may be used, but it is bulky. The standing seam is less satisfactory than a flat finish. The bulk is due to the double seam and to the fullness of the ruffle on one side of the seam.

A modified French seam is less bulky than the French seam.

Directions for making. Begin as for the French seam by placing the two wrong sides together. Baste and stitch.

Crease along the stitching and fold the cloth on the garment side of the seam around the two sides of the seam. Baste and stitch.

The second stitching should be placed beside the first, but on the ruffle side of the seam.

Plain seam on the right side, covered with a tuck. Crease a line three fourths of an inch from the edge and stitch a quarter-inch tuck. Crease the tuck down in place.

Fold the cloth below the tuck toward the wrong side and make a crease in line with the lower edge of the tuck.

Put in a guide basting beside this crease, but on the tuck side.

Place the wrong side of the ruffle against the wrong side of the garment, with the first row of gathering directly in line with the guide basting.

Baste and stitch the seam with the stitching on the first line of gathers.

Cut the seam to the desired width.

Crease the seam up under the tuck with the ruffle down in place.

Stitch the lower edge of the tuck down over the seam.

Rolled Hems and Whipping

A rolled hem is often daintier than a creased hem when used on sheer material. With practice it is easily and quickly made.

Cut all ravelings from the edge to be rolled.

Hold the material with the wrong side up and the edge to be rolled at the left.

Begin at the upper end, roll the edge of the cloth between the left thumb and forefinger, toward the wrong side. On soft materials the beginning of the roll is made more easily by placing a fine needle along the edge and rolling the edge over the needle.

The edge must be rolled tightly, not creased.

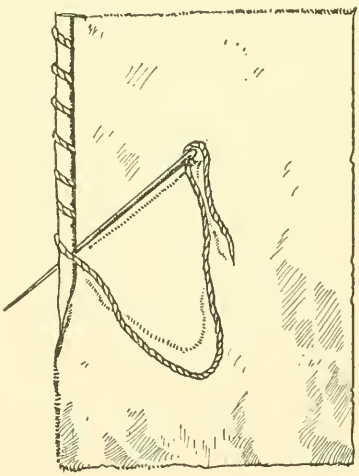

Fig. 72. A rolled hem

Hold the end of the roll between the right thumb and forefinger; place the material between the third and little fingers of the left hand; hold tightly.

Continue the roll already started for about two inches.

To confine the roll. Use a fine needle and thread. Begin with a small knot concealed or with a double stitch.

Hold the work as for hemming, and slip the needle under the roll and through the cloth at the left. No stitch is taken through the roll or in the cloth under the roll. The thread encircles the roll in a spiral line.

Make the space between the stitches a little longer than that required for regular hemming on similar material.

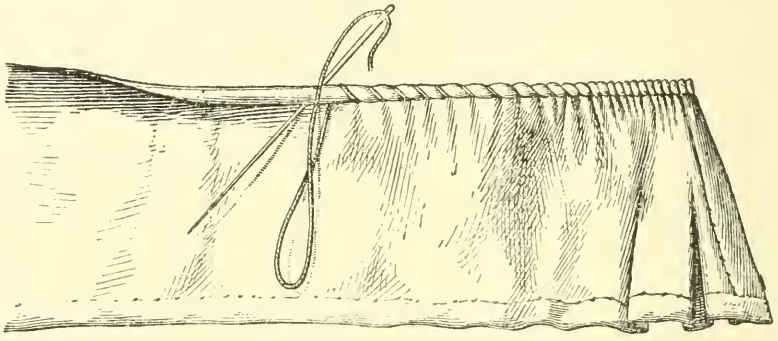

FIG. 73. An edge rolled and gathered with the overcasting stitch

If the edge has been stretched by the rolling, draw the thread tight enough to restore the original length and shape. This is especially necessary when bias or curved edges are rolled.

Rolled hem with lace ruffle attached. 1. The edge may be rolled and hemmed, the lace gathered, and the two overhanded. This requires at least two lines of stitches where only one is necessary.

2. Roll the edge, and gather the lace, either by drawing up the thread in the edge of the lace or by putting in a line of running stitches.

Arrange the gathers for the required amount of fullness.

Place the lace over the left forefinger with the gathered edge exactly beside the rolled edge of the cloth.

Insert the needle under the roll, through the cloth, and into the edge of lace. Continue, taking a stitch through the edge of the lace with every stitch taken to confine the roll.

Rolling and gathering or whipping. Make a roll on the edge.

Hold the edge as for overcasting with the wrong side toward the body.

Begin with a knot if it can be concealed with a later finish, otherwise begin with a double stitch.

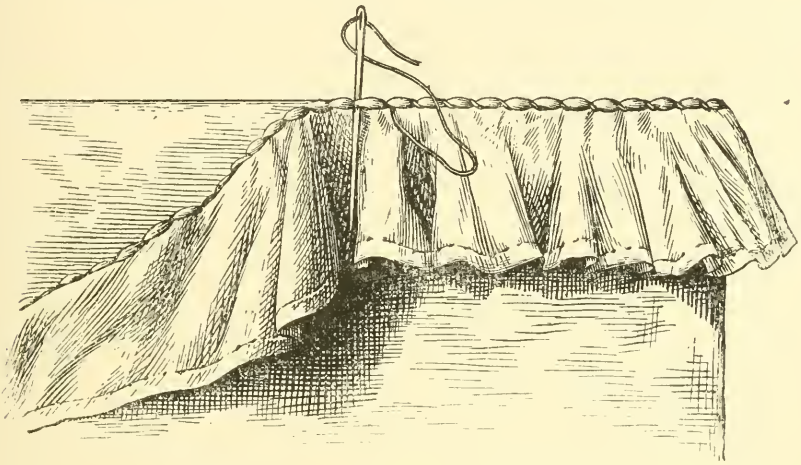

FIG. 74. Two rolled edges joined with a line of overhanding

Insert the needle from the right side down under the roll. No stitches should be taken through the roll.

Draw up the gathers and arrange the fullness with every few stitches.

The amount of fullness will determine the space between the stitches. Increase or decrease the space according to the fullness.

Heavy thread for the gathering is unattractive and should not be used. Use a coarse needle and fine thread when there is much strain; the needle makes a large hole, and the gathers slip easily with less strain on the thread.

Mitered Corners

To miter two strips of cloth, make a diagonal fold at the end of one strip by placing the end exactly in line with the side of the strip. Crease open the fold and cut on the crease.

Cut the other strip with a corresponding bias.

Place the right sides of the strips together, with the two ends even. Baste and stitch.

Press the seam open and trim off the ends of the seam which extend beyond the square.

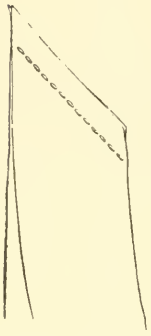

Fig. 75. Two strips seamed for a mitered corner

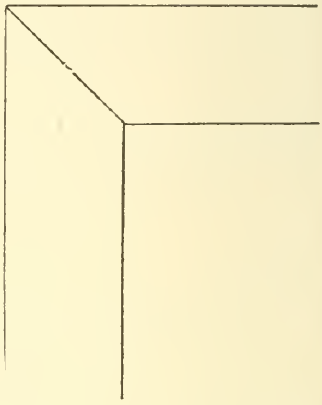

Fig. 76. The right side of the mitered corner

To miter the corners of a hemmed square. 1. Fold and crease the hems along the sides of the square.

Open the creases of the hems at one corner and make a pinhole where the creases of the second turn of the hems cross each other.

Make a diagonal fold across the corner, creasing a seam's width outside the pinhole. Measure carefully to get the two sides of this triangle the same length.

Open the fold and cut along the diagonal crease.

Fold and baste the hem along one side of the square.

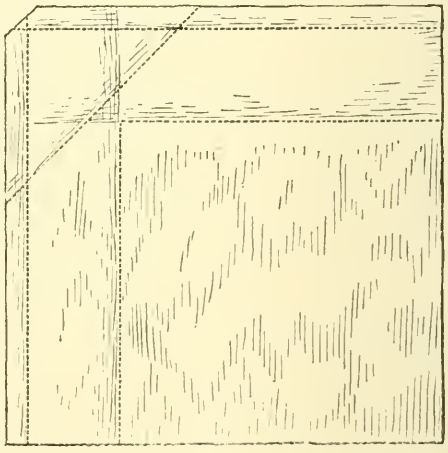

Fig. 77. A mitered corner. The corner creased for cutting

Make one turn along the diagonal of the second hem, from the outer edge to the corner.

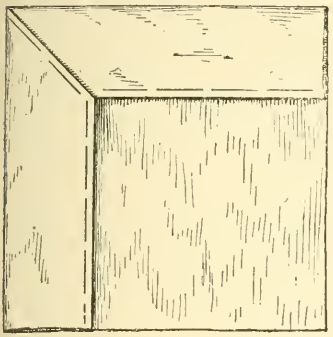

Fig. 78. A mitered corner. Corner cut and seams basted

Fold and baste the hem along the second side of the square.

Baste the bias fold of the corner and hem, taking the stitches through one thickness only.

2. A second method of finishing a mitered corner often gives better results on soft or loosely woven material.

Crease the hems the required width on two sides of the square.

Mark the point for the diagonal turn by opening out both hems and placing a pinhole where the creases of the second turn of the hems cross.

Make a diagonal turn toward the wrong side exactly in line with the pinhole.

Fold the two right sides together across the corner with the outer edges of the square even.

Overhand the two diagonal folds.

Cut off the triangular piece of cloth a seam's width beyond the diagonal fold.

Turn the corner right side out. Crease, baste, and finish the hems.

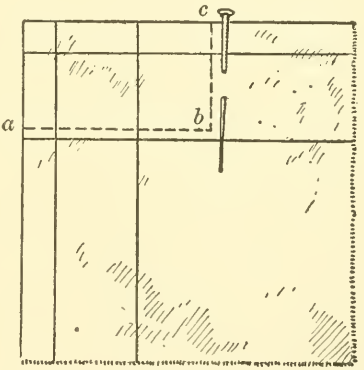

Fig. 79. Showing the method of cutting extra material from the corner of a hemmed square. The lines on which to cut are *ab* and *bc*

3. Another method of cutting out the unnecessary material from the corner of a hemmed square is similar to the miter.

Fold and crease the hems the required width.

Mark with a pin the line where the second hem overlaps the first.

Open out both hems.

Cut out a rectangular piece on the first hem turned. Cut to within a seam's width of the second turn of the hem and to within a seam's width of the pin which marks the line of the overlapping hem.

Crease and baste the first hem; crease and baste the second.

Baste and hem along the line where the second hem overlaps the first. Overhand the two folded edges from the corner along the width of the second hem.

Plackets

A placket is a finished opening in a garment, used for ease in putting the garment on, and, in the case of the tailored shirt-waist sleeve placket, for ease in ironing.

Length of placket. To find the required length of a placket, subtract the measurement of the body, where the garment is confined, from the measurement of the largest part of the body over which the garment passes when being put on. Divide by two and add from two to four inches for ease.

Example. Find the required length of the skirt placket if the waist measure is 24″ and the largest hip measure is 44″. Subtract the waist measurement 24″ from 44″. Dividing the remaining 20″ by 2, gives 10″, the shortest possible length. Add from 2″ to 4″ for safety and ease.

The edge finishes for plackets may be hems, bindings, facings, half-bindings, and half-facings, or a combination of two of these methods.

Place of plackets. A placket may be an opening in the upper part of a seam or it may be a gash in the material.

Lap of plackets. The general rule for fastening women's and children's garments which close in the front or in the back is to lap the right side over on the left.

For the opening at the hip there is a variation; drawers should fasten with the back lapped over the front, while skirts fasten with the front over the back.

For sleeve plackets at the end of the elbow line, the top of the sleeve laps over the under half; at the end of the sleeve seam, the under half laps over the top.

Double-hemmed placket. This is a strong, easily made placket but with limitations as to its use. It can be used only on full breadths or where a plait of fullness at the end of the placket will not be objectionable. It is especially satisfactory for a petticoat with a full back, an infant's slip, front opening on a sack nightgown, and, when the hems are very narrow, on a shirt-waist sleeve.

The hems may be of the same width, both wide or both narrow, or the hem of the upper lap may be much wider than that of the under lap. The required lap of the garment, the material, and the effect desired will determine the width of the hem.

Method of making. Cut the placket the required length. For a placket with an inch hem for the upper lap and a quarter-inch hem for the under lap, cut at the end of the gash horizontal gashes in both directions, each one-eighth inch, or the width of the first turn of the hems.

Hold the top of the garment up with the right side out and the placket line toward the body.

Turn a hem one inch wide on the right side of the gash toward the wrong side of the garment. Keep the hem uniform in width throughout the entire length.

Turn a hem one-fourth inch wide on the left side of the gash toward the wrong side of the garment.

Finish both hems with machine stitching or hand hemming.

Lap the wide hem over the narrow one until the outer edge of the narrow hem is directly in line with the stitching of the wide hem.

Baste across the end of the placket to hold the hems in place, and finish with two horizontal lines of stitching, one-eighth inch apart. Place both rows just below the end of the gash.

Suggestion. If the hem of the under lap is wider than the sum of the two first turns, the horizontal gashes at the end of placket must be lengthened to allow the hems to be folded over smoothly.

Placket with continuous binding. This placket is used on drawers, bloomers, gored petticoats, gored dress skirts, shirt-waist sleeves, etc. It is strong for the strain of wearing, but frequently pulls out at the end from the strain of ironing.

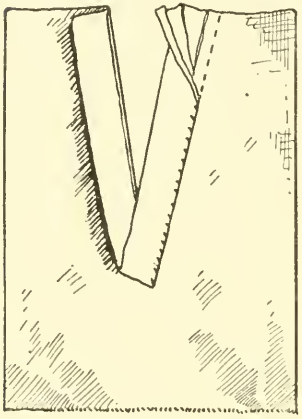

FIG. 80. A placket finished with a continuous binding

Method of making. Cut the gash the required length. For the binding, cut a strip with the warp threads, twice the length of the gash; and with the woof threads, twice the required width of the finished binding plus two eighth-inch seams. The width of the finished binding should be the required lap of the garment.

Place three backstitches at the end of the gash and perpendicular to it.

For a machine-finished binding, place the right side of the binding against the wrong side of the garment, with edges together at the top of the placket. Toward the end of the gash, slip the edge of the binding beyond the edge of the garment until, at the end, it is almost a seam's width beyond.

Make the second side like the first.

Stitch with an eighth-inch seam along the two sides of the gash, taking one stitch beyond the line of backstitching. The seam should be of uniform width throughout its length on the binding side; but on the garment side it should gradually decrease to a few threads at the end of the gash.

Crease and finish according to directions for a machine-made binding.

Crease the binding flat against the garment on the side of the upper lap. The other side extends out beyond the garment directly under the upper lap.

The appearance of the placket is frequently improved by stitching the two laps of the placket together with a diagonal stitching, which ends exactly at the end of the gash.

A reversible placket. This placket is finished with a continuous binding one fourth or three eighths of an inch wide. It is used on garments which may be reversed in wearing so that an upper and under or back and front lap is not desired. The two laps should be joined with a diagonal stitching at the end of the placket.

Caution. When the placket is an opening in the upper part of a seam, care should be taken to make the seam line of the placket finish exactly in line with the stitching of the seam.

Placket with continuous binding, modified. This placket is used on drawers, bloomers, the front opening of combinations, etc. It is more conspicuous than the placket finished with a binding, but is more durable.

Method of making. Cut the gash the required length. Cut the strip for the binding twice the length of the gash, with the warp threads; and twice the width of the finished binding plus two eighth-inch seams, with the woof threads.

Place three backstitches at the end of the gash and perpendicular to it.

Place the right side of the binding against the right side of the garment, slipping the garment away from the edge of the binding so that at the end of the gash the seam is only a few threads wide on the garment side.

Stitch an eighth-inch seam on the two sides of the gash, taking one stitch beyond the line of backstitches.

Crease to the wrong side as a binding.

Determine the proper lap of the placket.

On the upper lap cut out the unnecessary material, cutting to within a seam's width of the center lengthwise fold of the binding and to within a seam's width of the crosswise fold at the end of the gash.

Finish the upper lap as a facing either by hand or machine.

Place a line of stitches across the end of the placket through the facing and garment; use machine stitching if the facing is stitched, backstitching if the facing is hemmed by hand.

Hem the binding by hand.

When finished the upper lap of the placket is faced, and the under lap is bound.

Fastenings

The general rule for women's and children's garments, whether in the front or in the back, is to fasten the right over the left.

Buttonholes

A buttonhole is a slit cut and worked in a garment to admit a button.

The size of the buttonhole for a flat button is the diameter of the button plus its thickness; for a round button it is the diameter of the button plus at least one sixteenth of an inch.

Marking for the buttonhole. Make the proper lap and determine the place for the buttonholes. Mark both ends of the buttonhole with pinholes. The front end of the buttonhole should be at least one-fourth inch from the edge of the garment.

Cutting the buttonhole. Cut with a thread of the cloth. With buttonhole scissors set the gauge for the desired length, place the notch of the scissors at the point marked for the front of the buttonhole, and cut the desired length.

If not provided with buttonhole scissors, use sharp-pointed scissors. Fold the cloth across the center of the space marked for the buttonhole and cut a short gash. Open out the fold, insert the point of the scissors in the gash, and cut in both directions to the points marked for the ends of the buttonhole.

Underneath preparation. Buttonholes are always made in at least two thicknesses of cloth. Use a fine needle and thread. With the wrong side of the garment up, start at the end of the gash that is away from the fold of the garment, and take two running stitches perpendicular to the gash.

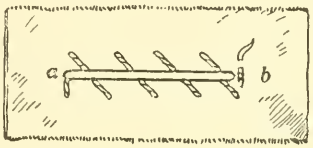

FIG. 81. Underneath preparation of a buttonhole. The slit is from *a* to *b* ; *a* is the front end and *b* the back end

Hold the buttonhole along the cushion of the left forefinger and take from three to five overcasting stitches along the first side. Turn the buttonhole and take a corresponding number of stitches along the other side.

Finish with two running stitches along the back end of the gash, directly over the first ones made.

Application of the buttonhole stitch. Use the size of thread which is suitable for the material on which the buttonhole is to be made.

Work on the right side.

See directions for stitch, p. 29.

Start with two running stitches at the back end of the gash and perpendicular to it.

Hold the gash along the cushion of the left forefinger and cover the lower edge with a line of buttonhole stitches.

Fan end. When the last stitch that can be placed perpendicular to the gash is made on the lower edge, take three to five stitches around the end with all stitches radiating evenly from the corner, and the purl of the stitches placed close together.

Turn the work and continue with the buttonhole stitch along the second side of the gash.

Barred end. Without turning the work, place the needle through to the wrong side at the point marked by the depth of the first buttonhole stitch. Take a stitch to the right side, bringing the needle through the point which marks the depth of the last buttonhole stitch.

Draw up the thread to make a firm stitch. Repeat this stitch twice.

Turn the work with the buttonhole toward the body and the thread bar along the left forefinger. The thread is at the left of the bar. Blanket-stitch across this bar with about eight stitches, taking up a thread of the cloth with each stitch. The purl of the blanket stitches should be on the buttonhole side of the bar.

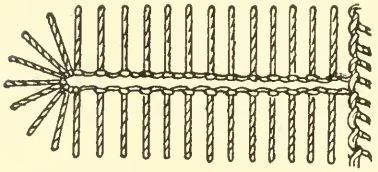

FIG. 82. A buttonhole with a fan end at the front and a bar at the back end

To finish, complete the purl of the last blanket stitch by placing the needle at the right of the last stitch and through to the wrong side. Take a double stitch on the wrong side.

The width of the bar should be exactly the width of the first buttonhole stitch plus the last. The bar should be exactly at the end of the gash and perpendicular to it.

The purpose of the bar is to protect the buttonhole from the strain of the fingers in buttoning the garment and from strain in ironing.

Blanket-stitched fan. A more attractive fan end can be made by substituting blanket stitches for buttonhole stitches. The purl of the blanket stitch is lighter and naturally less strong than the purl of the buttonhole stitch, but more blanket stitches can be used, thus adding strength by an increase in the number of stitches.

Method of making. When the last buttonhole stitch is made along the first side of the buttonhole, turn the work until the thread from the cloth is at the left. This is the position for the blanket stitch, with the purl down and progress from left to right. Make seven blanket stitches, radiating from the point of the front end. Turn the work until the thread from the cloth is at the right, and the second side of the buttonhole is in position along the left forefinger. Continue with the buttonhole stitch along the second side.

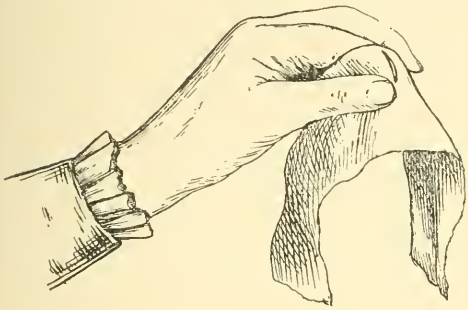

FIG. 83. Showing the position of the cloth for making the buttonhole

Kinds of buttonholes. Buttonholes may be named according to their end finish; as, fan and barred.

They may be named according to their use; as, end and inclosed buttonholes.

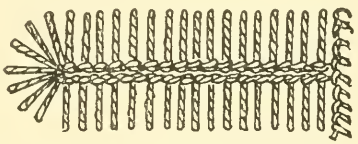

FIG. 84. An end buttonhole

An end buttonhole is one which, when the garment is buttoned, has the buttonhole pulled at one end around the button. An end buttonhole is finished with the front end a fan, the back end barred.

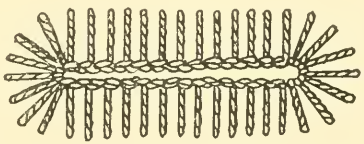

FIG. 85. An inclosed buttonhole

An inclosed buttonhole is one which, when the garment is buttoned, leaves the button in the center with no strain at either end. An inclosed buttonhole is finished with both ends alike, either two fan ends or two

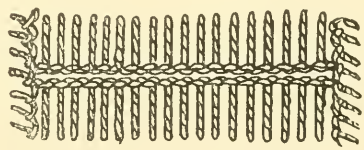

FIG. 86. An inclosed buttonhole

barred ends; the general finish of the garment and the effect desired will determine which should be used.

A good buttonhole requires a tight, even purl; stitches of uniform depth and space, perpendicular to the edge. Make the stitches as shallow as the strength of the buttonhole and the character of the cloth will allow.

Suggestions. In general, overcast the buttonhole with thread one size finer than that used in making the garment. Buttonhole with three sizes coarser than that used for overcasting.

If the material on which the buttonhole is to be worked frays badly, reënforce by basting a piece of firm, fine cloth on the wrong side. Work the buttonhole through all thicknesses and cut away the extra cloth up to the buttonhole stitch.

To prevent the raveling of the edge while overcasting, mark for the buttonhole and place a row of machine stitching on both sides of the buttonhole line; cut the gash between the two lines of stitching.

Buttons

A button is a catch of metal or other material over which the buttonhole is slipped in fastening the garment. Buttons are made of many materials and in many shapes (see p. 147).

For convenience in sewing on, buttons are made with two holes, four holes, a wire shank, or self shank.

Mark and make the buttonholes first.

Marking for buttons. Make the proper lap. Insert a pin in the cloth at the front of the buttonhole, taking up a few threads at the point where the button should be placed. Test, by pulling the buttonhole against the pin if it is an end buttonhole. With an inclosed buttonhole, the mark, when tested, should be exactly in the center of the buttonhole. Mark for all buttons and test the entire lap before sewing on any buttons.

Method of sewing on. In general, use a single thread at least one size coarser than that used for the buttonhole. Start with a knot and double stitch on the right side at the place marked for the button.

Two-hole button. With the button in place take a stitch up through one hole, across, and down through the other. Insert a pin under this thread above the button. Continue with the number of stitches required for the strain on the button. All threads should be over the pin. With the last stitch bring the needle down through the hole of the button and out between the button and garment. Remove the pin. Pull the button up into the loop of thread. Wind the thread in the needle several times around the threads under the button to make a thread shank. Fasten with one or two double stitches close to the shank.

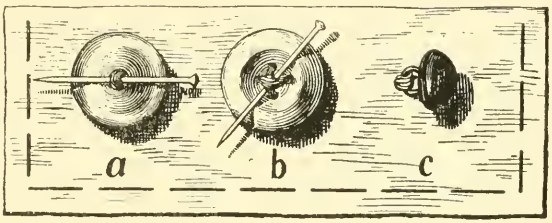

FIG. 87. Showing *a*, a two-hole button; *b*, a four-hole button; *c*, a shank button

Purpose of the thread shank. The space under the button made by the shank gives sufficient room for the buttonhole and prevents strain on the garment under the button when the garment is ironed. If the iron hits the button, the thread shank allows the button to move and often prevents tearing the garment.

Four-hole button. The method of sewing on four-hole buttons is similar to the two-hole. Regularity in arrangement of stitches is necessary for neat appearance on both the right and the wrong side. The threads may be crossed on the right side with two parallel lines on the wrong side, or the reverse order may be followed. The beginning, the fastening of the thread, and the making of the thread shank are the same as for the two-hole button.

Caution. Slant the needle slightly toward the center of the button in all stitches taken down through the two-hole or four-hole button. This makes a shorter stitch on the wrong side and prevents the puckering of the cloth where the shank is made.

Suggestion. Place two-hole buttons with the holes in line with the buttonhole. There is less strain on both the button and buttonhole by this method.

Place a shank button with the loop of the shank in line with the buttonhole.

Hooks and Eyes

There are two kinds of hooks and eyes in general use — the hump hook, which has a bent wire acting as a spring to hold the hook firmly in the eye, and the swan-bill hook, which has no spring nor hump and is used only where the strain of the fastening is sufficient to prevent its unfastening.

Eyes are of two kinds: the loop eye, which is used on the edge of a garment where there is some strain; and peets, which are wire bars used where there is less strain, where the fastening is not on the extreme edge of the garment, or where an inconspicuous and flat fastening is required. Thread loops or bars are used where there is little strain on light-weight materials for an inconspicuous fastening.

The space between the hooks and eyes is determined by their place on the garment and the amount of strain. The distance may vary from a half inch to several inches.

Placing and marking. Mark for the hooks first. Place the front end of the hook one-sixteenth or one-eighth inch back from the edge of the garment. Sew the hooks in position. To determine the positions of the eyes, peets, or loops, make the proper lap of the garment and put a pin through both parts of the garment at the front loop of the hook. The pinhole will mark the place on the under lap for the front of the eye or loop.

Method of sewing on. Spread the rings of the swan-bill hook and the loop eye to distribute the strain. Use a single strong thread. Start with a double stitch. Hold the hook firmly in place and sew around both rings with close overhanding stitches.

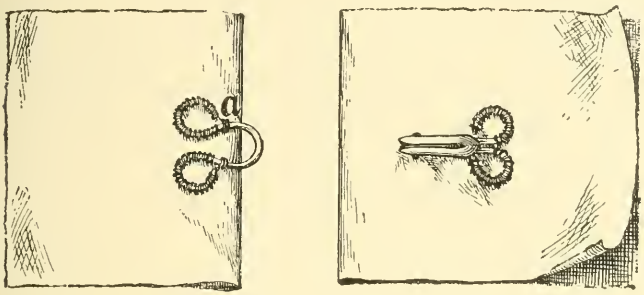

FIG. 88. A hook and eye sewed on with overhanding stitches

Overhand the under part of the hook to the garment as far as the bend. Fasten with a double stitch at the bend; run the needle back underneath the hook to the space between the two rings; take another buttonhole stitch at this point and cut the thread.

In sewing on the hump hook, overhand around both rings; fasten securely with several stitches the space between the rings and the hump; slip the needle under the hump and fasten securely with several stitches the space between the hump and the bend. Slip the needle back under the hook and fasten with a buttonhole stitch between the rings.

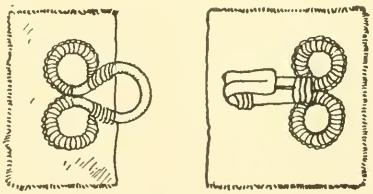

FIG. 89. A hook and eye sewed on with buttonhole stitches

Place the eye according to directions and hold firmly in place. Start with a double stitch. Begin at the outside curve and overhand the rings securely to the garment. Take three or more stitches over one another at each side of the loop where the eye overlaps the edge of the garment (see *a*, Fig. 88). Slip the needle to the opposite ring and take a buttonhole stitch to secure the thread end.

Buttonhole stitches may be used instead of overhanding to join the hooks and eyes to the garment. This method requires more time, but the appearance is more attractive and in case a change of position is necessary, the buttonhole stitch is ripped more easily than overhanding.

Thread loops. Use a single strong thread. Hold the outer edge of the lap toward the body. Start with a double stitch on the wrong side; take a stitch through to the right side and strand across the place marked for the loop with three or four stitches one-fourth inch long. All stranding stitches should begin and end at exactly the same points. The edge of the lap should be toward the body, and the thread should be at the left of the bar, ready for the blanket stitch. Take the first blanket stitch in the cloth at the end of the bar. Cover the bar with blanket stitches placed closely together. Take one blanket stitch at the right-hand end of the bar through the garment. Slip the needle from the right to the left-hand end of the bar, between the two thicknesses of cloth, and finish with a double stitch on the wrong side. The purl of the blanket stitches should be toward the edge of the lap.

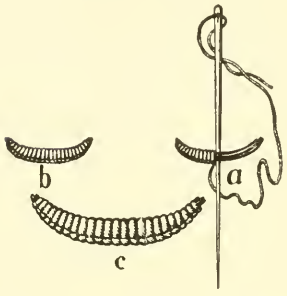

FIG. 90. Thread loops made with blanket stitches. *a*, needle in position; *b*, completed loop; *c*, enlarged loop

In stranding for the bar, short stitches perpendicular to the bar may be taken at each end instead of the underneath stitch in line with the strand on the right side. This method is not so strong, but prevents the finished bar from pulling out of place.

In taking the blanket stitches over the bar, it is more convenient to use the eye of the needle instead of the point.

Buttonhole stitches may be used instead of blanket stitches to cover the bar. If the loop is to be used to fasten over a button, the loop will twist less if made with buttonhole stitches.

Snap Fasteners

The snap, or ball-and-socket, fastener makes a close, flat fastening which is very satisfactory where there is little strain.

The space between the snaps depends on their place on the garment and may vary from less than an inch to several inches.

Marking. Mark for the balls on the inside of the upper lap. They should be on or near a line of stitching, if possible. When the balls have been attached to the garment, make the proper lap. Press the balls firmly against the under lap. On most materials this will make sufficient impression to be seen and marked with a pin. If the material does not give the impression readily, rub the end of the ball with tailor's chalk and mark the under lap in this way.

Method of sewing on. Use a single, strong thread. Start with a knot to be concealed under the ball. Hold the ball firmly in place. Take several overhanding stitches in each hole on the edge. The number of stitches in each hole will be determined by the size of the fastening and the strain. When taking the stitch from one hole to the next, slip the needle between the two pieces of cloth on which the ball is sewed. Finish with a buttonhole stitch drawn tight and slip the needle through to the opposite edge of the ball before cutting the threads.

Attach the socket according to the directions given for the ball.

In using snaps or hooks and eyes on garments to be laundered it is very necessary to get those which are rust-proof.

CHAPTER V

MENDING

Darning

Use. Darning is that method of mending by which the worn or thin parts of a garment are replaced or strengthened by threads which form a texture similar to that of the garment.

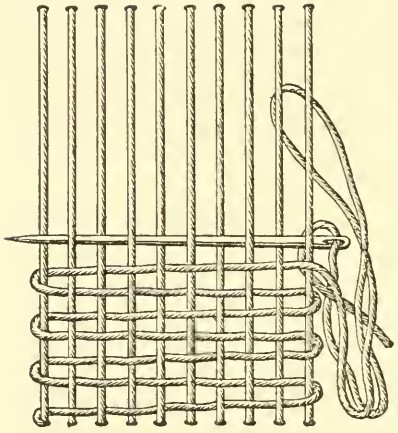

Fig. 91. Showing the weaving of threads used in darning

Stockinet darning. Stockinet is a knitted fabric used for undervests, union suits, stockings, etc. The woven darn is used on this material to fill the hole and reënforce the worn parts around the hole.

Method of making the woven darn. Use a darning needle of convenient length and loosely twisted darning cotton, satisfactory in color and size. The number of strands used is determined by the texture of the garment. If a darn is made thicker than the surrounding material, it will tear out the thin part around the darn. If the darn is thinner than the material, it will not wear satisfactorily.

Work on the wrong side. Never use a knot. Cut away all ragged edges and ravelings from the hole. For a large hole use a flat darning ball or a circle of cardboard.

The darning stitches are arranged in the shape of a diamond or a square on its diagonal. By this method the longest warp

and woof threads are placed through the center of the hole and the worn part is reënforced an even distance from the hole.

Hold the stockinet lengthwise over the darning ball or cardboard and begin with the warp threads, the required distance at the right of the hole. The darning stitches outside the hole may be taken through the cloth or they may be taken through the loops on the wrong side of the stockinet.

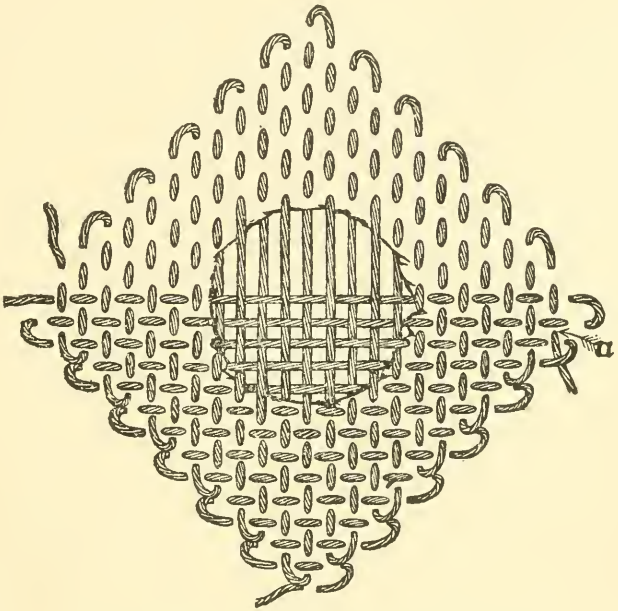

FIG. 92. Showing a hole partly darned

Strand across the hole. With every stranding stitch place the needle to the right side of the garment through the loops on opposite sides of the hole.

Leave a loop about one sixteenth of an inch long at every turn of the thread to allow for the stretching of the stockinet.

If a very large hole is to be darned, begin with the longest threads through the center. This method will hold the work in shape.

Reënforcing a thin place in the stockinet garment. Very satisfactory results are obtained in darning thin places by taking up the loop on the wrong side. No darning stitches show on the right side, but the thin place is reënforced sufficiently to prevent a hole for a time. Use this method on the heels of stockings just above the line of low shoes.

A dropped stitch in a stockinet garment ravels out quickly and makes a "run" or "Jacob's ladder." If only one stitch has dropped, pick up the loop at the lower end of the run with a crochet hook and crochet to the top of the run. Darn the beginning and the end of the run to secure the loops.

If the texture of the stockinet or the length and width of the run make the preceding method impracticable, mend with fine drawn darning (see p. 96) or the woven darn.

Grafting

Use. Grafting is the joining of two pieces of stockinet in a way to render the joining invisible.

Method of work. Use a darning needle and yarn to match the stockinet. Ravel the two edges that are to be joined until the loops are even and clear.

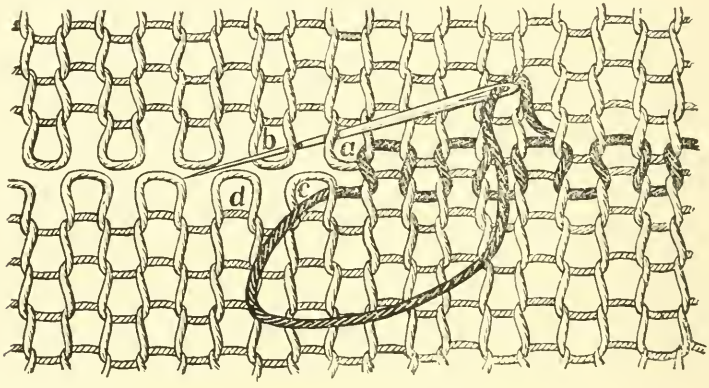

Fig. 93. Showing grafting stitches and needle in position

Place the edges together with the loops of one opposite the corresponding openings of the other (Fig. 93).

Hold the right side of the garment toward the body and work from right to left. Fasten the end of the yarn by darning it in and out on the wrong side at the right-hand end where the joining is to begin.

Insert the needle in an upper loop (Fig. 93, *a*) and take a stitch through the next loop. Insert the needle in the under loop, opposite the last stitch, and take a stitch into the next loop.

Continue, taking two upper loops, then two under loops, using one new loop with every stitch. By this method the needle is inserted twice in each loop.

Fasten the yarn by darning it in and out on the wrong side.

Swiss Darning

The stitches in Swiss darning are taken in a manner similar to grafting, but are worked over the stitches in the stockinet.

A patch set in by grafting and Swiss darning can be made almost invisible by using the following method:

Cut a square or oblong hole in the stockinet following a thread of loops. Ravel the sides until the loops are even and free.

Cut the patch large enough to fit the hole, cutting by a thread.

Graft in the top and lower edges and Swiss-darn the edges along the sides, working over four or five stitches at each side of the joining.

Ordinary machine-made stockinet is too fine for this type of mending, but heavy sweaters and similar garments may be mended successfully by this method.

Stocking-web Darning

Use. Stocking-web stitches are used to fill a hole in stockinet when the darn is to match the garment in both texture and appearance. The stitches are made on a foundation of thread strands.

Method. Use a fine long-eyed darning needle and heavy cotton thread for the stranding.

Place the ribs of the stockinet in a vertical position and baste the garment to a piece of stiff paper or cardboard; place the wrong side of the garment next the stiff paper with the hole to be darned at the center.

Cut a rectangular hole and ravel the edges until the loops are even.

Connect the upper and lower loops with stranding stitches (Fig. 94).

Use yarn to match stockinet and a suitable darning needle. Insert the needle one or two loops to the right of the lower row and one row above (Fig. 95, *a*).

Swiss-darn the loops at the right of the hole (p. 95, *a*) and work across the strands with stitches similar to grafting (Fig. 93). Insert the needle between the strands for the beginning and finishing of the loops. Finish the row by Swiss-darning over two or three loops at the left of the hole.

Turn the work around and make the second row similar to the first.

Continue working up the strands and finish by grafting the last row of loops in the web-darn to the loops of the stockinet.

Use this method of darning on heavy sweaters or other garments made with heavy yarn.

Cloth Darning

Use. Cloth darning is used to strengthen worn places on a garment or to draw together and hold securely the edges of a tear or cut. This method is less conspicuous than patching.

Method. Always darn on the wrong side. For the darning use threads which match the garment in color and are strong and fine. Ravelings of cloth like the garment, split strands of sewing silk, or fine cotton thread are satisfactory.

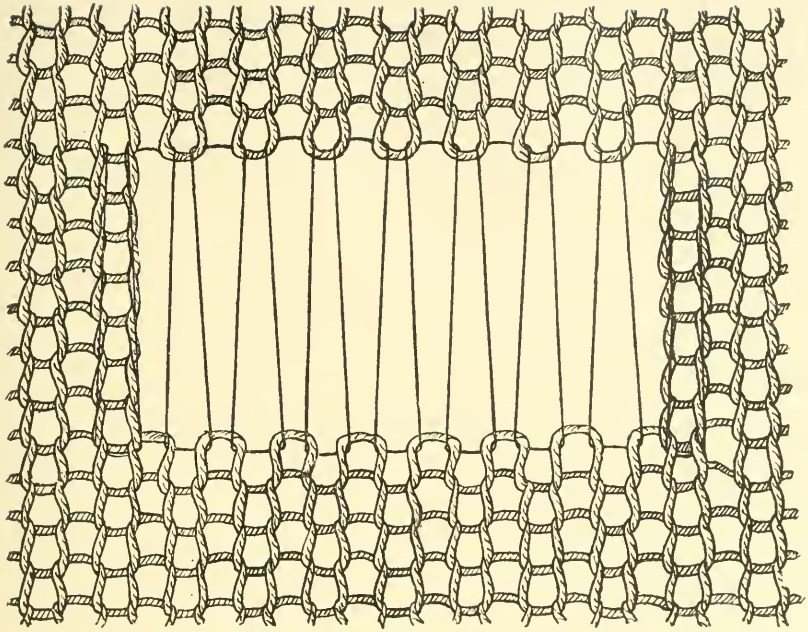

FIG. 94. Foundation of strands for stocking-web stitches

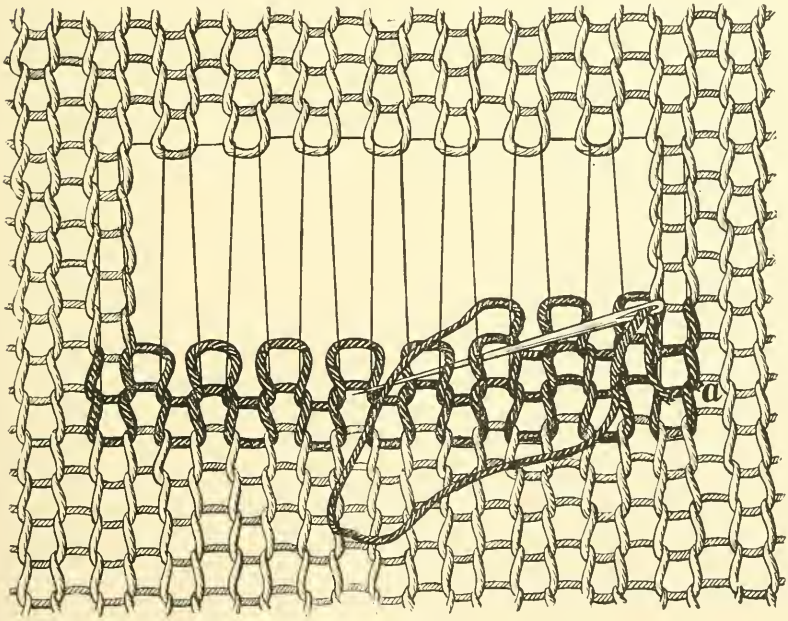

FIG. 95. Stocking-web stitches

Straightway tears may be with the warp or with the woof threads. Hold the wrong side of the garment up with the edges together or basted to a piece of stiff paper.

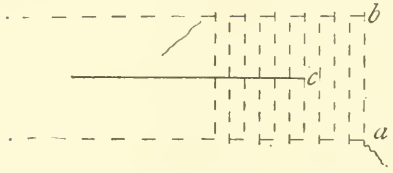

FIG. 96. Straightway tear, partly darned with vertical stitches

Darn across the tear, placing the stitches with the threads of the cloth (Figs. 96 and 97). Leave the darning thread loose enough at the turn to avoid any tendency to pucker.

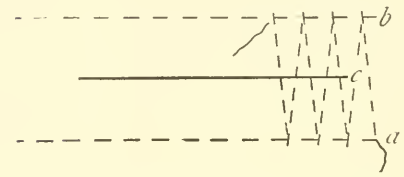

FIG. 97. Straightway tear, partly darned with slanting stitches

Do not use knots or double stitches in darning.

The bias or diagonal cut must be darned with stitches in line with the warp or woof threads of the cloth (Fig. 98).

Corner darn on a hedge tear. This type of tear should be mended along the two sides according to the directions for the straightway tear. The corner may be mended in two ways:

1. Radiating stitches forming a fan, with a sufficient number of stitches to hold the corner firmly, may be used (Fig. 99).

2. With some materials the corner is finished more satisfactorily by continuing the straightway darn in both directions beyond the tear and making a double corner. This is stronger than the fan if the threads at the corner have been pulled, and it has the advantage of being finished with all stitches placed with the warp and woof threads of the cloth.

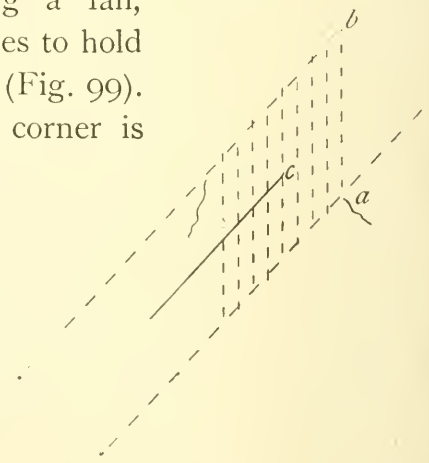

FIG. 98. Diagonal cut, partly darned. From *a* to *b* is the line of the warp threads. *c* represents the cut

Cloth darning reënforced with a stay on the wrong side. If the material is thin, if there is much strain on the mended part of the garment, or if the material around the tear is thin or frayed, use a stay.

The material for the stay may be the same as the garment or it may be very much lighter in weight. Chiffon and net are often used to stay the darning on a silk or woolen garment.

Place the stay on the wrong side of the garment and match the threads of the stay with the warp and woof threads of the garment.

Darn on the wrong side through the stay, if light weight, into the garment. The darning stitches are scarcely visible on the right side.

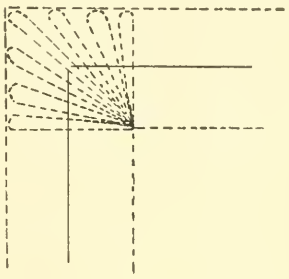

FIG. 99. A hedge tear with corner darned with radiating stitches

When the stay is of heavy material the darning must be done on the right side, through the garment into the stay.

Finish the edges of the stay by the method best suited to the material used. The edges of the stay may be catchstitched to the garment or they may be cut a narrow seam's width from the darning, and overcast.

FINE DRAWING ON HEAVY MATERIAL

Fine drawn darning is an especially satisfactory method of mending a cut on heavy material.

Use split silk and a fine needle. Place the edges close together and baste them with the right side against a piece of stiff paper.

Work on the wrong side. Insert the needle through the edge of the cloth and take the stitch far enough from the edge to prevent raveling.

Insert the needle in the opposite edge, a short distance down from the first, and take a second stitch (Fig. 100).

Draw the edges together firmly with each stitch and continue.

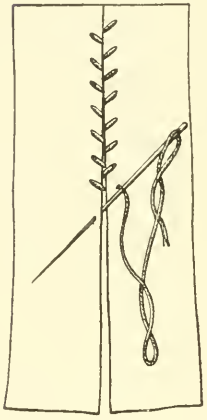

Fig. 100. This is the stitch used in fine drawn darning

To strengthen. Darn across the entire length of the tear. Use split silk for the darning and take no stitches through to the right side.

Remove from the paper, brush up the nap if there is any, place a damp cloth over the right side of the darn, and press. Remove the iron before the press-cloth is dry, to avoid a shine on the garment.

Fine Drawn Patch

Cut the hole to a rectangular shape. Match the material of the patch to the garment, matching warp, woof, figure, nap, etc. Cut the patch the exact size of the hole.

Baste the right side of the garment to a piece of stiff paper with the hole at the center. Baste the patch in place.

Join the edges of patch and garment according to the directions given for fine drawing.

Hemmed Patch

The hemmed patch is used on garments and on household linen where a strong patch is necessary to withstand the strain of frequent laundering and where the conspicuous appearance of the overlapping material around the hole is not objectionable. It is used on muslin underwear, sheets, etc.

Method. Cut the hole to a rectangular shape, cutting the sides with the warp and woof threads.

Fold the garment with the warp and woof threads, creasing through the centers of the four sides of the hole.

Cut a patch at least one inch longer and wider than the hole. Use material for the patch that matches the color and weight of the garment at the time it is mended.

Fold the patch through the center in both directions, making the creases with the warp threads and with the woof threads.

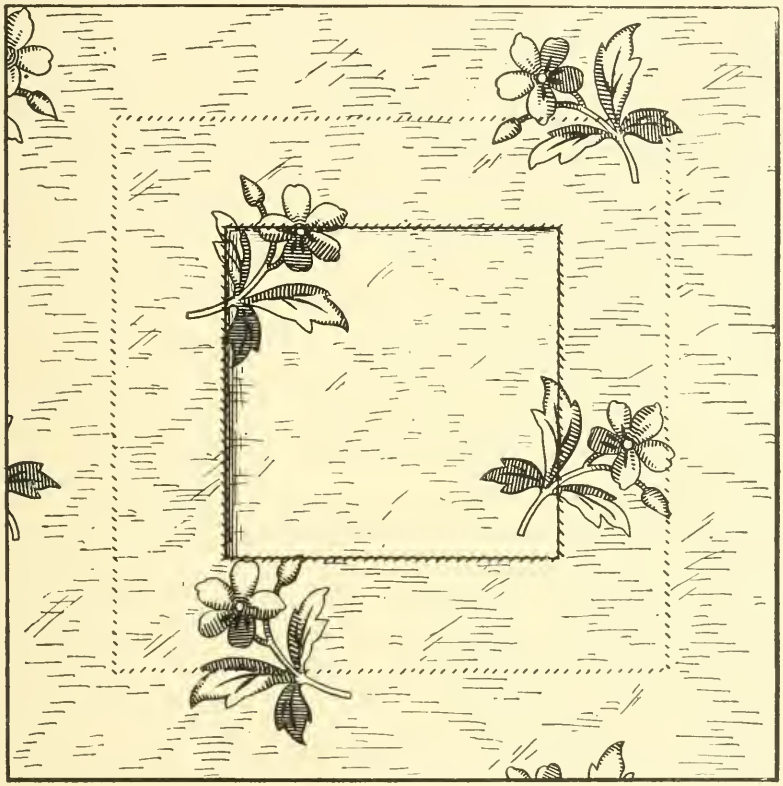

FIG. 101. A hemmed patch

Place the right side of the patch against the wrong side of the garment, with warp and woof threads and figures and creases matching. Pin in place.

Cut small triangular pieces from the four corners of the patch to make the turns less bulky.

Turn in the raw edges of the patch an even seam's width on the four sides. Baste the patch to the garment.

Turn in the raw edges of the garment an even seam's width on the four sides. With diagonal cuts, gash the four corners the required depth. Baste the garment to the patch.

Hem the garment to the patch and the patch to the garment.

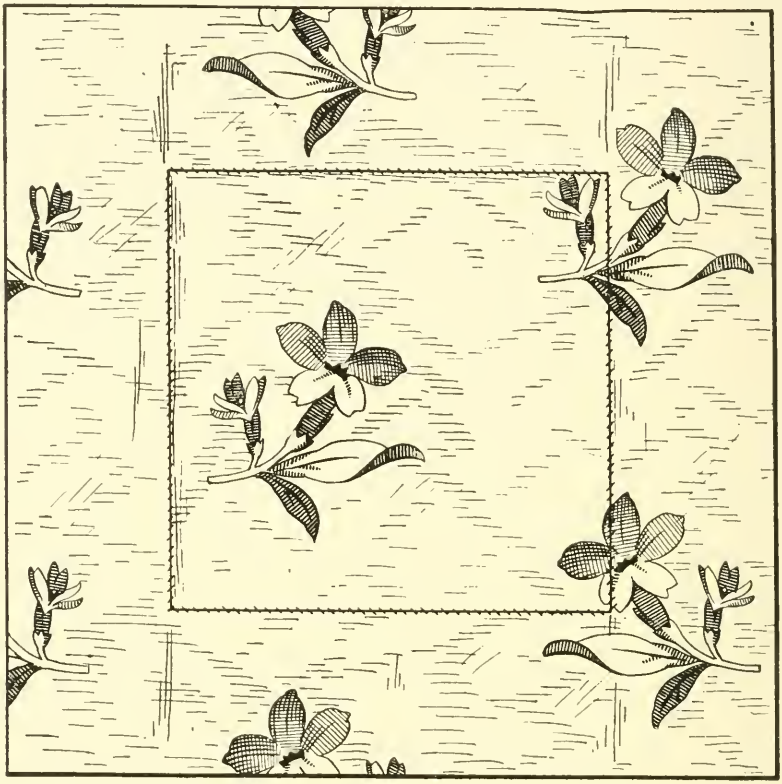

FIG. 102. The right side of an overhanded patch

The counter hem, or the space between the two lines of hemming stitches where garment and patch overlap, may vary in width. If the thin part of the garment around the hole is cut away, the counter hem may be as narrow as one-fourth inch. If only the worn part of the garment is cut away, the thin part around the hole should be reënforced by a wide counter hem.

The width of the turns on both patch and garment will vary with the type of material used.

Overhanded Patch

The overhanded patch is used where the hole is too large for darning and where careful matching of the materials is

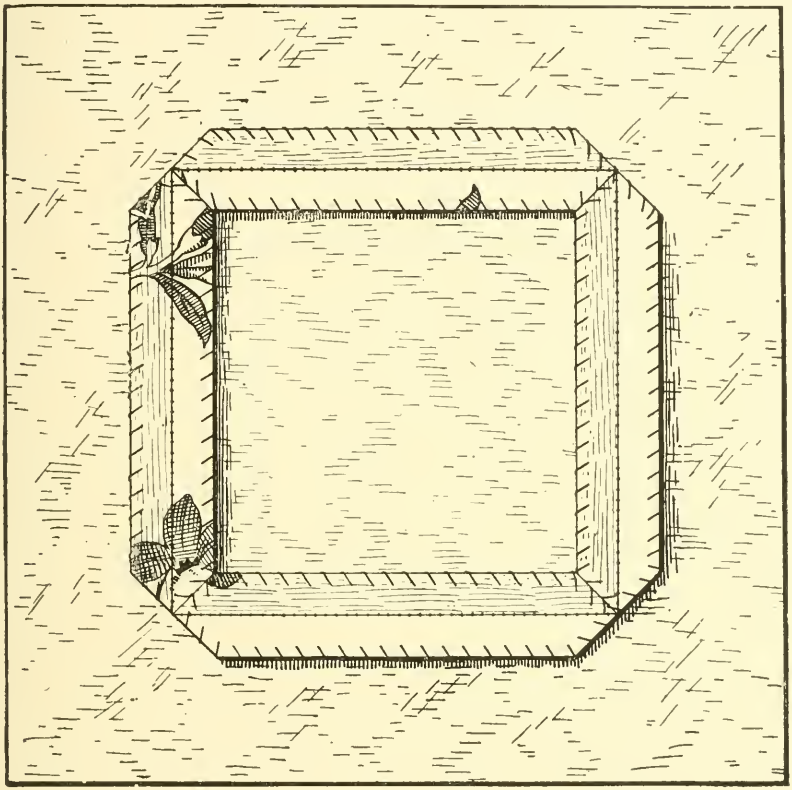

Fig. 103. The wrong side of an overhanded patch

necessary for an inconspicuous patch. It is used on dresses, coats, etc.

Method. Cut the hole to a rectangular shape, removing all thin and ragged edges. Make one turn an even seam's width to the wrong side of the garment on the four sides of the hole. Cut diagonal gashes in the four corners to the point where the creased lines intersect.

Caution. Do not gash beyond the creased line.

Hold the garment right side up and match the patch to the hole. Make one turn along the top of the patch at the place necessary for matching the figures with those of the garment. Match warp and woof threads of patch and garment.

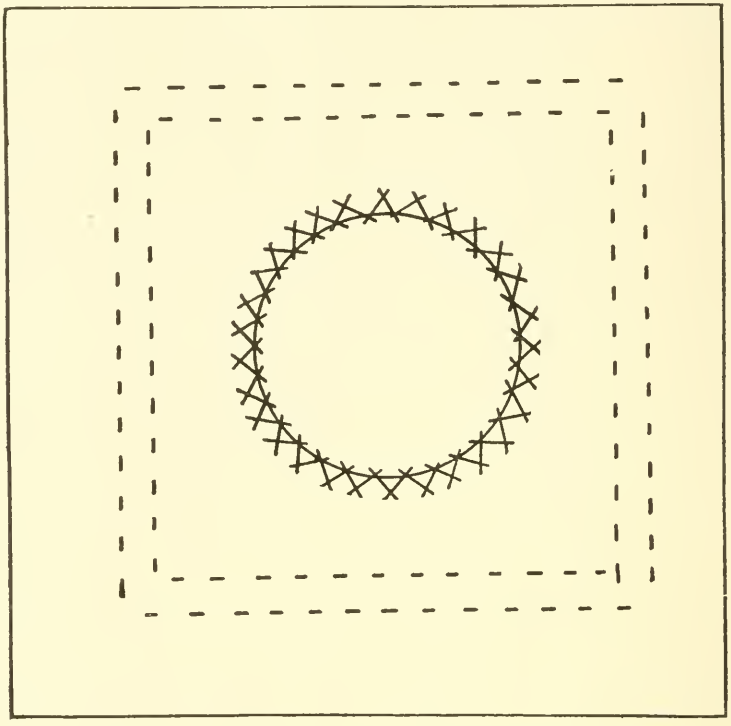

FIG. 104. The right side of a catchstitched patch

Place the right side of the patch against the right side of the garment with folded edges matching. Baste the two together near the folded edges.

Match the side of the patch to the garment, make one turn toward the wrong side of the patch. Baste with the two right sides together.

Continue around the four sides of the hole.

Overhand the patch to the garment with shallow overhanding stitches. Do not pucker the seam by drawing the thread too tight.

Cut an even seam on the patch.

Miter the corners of the patch if necessary. The mitered corner is less bulky and is less strong.

Overcast the two edges of the seam separately.

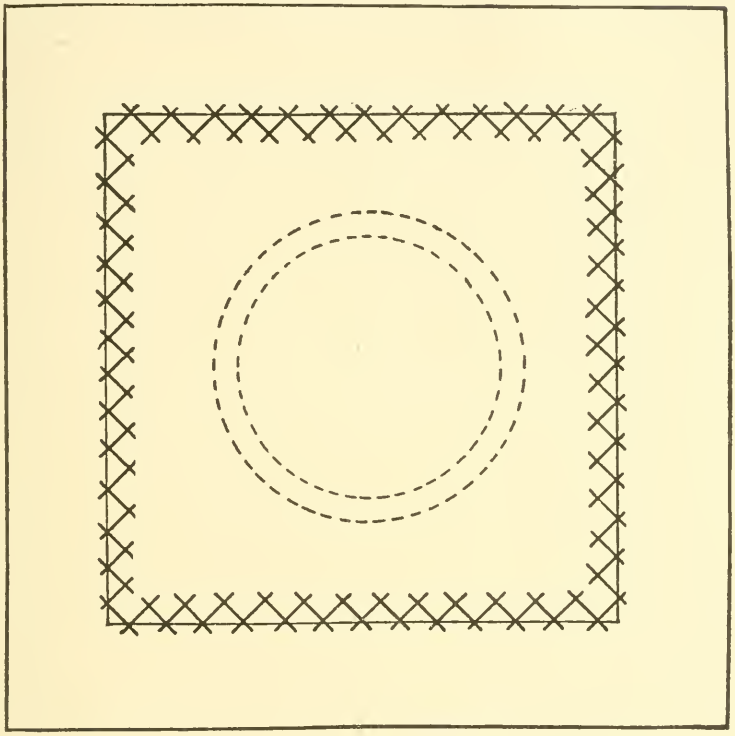

FIG. 105. The wrong side of a catchstitched patch

CATCHSTITCHED OR STOCKINET PATCH

This patch is used on knitted garments where the hole is too large to darn. Catchstitching is the only stitch that will stretch with the stockinet. It is used on undervests, stockings, etc.

Method. Cut away all frayed and ragged edges, making a clean round hole. Crease with the lengthwise ribs through the center of the hole. Crease across the ribs through the center. Mark the lines outside the hole with pins or bastings placed

in vertical and horizontal positions to mark the center lines for the application of the patch.

Cut a rectangular-shaped patch of material like the garment, at least an inch and a half larger than the hole. Crease the patch through the center in the two directions and mark the creases with pins or bastings.

Place the right side of the patch against the wrong side of the garment, lengthwise and crosswise creases together and ribs matching. Pin and baste the patch to the garment and the garment to the patch.

Use darning cotton and catchstitch the garment to the patch and the patch to the garment.

If the patch is in a conspicuous place like the knee of a stocking, darn the edge of the garment to the patch.

CHAPTER VI

MACHINES

The machine is an important part of the sewing-room equipment. Much personal and household sewing can be done by machine as well as by hand, with a great saving of time. Machine sewing should not mean careless sewing; good creasing and careful basting are as essential preparations for machine sewing as for hand sewing. An intelligent knowledge of the machine and its adjustments is the next step toward good results. A high standard and correspondingly beautiful work should be the aim.

Kinds of machine. There are two kinds of machine, the chain-stitch (single thread or automatic) and the lock-stitch (or two-thread). The names suggest some of the characteristics of each.

The chain-stitch machine is a small, light-running machine. The Willcox and Gibbs, Singer, and National are examples of this type. The fact that there is no under bobbin makes extremely simple the complete threading with a single thread. The tension is automatic, leaving the length of stitch the one adjustment to be made. This machine costs more than the two-thread, the chain stitch rips if not securely fastened, and all stitching must be done on the right side. These facts are responsible in part, at least, for certain prejudices against a very satisfactory type of machine.

The lock-stitch machine is the type most commonly used in homes and schools. The Singer, New Home, Standard, White, etc. are examples. This is a larger, heavier machine

than the chain-stitch, and with the upper and under threading and additional number of adjustments it requires more careful study.

Learn the name and purpose of the following parts of the machine, and with the help of the book of directions, which comes with every machine, learn the position of each on the machine.

Treadle	Presser-foot bar
Belt wheel	Presser-foot lever
Balance wheel	Tension releaser
Stop-motion	Thread cutter
Upper tension	Feed
Take-up lever	Under tension
Presser-foot	

When learning to use a sewing machine, remember that it is both expensive and complicated, and do not attempt to control all the parts at once.

Order in which the parts of the machine control should be learned: 1. *Treadle.* Release the belt from the balance wheel. Sit squarely in front of the machine and in the beginning place both feet on the treadle. Start the motion with the belt wheel by hand, catch the motion with the feet, and practice until the belt wheel can be easily and smoothly revolved in either direction by means of the treadle.

2. *Balance wheel.* Connect the large and small wheels with the belt. Start the machine by turning the balance wheel with the right hand. This motion is carried by means of the belt to the belt wheel and by means of the rod to the treadle. Catch this motion with the feet and continue with even treadling.

3. *The relation of presser-foot and feed and the action of the feed.* When lowered against the cloth the presser-foot presses it against the feed. The feed with its sharp teeth

carries the cloth toward the back with each stitch. Try the action of these two parts by stitching on paper. This offers, in addition, experience in guiding.

4. *The correct threading* of both the upper and under threads is the next step in the order of work. There is a convenient and natural order of threading every machine. By observing the parts, their use and action, few mistakes in threading should be made.

Stitching. When the upper and under parts of the machine have been threaded, draw up the under thread.

Place both threads together toward the back of the machine. This insures a neat beginning.

By a slight movement of the balance wheel determine the correct turn by observing the feed. The direction of the turn which carries the feed back when it is above the surrounding plate is the correct motion for stitching.

Place the cloth in position with the bulk of the garment at the left, lower the presser-foot, and stitch the required distance.

To remove the work, raise the needle to the highest point to complete the stitch. The take-up lever will be at its highest point, thus providing a sufficient amount of thread for the first stitch in the next piece of work. Raise the presser-foot, release the tension, pull the work diagonally back toward the left, cut or break the thread.

Methods of fastening thread ends. 1. Tie the ends with a square knot.

2. Turn the work and stitch back over the completed line for a half inch; cut the threads close to the cloth.

3. Thread one of the ends in a needle and finish with overhanding stitches or a double stitch.

The place on the garment will determine the method to use.

Strong fastening adds to the durability of the garment; neat fastening adds to its attractiveness.

Adjustments to be Made

Tension. The tension regulates the amount of thread to be used in the stitch. Although the machine is provided with both upper and under tension, the adjustments are made by means of the upper tension. The appearance of the stitch is described in terms of upper tension.

" Tight tension " describes the stitch when the upper thread appears as a straight line. Loosen the upper tension.

" Loose tension " describes the stitch when the under thread appears as a straight line and the upper thread shows in tiny loops on the wrong side. Tighten the upper tension.

Perfect tension gives a round appearance to the stitch on both the right and the wrong side of the garment. An equal amount of upper and under thread is used in each stitch and the threads lock halfway between the right and wrong sides of the cloth.

An irregular slant of stitches in a line of machine stitching indicates that the under tension is not working properly. The spring may be bent or loosened or a thread may be caught under the tension.

The stitch regulator is a sliding or stationary screw at the left of the balance wheel. This regulates the movement of the feed determining the length of each stitch.

The kind of material and the size of thread influence the length of stitch. With soft material a short stitch is necessary to avoid puckering.

Presser-foot bar. The screw at the upper end of the bar regulates the pressure of the foot against the feed. Thin material requires a lighter pressure than heavy. The appearance of feed marks on thin material indicates too heavy pressure. Thick materials require a heavier pressure. If the machine does not " feed " easily, increase the pressure.

Suggestions for the Use of the Machine

Never pull or push the work while stitching; guide with a light pressure. A perfectly adjusted machine will stitch a straight line in the direction started, without guiding.

To turn a corner, stitch to the point of turning with the needle down in the corner. Raise the needle slightly, but without raising it to the surface of the cloth. Use the needle as a pivot and turn the cloth in the direction desired for the other line of stitching.

Bias and silk or flannel seams. Use a short stitch and a tension loose enough to allow for the strain of the seam, and thus prevent a puckered seam.

Gathering with loose tension is often more satisfactory than with the ruffler and saves the time that is required for hand gathering. Adjust the length of the stitch according to the amount of fullness and the quality of the cloth to be gathered. Loosen the upper tension. Stitch the length of the space to be gathered with one or two rows. Adjust the gathers by drawing up the under thread.

Caution. Do not try to gather long spaces. Work carefully if fine thread must be used. Do not pull the upper thread by mistake.

Decorative stitching. Wind the bobbin with silkateen, knitting silk, or similar material. Slip the bobbin into the carrier, but do not thread under the spring of the under tension. Thread the upper part of the machine with fine thread or silk. Lengthen the stitch and loosen the tension slightly. Stitch with the wrong side up and the line of heavy silk will be on the right side. Parallel rows of decorative stitching make an attractive trimming.

Attachments

The attachments should not be used until the machine is easily controlled.

Many of the attachments when properly adjusted and skillfully used give satisfactory results with a saving of considerable time for creasing and basting. But time is required for the proper adjustments, and unless the attachment is to be used for a long piece of work it is hardly worth while.

The attachments most often used are the hemmers, tucker, adjustable binder, braider, and ruffler with five-stitch regulator for plaiting.

Care of the Machine

Keep pins and needles away from the feed.

Keep threads and scraps away from the belt.

Keep the machine covered when not in use.

Keep the machine well oiled with a thin, light-colored oil. It is better to use a few drops frequently on the parts where there is friction than to flood the machine with oil at less frequent intervals. The amount that the machine is used will determine whether the machine should be oiled daily or weekly.

Clean the machine thoroughly at least once a month, with alcohol or kerosene. Put the alcohol (or kerosene) in a clean oil can; flood the oil holes with alcohol, run the machine to get the alcohol well into the parts. Let it stand for a few minutes and wipe off all parts carefully. This removes the dried oil and dust. Oil thoroughly. The treadle and belt wheel should be kept clean and well oiled.

Caution. Do not let the alcohol touch the finished woodwork of the machine.

A clean, well-oiled machine wears longer, runs more easily, and gives far better results than the neglected machine.

CHAPTER VII

SOME SUGGESTIONS FOR THE APPLICATION OF STITCHES AND CONSTRUCTION

Plain Sewing Bag

Materials. Use $\frac{1}{2}$ yard of fine checked gingham, chambray, sateen, light-weight cretonne, or similar material, 28″ to 32″ in width.

Use $\frac{7}{8}$ yard of white cotton tape or colored ribbon $\frac{1}{2}$″ wide.

Method of making. Cut the ends even with a thread.

If out of line, pull into shape.

Fold the two right sides together with selvages even, pin and baste.

Side seam. 1. Join the selvages with an overhanded seam. 2. Join with a plain seam, backstitched.

Bottom seam, plain seam, backstitched with raw edge, overcast.

Top. Turn a hem to the wrong side, $1\frac{3}{4}$″ wide. Pin, baste, and hem.

Make the upper line for the casing $\frac{3}{4}$″ up from the edge of the hem with a line of running or combination stitches.

Leave two openings in the side seam for the casing.

Run in tape or ribbon and seam the ends together with a flat fell finished on the wrong side by hand.

Square Pincushion

Materials. Two squares of galatea, sateen, or similar material each $3\frac{1}{2}$″ on a side. Fine sawdust or coarse bran for filling.

Method of making. Place the two right sides together, edges and warp threads matching. Pin, baste, and backstitch

$\frac{1}{4}''$ seam on three sides. In the center of the fourth side leave an opening for filling, $1\frac{1}{2}''$ long. Make square corners.

Crease and baste the cloth to the wrong side on the two sides of the opening, exactly in line with the backstitching.

Turn the cushion, fill, and overhand the two sides of the opening together.

Small Fancy Sewing Bag

Materials. Plain or figured materials in light-weight cretonne, upholstery sateen, chambray, linen, or silk; cardboard for the base; ribbon.

Method of making. Cut two strips of material $13\frac{1}{2}''$ with the warp, $9\frac{5}{8}''$ with the woof.

Cut two cardboard circles, each $3\frac{1}{4}''$ in diameter.

Cut two circles of material, each $3\frac{3}{4}''$ in diameter.

Cut two pieces of $\frac{1}{4}''$ tape or ribbon, each 20″ long.

Crease, baste, and hem the sides of the two strips along the warp threads with $\frac{3}{16}''$ hems.

Turn a hem across the top of the two pieces $1\frac{1}{2}''$ wide. Baste and hem.

Put in the line for the casing, $\frac{1}{2}''$ above the line of hemming, using running or combination stitches.

Place the two right sides of the two strips together. Baste together along the side hems.

Overhand the folded edges of the side hems from the lower edge of the top hem to the bottom of the bag.

Turn, baste, and hem the bottom of the bag with a $\frac{3}{16}''$ hem.

Mark the quarters on the lower edge of bag with pins.

Gather the bottom of the bag, placing the gathering near the outside fold of the hem.

Base. Gather the circle of cloth $\frac{1}{8}''$ from the edge.

Place the cardboard against the wrong side of the gathered piece.

Draw up the gathers, fasten the ends, and with the same thread, strand across from one side of the circle to the other, to hold the cover evenly and firmly over the cardboards.

Repeat with the other cardboard.

Place the two wrong sides of the two parts of the base together, warp and woof threads matching on the edge. Overhand the two edges.

Joining bag and base. Quarter the base and mark with pins.

Place the right side of the bag against the base, with the pins marking the quarters together.

Adjust gathers. Join with an overhanded seam.

Ribbons. Draw in a ribbon from one side of the bag. Knot or seam the ends.

Draw in the other ribbon from the other side of the bag. Knot or seam the ends.

Variations. 1. Longer strips of material may be used and the ends turned up on the inside of the bag for pockets. Make the sections of the pockets by lines of chain or featherstitching on the right side.

2. A second base the size of that used for the bag, covered and overhanded, may be joined with a thread hinge on one side of the base and with ribbons for tying on the opposite side. Flannel leaves may be joined to the outside of the bag base and a satisfactory needlebook is made.

Tomato Pincushion

Materials. Sateen, galatea, silk, wool, batiste, or any soft material which does not show pin marks easily (with silk or wool, of light weight, use a lining of cambric or soft long cloth); fine sawdust, coarse bran, or scraps of woolen material, cut fine, for the filling of the pincushion; heavy embroidery cotton or silk for stranding; lighter weight embroidery cotton or silk for featherstitching.

Method of making. Cut two circles of material for the outside and lining, each $3\frac{7}{8}''$ in diameter.

Place linings against wrong side of material.

Baste the outside and lining together $\frac{1}{2}''$ from the edge.

Mark the centers of each circle of cloth with a white thread on the right side.

Place the two right sides of the circles together and baste $\frac{1}{4}''$ from the edge, leaving an opening $1\frac{1}{2}''$ for filling the cushion.

Backstitch just outside the $\frac{1}{4}''$ line of basting.

Fold the lining and outside toward the wrong side on each side of the opening. Follow the curve carefully for these turns. Baste along the folded edges.

Turn the cushion right side out.

Fill until all wrinkles are smoothed out. Do not make a hard cushion.

Overhand the sides of the opening together.

With heavy thread strand the cushion by dividing it into halves, quarters, and eighths. Begin stranding from the top side of the cushion, placing the needle exactly at the center marks. Leave a $2''$ end of thread. To finish, take an extra stitch through to the top of the cushion and fasten the two ends with knots, a small tassel, or a spider web.

Decorate the seam line with featherstitching.

Emery Bag

Materials. Cloth and lining the same as that used for the pincushion; two pieces of No. 1 ribbon $2''$ long; medium powdered emery.

Method of making. Cut a triangular piece, using as the base the diagonal of a square $1\frac{7}{8}''$ on a side. Cut two outside pieces with two linings the size of the given triangle.

Baste the outside and linings together.

Place the two right sides of the cloth together and baste. Leave an opening in the center of the base of the triangle $\frac{3}{4}''$ long.

Backstitch a $\frac{1}{8}''$ seam on the three sides.

Cut down the seams a little at the corners to remove some of the bulk.

Baste the turns along the two sides of the opening.

Turn and fill with emery.

Overhand the edges of the opening.

Hem one end of each ribbon. Overhand a ribbon securely to each angle at the two ends of the base of the triangle. Draw the ends together and tie the ribbon in a bow.

Sewing Aprons

Many kinds of sewing aprons can be made, the type to be determined by the experience of the worker, the kind of material used, and the time to be spent in the making.

Shapes. Sewing aprons may be rectangular in shape, finished with narrow hems on the sides, and a wide hem, a ruffle, or a deep pocket across the bottom. They may be circular in shape, or they may be made with slightly bias lines along the sides and bottom which form points at the ends of the side lines and a point at the bottom. Many variations of these standard shapes are possible.

Size. A sewing apron should cover the lap, extending from the waist to a little above the knees, and across the front from side to side.

Waistline finishes. The simplest waist finish is a hem wide enough for a casing, through which ribbon or tape may be run.

A binding is the most common and satisfactory finish. The binding may be joined by hand or machine.

The width of the finished binding is approximately an inch, slightly narrower for fine materials and wider for heavy materials.

The length of the binding may be the waist measure plus the lap. A button and buttonhole are necessary additions to this length of binding for fastening.

The length of the binding may be the waist measure plus 20″, 10″ on each end for a short bowknot.

Binding and strings in one piece. Cut the strip the waist measure, plus from 30″ to 40″ for the bow, half on each end. The width should be from $3\frac{1}{2}''$ to $4\frac{1}{2}''$.

Method of making. Measure at the waistline across the front from side to side for the finished width of the apron. This measurement should be from 4″ to 6″ less than the measurement across the front from hip line to hip line.

Fold the ends of the binding strip together and notch the center on both sides.

From the center notch measure on the two sides along one edge of the strip one half of the front waist measure of the apron. Notch these two points.

Baste and finish two $\frac{3}{16}''$ hems on the wrong side along the two ends of the strip. The hems should extend from the waist-measure notches to the ends of the strip. Hem across the ends of the strip.

Gather the top of the apron, adjust the fullness, and join the binding by hand or machine. The seam and first turn of the binding must be the sum of the two turns of the hems, or, in other words, the outside fold of the hems must be in line with the creased edges of the finished binding. Cut the seams of the binding to a satisfactory width. Finish the binding across the top of the apron.

A binding with strings inserted. Cut the strip for the belt the waist measure plus two seams in length and the desired width. Cut two strings, each 18″ or 20″ long and 4″ wide.

Notch the center of the binding on the two sides.

Method of making. Decide the width of the waistline finish of the apron by actual measurement on the figure. Measure from the center notch of the binding one half the waistline finish and place notches on the two sides of the center.

Notch the center of the top of the apron; gather the top and adjust the fullness.

For a hand-made binding place the right side of the apron against the right side of the binding, center notches together and the side hems of the aprons against the side notches on the binding. Pin, baste, and backstitch.

Crease along the line of the backstitching and continue the same line to the two ends of the binding.

Crease the first turn of the binding along the entire edge of the second side. Fold the binding in place and crease the lengthwise center fold.

Gather the ends of the strings. Place the right side of the string against the right side of the front half of the binding, with one hem at the line of the first turn, and the other hem at the center crease of the binding.

Arrange the gathers, pin, baste, and backstitch.

Repeat with the second string.

The strings and apron are now seamed to the lower half of the binding, with all seams on the wrong side.

Fold the upper half of the binding down over the seams of the lower half, notches and ends together. Pin, baste, and hem along the seam lines and overhand the folded edges between the seams.

Apron Patterns

Measurements required. Width, taken from a point on the side in line with the hip across the front to a corresponding point on the other side.

Length, taken from the waistline to the center of the bend of the knee. From this length subtract from 2″ to 4″ for the finished length of the apron.

Suggestive list of measurements:

Width, 18″.

Length, 20″ minus 4″, or 16″.

Pattern (see Fig. 106).

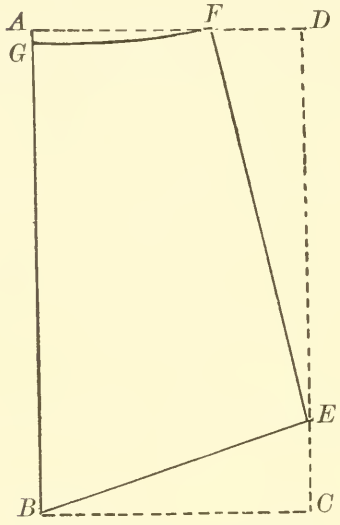

FIG. 106. The pattern for a sewing apron

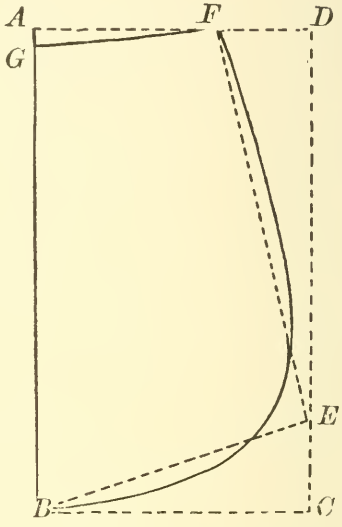

FIG. 107. The pattern for a sewing apron

AB is the center fold of the apron, 16″.

BC and *AD* are one half the width measurement, $\frac{1}{2}$ of 18″, or 9″.

EC is $\frac{1}{4}$ the length minus 1″, or 3″.

FD is $\frac{1}{4}$ the width measurement minus 1″, or $3\frac{1}{2}$″.

AG is $\frac{1}{2}$″ and marks the depth of the waist curve.

Suggestions. Decrease the measurement from *D* to *F* if the waist is large in proportion to the hips.

Increase the depth of the waist curve *AG*, if there are few gathers across the front.

Curved lines, if sufficiently shallow, may be used instead of the straight lines, *FE* and *EB*.

The shape of the apron may be changed by drawing a free-hand curve from *F* to *B*, cutting off about 2″ of the corner at *E* and extending beyond the side and bottom lines (see Fig. 107).

Pillow Case

The size of the pillow case should be made in relation to the size of the pillow on which it is to be used.

The average width of the case is at least 2″ on the fold wider than the pillow.

The average length of the case is at least 2″ and the hem more than the pillow.

The widths required most often are 36″, 40″, or 42″ material, and the finished length from 33″ to 36″.

The usual width of hem is 3″.

Directions for making. Pull the cloth into shape with the edges even when folded.

Fold the two right sides together. Pin and baste across one end and along the selvages.

Overhand the selvages together.

Stitch or backstitch the seam across the end. Cut the frayed edges from the seam and overcast.

Turn and baste a 3″ hem around the open end of the case. Finish the hem by hand or machine.

Suggestions. A shallow overhanding stitch must be used on the side seam, for satisfactory results.

The overhanding stitches may be made on the right side. The appearance is less attractive, but the creasing for ironing is somewhat easier.

Pillow tubing may be used to simplify the making. The appearance is satisfactory, but the creasing for ironing is a little more difficult.

Caution. Do not cut pillow cases with the woof threads for the length of the case. They are much less durable made in this way.

Napkins

Napkins are usually made of linen or cotton damask woven the width of a single napkin and the length of either six or twelve napkins. There is a complete design for each napkin, and these designs are separated by a heavy thread. This heavy thread is used as a guide for cutting the napkins apart for making.

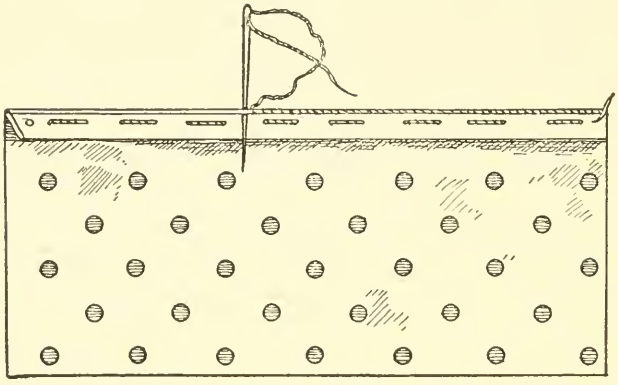

Fig. 108. Showing damask or napery hemming

There are two selvages along the sides of each napkin and two raw edges to be hemmed.

Determine the right side of the damask. The warp threads form the overshot, or flush, of the background weave on the right side of the damask. The woof threads form the overshot, or flush, of the pattern on the right side of the damask. On the wrong side the overshot is reversed in background and figure.

Determine the necessary allowances for the hems. The usual finished width of the hem is $\frac{1}{8}''$.

Fold the napkin diagonally from corner to corner and measure the sides to make sure that the napkin will be exactly square when finished. Cut from the two ends any length that is beyond the hem allowance of the square.

Crease the hems the required width to the wrong side. Baste.

Fold the hem back on itself to the right side, making a second crease exactly in line with the crease of the first turn of the hem.

Overhand the two folded edges, making a damask, or napery, hem.

Caution. The beauty of the stitch depends on its being exactly in line with the warp threads of the napkin.

The durability of the hem depends on the depth of the stitch and the tension of the thread. Avoid a deep stitch or tight thread.

In general, hold the work with the hem toward the body.

Hemstitched Tea Cloth

Use one yard of yard-wide linen or Indian head.

Determine the width of the finished hem, the type of hemstitching to be used, and the number of threads to be drawn.

The threads may be drawn the entire length of the hem from one edge of the square to the opposite edge. For wide hems a more attractive result is obtained by drawing the threads to the inside line of the hems and ending each line of hemstitching at the same point.

Directions for making. Let Fig. 109 represent a corner of the tea cloth with a finished hem $1\frac{3}{4}''$.

AB and *AC* represent the raw edges of the cloth.

DE and *FG* represent the first turn of the hem.

HI and *JK* represent the outside fold of the finished hem.

LM and *NO* represent the lines to which the finished hems are folded.

OP and *PM* represent the lines along which the threads are to be drawn.

Cut a thread on line *PM* at least $\frac{1}{4}''$ in toward the center from *P*. Draw the thread to a corresponding point on the opposite side. Cut the thread $\frac{1}{4}''$ in from the corner.

Cut a thread the same distance from the two corners on line *PO*. Continue on the other sides of the square.

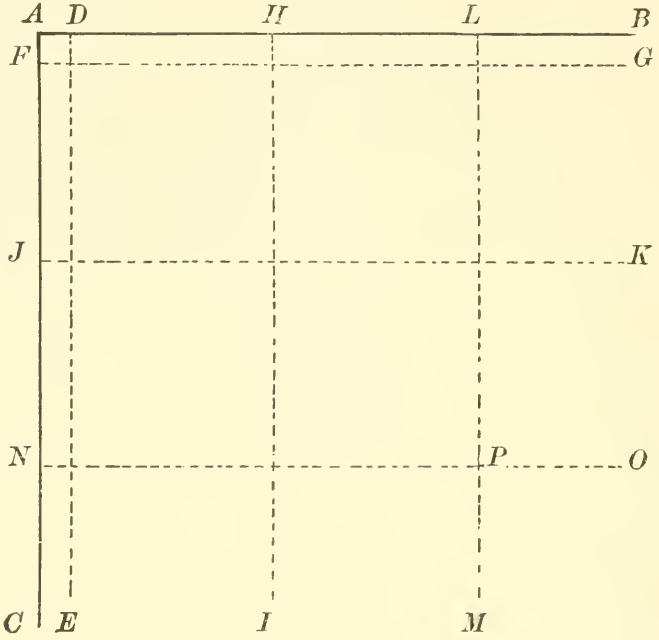

FIG. 109. Diagram showing the creased lines on the corner of a tea cloth which is to be hemstitched

Draw the required number of threads on each side of the square. Draw the threads on the side of *PM* and *PO* toward the center of the cloth.

With a pin unravel and pick out the threads back to the corner.

Repeat on the two sides of the other corners.

Miter the four corners and finish (see p. 72).

Fold and baste the hems on the four sides of the cloth.

At the corners, fold back the $\frac{1}{4}''$ ends of threads and tuck them under the first turn of the hem.

These $\frac{1}{4}''$ thread ends folded back make a stronger, more attractive corner which is more quickly made than a corner in which the threads are cut at point *P* and corresponding points.

Hemstitch the hems.

Kimono Nightgown

This type of nightgown is made with low neck and short sleeves. It is slipped on over the head and shoulders; the size of the gown around under the arm must be as large as the measurement taken around the shoulders.

Measurements and how to take them. *Length.* Measure from the top of the shoulder near the neck to the floor in front, and from the same point on the shoulder to the floor in the back. Add the two lengths, divide by two to find a common length to use for the gown.

Around the shoulders. Measure in a line parallel to the floor, taking a close measure.

Armscye. Take a close measure around the armseye well up on the shoulder.

Bust. Take the measure over the largest part of the bust.

Sleeve length. Measure on the outstretched arms in line with the shoulders from one elbow across the back of the neck to the other elbow.

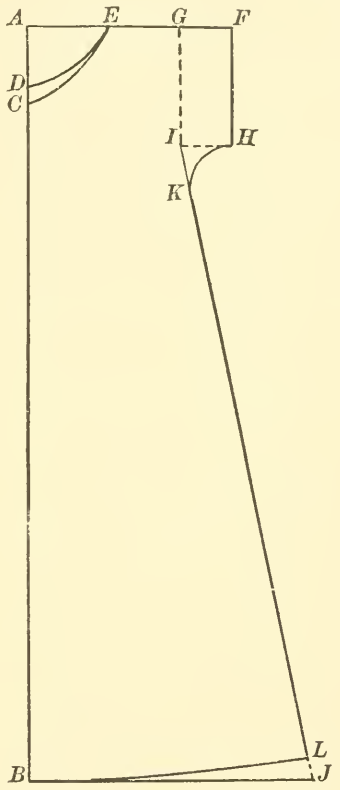

Fig. 110. A kimono nightgown pattern

Suggestive list of measurements and allowances:

Length, 50″.

Around the shoulders, 37″. Add 2″ for ease, 39″.

Armseye, 12.″ Add 4″ for comfort, 16″.

Bust, 34″.

Lower edge, 2 times the bust, plus 8″, 76″.

Elbow to elbow, 30″. Subtract 4″ for short sleeves, 26″.

Pattern. Work directly on the cloth. Tear off a piece of cloth the required length. To find the necessary amount, subtract from the length measurement the number of inches that the gown is to be finished from the floor; add the hem allowance, from $1\frac{1}{2}$″ to 3″; subtract the height of the heels, if the measures were taken with the shoes on; add at least 2″ for shrinking. This total multiplied by 2 will give the cutting length for the front and the back.

Use cloth at least 36″ wide.

Pull the cloth in line.

Make one lengthwise fold with selvages together evenly.

Make one crosswise fold with ends together evenly.

Line *AB* of Fig. 110 represents the lengthwise fold of cloth, 50″.

Line *AF* represents the crosswise folds.

Place pins for the points and connect the points with light pencil lines.

AC is the depth of the front neck curve, 5″.

AD is the depth of the back neck curve, 4″.

AE is the width of the neck curve, 5″.

AF is $\frac{1}{2}$ the sleeve length measurement, 13″.

AG is $\frac{1}{4}$ the required measurement around the shoulders, $9\frac{3}{4}$″.

FH and *GI* are $\frac{1}{2}$ the armseye measure, 8″.

BJ is $\frac{1}{4}$ the lower edge measure, 19″.

JL is the depth of the curve of the bottom line at the side seam, $1\frac{1}{2}$″.

IK is the depth of the underarm curve on the underarm line, $3\frac{1}{2}$″.

HI is the width of the underarm curve on the sleeve line, 3″.

Add seam allowances and cut the gown.

In cutting the neck curves, cut through all thicknesses along the back neck curve, *DE*. Open out the fold and cut the front curve along *CE*.

Making. Underarm seams, plain or narrow French seams.

Neck and sleeves may be finished by one of a variety of methods, either by hand or machine:

1. The edges may be finished with an $\frac{1}{8}''$ hem or with a $\frac{3}{8}''$ bias facing or binding. Overhand lace to the finished edge of hem, facing, or binding.

2. Join an embroidery edge to the neck and sleeves with a plain seam on the right side. Cover the seam with bias seam tape, finishing braid, etc.

The seam may be on the wrong side and covered with a bias facing.

3. Join an embroidery edge to the neck and sleeves with a flat fell on the right side.

Ribbon beading or a casing may be used to draw up the fullness, or the fullness may be gathered and confined by the trimming.

Hem the bottom of the gown (see p. 54).

Suggestions. Groups of narrow tucks, parallel with the front fold may be placed in the cloth across the neck lines before cutting. They should extend from $2''$ to $4''$ below the neck curve, back and front.

Make an extra allowance between the points *A* and *G* and place tucks over the shoulders between *E* and *G* on the two sides. The finished tucks should extend almost to the line of *H*, both back and front.

With an extra allowance from *A* to *G*, confine the fullness across the front with a band of smocking or shirring. A corresponding amount of fullness must be confined across the back by the tucks.

Dutch Cooking Cap

There are many types of cap that may be chosen for use in the cooking class. In most cases a cap which covers the hair completely is the one desired. The Dutch cap fulfills this requirement.

Material to be used. Use any thin, crisp material which will launder easily; as light-weight apron lawn or white dimity.

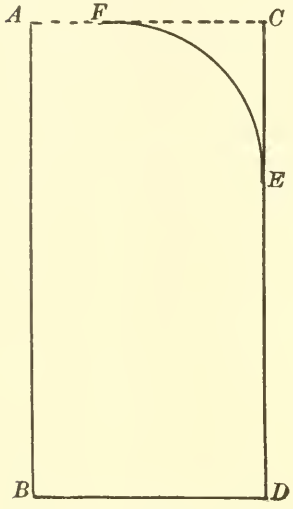

Fig. 111. Dutch cooking-cap pattern

Measurements. *Depth.* Measure from the hair line on the forehead over the crown to the hair line at the back.

Width. Measure from a point just in front of one ear across the back to the corresponding point on the other side.

Length of binding. Measure from the lobe of one ear around the front hair line to a corresponding point on the other side.

Suggested measurements:

Depth, 16″.

Width, 15″.

Length of binding, 14″.

Size of binding: length, according to measurement, plus two seams; width, two times 3″, plus two seams.

Pattern. *AB* is the center lengthwise fold of the cap, 16″.

AC and *BD* are $\frac{1}{2}$ the width measurement, $7\frac{1}{2}$″.

FC and *CE* are $\frac{1}{3}$ of the length measurement, $5\frac{1}{3}$″.

The curve from *F* to *E* must be a full outward curve.

Add a seam allowance along *AFED*.

Add an allowance for a $\frac{1}{2}$″ hem along *BD*.

Making. Turn and finish a $\frac{1}{2}$″ hem along *BD*.

Notch the center front of the cap at *A*.

Gather the outer edge of the cap from *D* around the curve to *A* and around the second side.

Notch the center of the two sides of the binding.

Fold the two right sides of the binding together lengthwise and join the ends with plain seams.

Turn the binding, crease, and baste along the end seams and the lengthwise fold.

Join the binding to the gathered edge of the cap, either by hand or machine. Match center notches.

Use the $\frac{1}{2}''$ hem across the back as a casing. Make buttonholes on the inside of the hem at the two ends near the seam of the binding. Run in an elastic at least $6''$ less than the width measurement, and fasten both ends securely to the wrong side of the cap over the binding seam.

A buttonhole may be made in the center of the inside of the hem. Use two pieces of tape. Run the tape from the center buttonhole to the ends of the hem before the binding is put on. Secure these tape ends in the seam which joins the binding to the cap. Draw up the ends of the tape through the center buttonhole and tie.

Kimono Cooking Apron

Measurements and allowances. *Length.* Measure from the top of the shoulder near the neck to the bottom of the skirt. Add an allowance for shrinkage, growth of the wearer, and hem.

Around the shoulders. Take a close measure.

Armseye. Take a close measure around the armseye well up on the shoulder. Add $2''$ for comfort.

Bust. Take the measure around the largest part of the bust.

Lower edge. Take two times the bust measure plus $8''$, more or less, according to conditions. The length of the dress and the fullness of the dress skirt will influence the amount added.

Sleeve length. Measure from the back of the neck to the end of the shoulder, down the arm to the wrist:

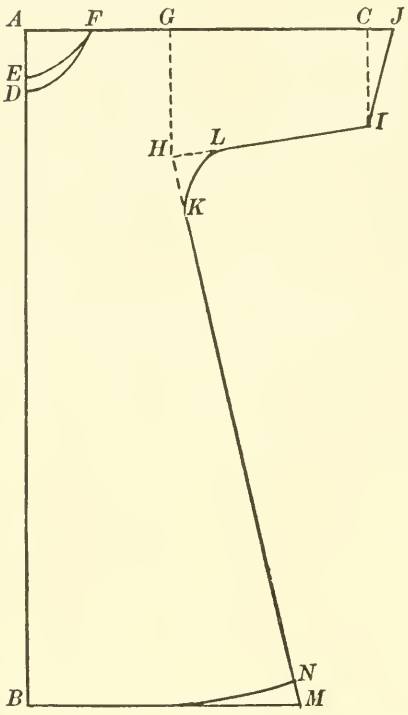

FIG. 112. A kimono cooking-apron pattern

Suggestive list:

Length, 45″.

Around shoulders, 37″.

Armseye, 15″ plus 2″, 17″.

Bust, 32″.

Lower edge, 2 times 32″ plus 8″, 72″.

Sleeve length, 23″.

Pattern. Tear a length of material according to measurements and allowances (see nightgown allowances, p. 121).

Pull the cloth into line.

Fold the selvages together with a lengthwise fold.

Fold the ends together with a crosswise fold.

AB is the front fold, 45″.

AC is the crosswise fold and the sleeve length, 23″.

AD is the depth of the front neck curve, 4″.

AE is the depth of the back neck curve, 3″.

AF is the width of the neck curve, 4″.

AG is $\frac{1}{4}$ of the measurement around the shoulders, $9\frac{1}{4}$″.

GH is $\frac{1}{2}$ the armseye measure, $8\frac{1}{2}$″.

CI is 2″ less than *GH*.

CJ is a $1\frac{1}{2}$″ allowance for the back of the sleeve.

BM is $\frac{1}{4}$ the lower edge measure, 18″.

MN is the depth of the curve at the side seam, $1\frac{1}{2}$″.

HK is the depth of the underarm curve on the underarm seam, $3\frac{1}{2}$″.

HL is the width of the underarm curve on the sleeve seam, 3″.

Making. Allow for seams and cut apron.

Seams. Underarm, plain or narrow French seams; sleeve piecings, narrow plain or narrow French seams.

Neck curve. Finish with a narrow bias facing on the wrong side or a wide, fitted facing on the right side.

The neck may be cut square and finished with a narrow bias facing on the wrong side or a wide, fitted facing on the right side.

Cut along the center back fold for the opening. Turn 1″ hems along the two sides of the back opening for buttons and buttonholes.

Gather the ends of the sleeves and finish with a binding. The binding should be finished 1″ larger than the hand measure and 1″ wide.

Finish the bottom hem $1\frac{1}{2}$″ to 3″ in width.

A belt and one or two pockets may be added.

Child's Drawers

For comfort and durability children's drawers must be made with a low seat line and sufficient fullness to prevent any strain on the garment.

Measurements and how to take them. *Length.* Measure from the waistline just in front of the hip to the center of the bend of the knee. Make no subtractions from this measurement for the finish above the knee. Draw the pattern, using this measurement for the right placing of the seat line.

Hip. Take a loose measure around the hip just below the hip bone.

Suggestive measures:

Length, 20″.

Hip, 36″.

Pattern. *AB* on the fold of the paper is the length measure, 20″.

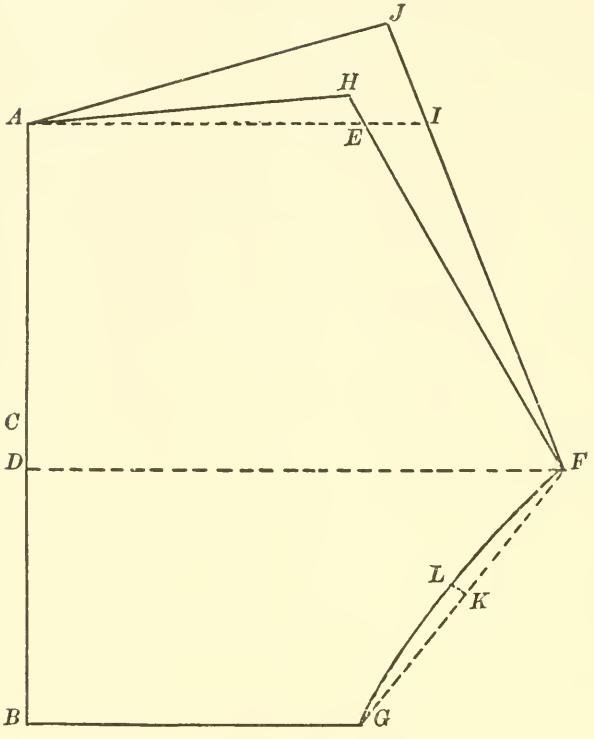

FIG. 113. The pattern for child's drawers

AC is $\frac{1}{2}$ of *AB*.

D is $1\frac{1}{2}''$ below *C*.

AE is $\frac{1}{4}$ the hip measure, plus 2″ of fullness, 11″.

DF is $\frac{1}{2}$ the hip measure, 18″.

BG is $\frac{1}{4}$ the hip measure, plus 2″ of fullness, 11″.

Continue *EF* in direction of *H*, 1″ above *AE*, for the front extension; continue *AE* in direction of *I*, 2″ beyond *E*, for the back fullness; continue *FI* in direction of *J*, $3\frac{1}{2}''$ above *I*, for the back extension.

K marks the bisection of *GF*.

KL marks the $\frac{1}{2}''$ depth of the leg curve.

AB, *BG*, *GLF*, *FEH*, and *AH* are the lines of the front.

AB, *BG*, *GLF*, *FIJ*, and *AJ* are the lines of the back.

Variation of lines. The seat line, *DF*, may be placed more than $1\frac{1}{2}''$ below the center. If the fullness is decreased and the front and back extension decreased, the seat line must be lowered.

The amount of fullness added to $\frac{1}{4}$ the hip measure at the waistline (*AE*) and at the bottom of the leg (*BG*) may be

increased or decreased. If the seat line is sufficiently low, it may be less than $\frac{1}{2}$ the hip measure.

The front extension (*EH*) may be increased and the back extension (*IJ*) may be decreased.

The amount of front and back fullness may be the same.

The front and back extension may be the same.

Making. Cut the pattern according to the outline, making the necessary seam allowances.

Decide on the number of inches that the drawers are to be finished above the knee. Calculate the allowances or subtractions in length for the making.

Measure the required length from the waistline on *AB* and fold back the unnecessary amount at the bottom of the pattern.

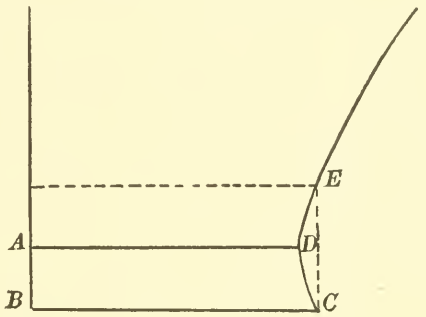

FIG. 114. Diagram showing the necessary allowance for the outward curve of a hem. *ABCD* is the hem allowance

Cut the placket line on *AB* the required length from *A*. If the drawers are to be buttoned on a waist, use two plackets; if they are to be buttoned around the waist, use one (for length of plackets, see p. 74).

Placket (see pp. 76, 77). Use the type of placket best suited to the garment and to the experience of the worker.

Lower edge finish. The bottom of the leg may be finished with a hem. To provide sufficient material for the side allowance of the hem, crease the hem before cutting the garment, place the edge of the pattern on the fold of the hem. The diagram (Fig. 114) shows the necessary allowance for the outward curve of the hem.

Tucks (see pp. 64–65), *ruffles* (see pp. 66–68), *or a facing* (see pp. 62–64) may be used for the lower edge finish.

Child's Bloomers

The same measurements are taken for the bloomers as for the drawers (see p. 127).

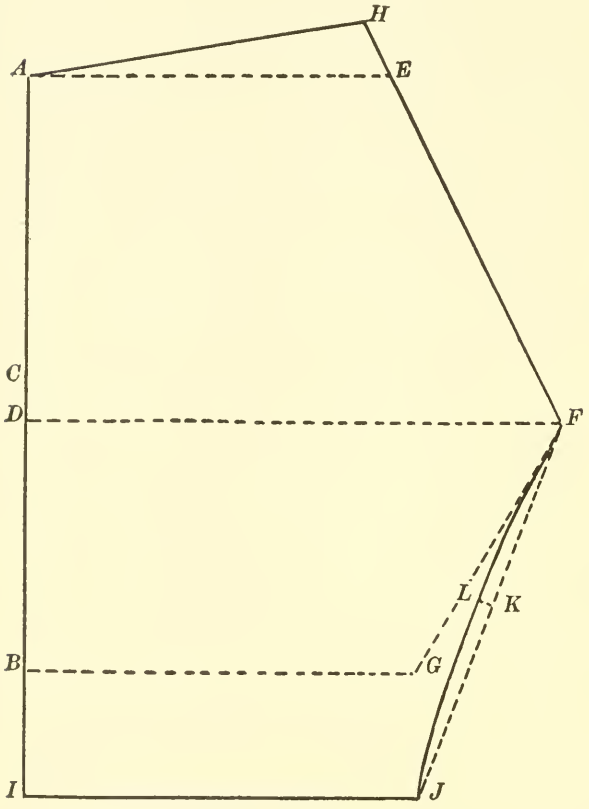

Fig. 115. Pattern for child's bloomers

Suggestive list:
Length, 20″.
Hip, 36″.

Pattern. *AB* is measured on the fold of the paper, 20″.

C marks the bisection of *AB*.

D is $1\frac{1}{2}$″ below the center of *AB*.

AE is $\frac{1}{4}$ the hip measure, plus 3″ fullness, 12″.

DF is $\frac{1}{2}$ the hip measure.

BG is $\frac{1}{4}$ the hip measure, plus 4″ fullness, 13″.

EH is the continuation of *FE*, 2″ above *E*, front and back extension.

Continue *AB* 4″ below *B* and draw *IJ* $\frac{1}{4}$ the hip measure plus 4″ for the lower edge of the bloomer leg.

K marks the bisection of *FJ*.

KL marks the $\frac{1}{2}$″ depth of the leg curve.

Variations. Other proportions may be used if the relation of the seat line, the front and back extension, and the fullness are considered.

Making. The seams, placket, and waist finish may be the same as for the drawers (see p. 129). An inch hem may be used as the lower edge finish and form a casing for the elastic.

Bloomers may be made without plackets, the waist-line finished with a binding $\frac{3}{4}''$ to $1''$ in width, making a casing for elastic.

If the material is bulky and more than an average amount of fullness added at the bottom of the leg, a binding is a satisfactory finish. Gather the bottom of the leg and finish with an inch binding that is somewhat longer than the leg measure. The binding forms a casing for the elastic. This finish is less bulky than the hem.

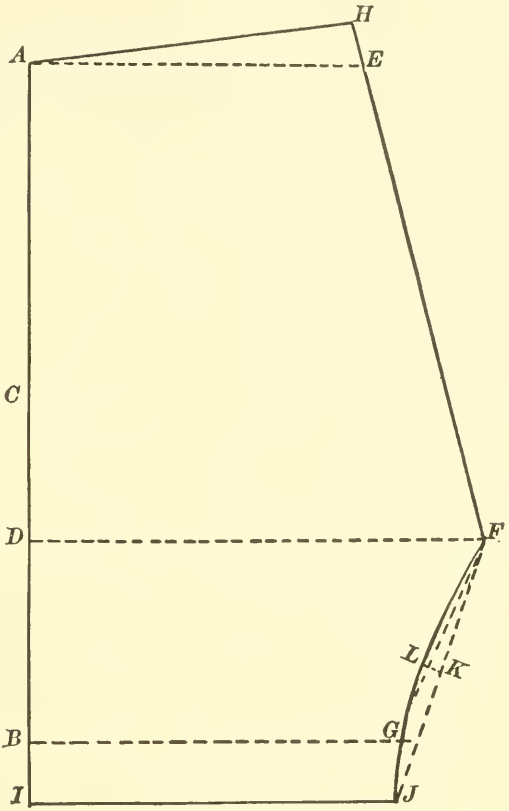

FIG. 116. A bloomer pattern for an older girl

BLOOMERS FOR OLDER GIRLS

Measurements. Take the measures as for the drawers.

Suggestive list:

Length, $22\frac{1}{2}''$.

Hip, $40''$.

Pattern. *AB*, on a fold of paper, is the length, $22\frac{1}{2}''$.

C marks the bisection of *AB*.

D is $4\frac{3}{4}''$ below *C*.

AE is $\frac{1}{4}$ the hip measure, plus 1″ fullness.

DF is $\frac{1}{2}$ the hip measure, minus 5″.

BG is $\frac{1}{4}$ the hip measure, plus 2″.

I is 2″ below *B* for the added bloomer length.

IJ is $\frac{1}{4}$ the hip measure, plus 2″.

K marks the bisection of *FJ*.

KL marks the depth of the leg curve, $\frac{1}{2}$″.

EH is the $1\frac{1}{2}$″ extension above *E* and is a continuation of *EF*.

Making. The methods suggested for the child's bloomers may be used. With the decrease in fullness at the waist and lower edge narrower casings can be used.

Infant's Slip

The cutting and making of the infant's slip is an interesting and profitable school problem. The material chosen for the garment is soft and fine; as nainsook, batiste, fine dimity, etc. The seams are short, if the garment is to be made by hand, and the required construction offers a satisfactory variety with that used on the personal garments.

Pattern. The purchase of a pattern for this simple garment is unnecessary. The lines are so simple that the pattern can be drawn directly on the cloth.

Suggestive measurements:

Length, 26″.

Size around the bottom, 48″.

Armseye, 8″.

Around the shoulders, 20″ plus 4″ for ease.

Length of sleeve from back of neck, 11″.

Pattern. Calculate the front and back lengths with hem allowance.

Fold the cloth lengthwise with selvages together.

Fold the cloth crosswise with the ends together.

AB is measured on the lengthwise fold, 26″ plus hem allowance.

AC is measured on the crosswise fold, the sleeve length, 11″.

AD is the depth of the front neck curve, $1\frac{1}{2}$″.

AE is the depth of the back neck curve, 1″.

AF is the width of the neck curve, $1\frac{1}{2}$″.

AG is $\frac{1}{4}$ of the measurement around the shoulders plus the required fullness, 6″.

GH is $\frac{1}{2}$ the armseye, 4″.

BI is $\frac{1}{4}$ the size around the bottom, 12″.

IJ is 1″ for the upward curve of the lower edge at the side seam.

CK is $3\frac{1}{2}$″.

CL is a $\frac{1}{2}$″ extension for the end of the sleeve.

LK is the lower edge of the sleeve.

M and *N* mark the points of the underarm curve, each $\frac{3}{4}$″ from *H*.

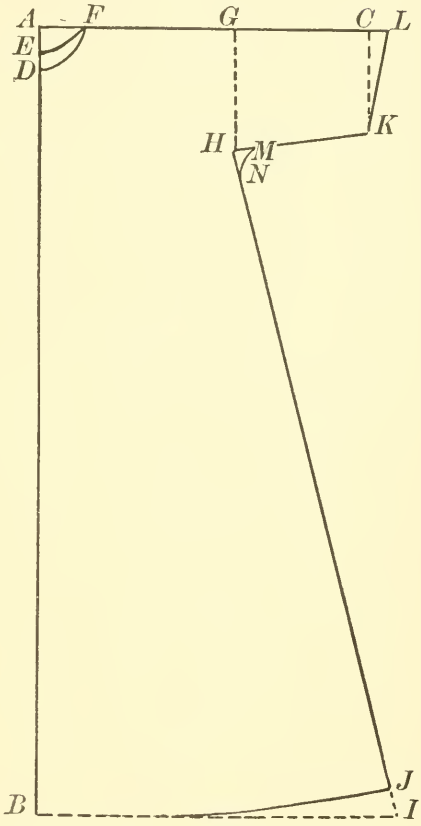

FIG. 117. Pattern for an infant's slip

Making. Cut with seam and hem allowances.

Cut the placket line on a fold $\frac{1}{4}$″ to the left of the center back fold, $9\frac{1}{2}$″ from the neck.

Make a placket with the upper lap finished with a $\frac{3}{8}$″ facing and the under lap, with a binding finished $\frac{3}{8}$″ wide. Finish across the end of the placket with two lines of backstitching.

The neck may be finished with a binding $\frac{1}{4}$″ wide to which a very narrow edge of lace is overhanded. This binding may be

used as a casing through which bobbin tape is run. Make a buttonhole through the outside of the binding at each end in line with the placket lap. Run the ends of the bobbin tape through these buttonholes.

Gather the ends of the sleeves and finish each with a binding $\frac{1}{4}''$ wide and $6''$ long. Overhand an edge of lace to the binding.

Finish the bottom of the slip with a hem $1\frac{1}{2}''$ to $2\frac{1}{2}''$ wide.

Decorations. Small tucks may be placed over the shoulders between *F* and *G*.

Featherstitching may be used to decorate and finish the bindings and the hem.

A fine design of French embroidery may be worked across the center front.

Infant's Gertrude

Decide on the length, the size around the bottom, and the width across the front to the underarm.

Suggestive list of measures:

Length, $25''$.

Front width, $11''$.

Size around the bottom, $44''$.

Pattern. *Front.*

AB is the length of the garment, $25''$.

AC and *BD* are $\frac{1}{2}$ of the front width, $5\frac{1}{2}''$.

AE is the depth of the front neck curve, $2\frac{3}{4}''$.

AF is the width of the front neck curve, $2\frac{1}{4}''$.

CG is the measurement down from *C* for the slant of the shoulder line, $\frac{3}{4}''$.

FG is the shoulder slant.

FH is the shoulder length, $1\frac{1}{2}''$.

GI is the depth of the arm curve, $3''$.

HI is a full, deep curve for the armseye, drawn freehand.

BJ is $\frac{1}{4}$ the size around the bottom, 11″.
JK is the measure of the upward curve at the side seam, $1\frac{1}{4}$″.
BK is the lower edge.

Pattern. *Back.*

ab is the length, 25″.
ac and *bd* are $\frac{1}{2}$ the back width, $5\frac{1}{2}$″.
ae is the depth of the back neck curve, $1\frac{1}{2}$″.
af is the width of the back neck curve, $2\frac{1}{2}$″.
cg is the depth of the shoulder slant, $\frac{3}{4}$″.
fg is the shoulder slant.
fh is the shoulder length, $1\frac{1}{2}$″.
gi is the depth of the back arm curve, 3″.
hi is the back arm curve, drawn freehand.
bj is $\frac{1}{4}$ the size around the bottom, 11″.
jk is the measure of the upward curve at the side seam, $1\frac{1}{4}$″.
bk is the lower edge of the back.
fl and *hm* are extensions of the back shoulder straps, $1\frac{1}{2}$″.
lm or *no* may be used for the outline of the tab.

Making. Allow for seams and for a $1\frac{1}{2}$″ hem at the bottom.

Finish the seams according to the directions for one type of flannel seams (see pp. 51–52).

Turn the hem and finish with a method which corresponds with the type of seam finish chosen.

Neck and armseye finish. If flannel is used for the garment, choose a firm quality of wash silk for the neck and armseye finish. If outing flannel is used choose firm, soft nainsook or cambric.

Reënforce the front and back shoulder tabs on the wrong side with silk or cotton to make sufficiently strong for the fastenings.

Choose from the following methods:

1. A narrow bias facing on the wrong side finished $\frac{1}{4}$″ or $\frac{3}{8}$″ may be finished on the wrong side with the hemming stitch and decorated on the right side with featherstitching.

2. Finish with a bias binding on the wrong side, $\frac{1}{4}''$ for the finished width.

3. Use a $\frac{1}{2}''$ woven silk tape or galloon instead of the bias strip for a binding. This is a straight strip and does not fit

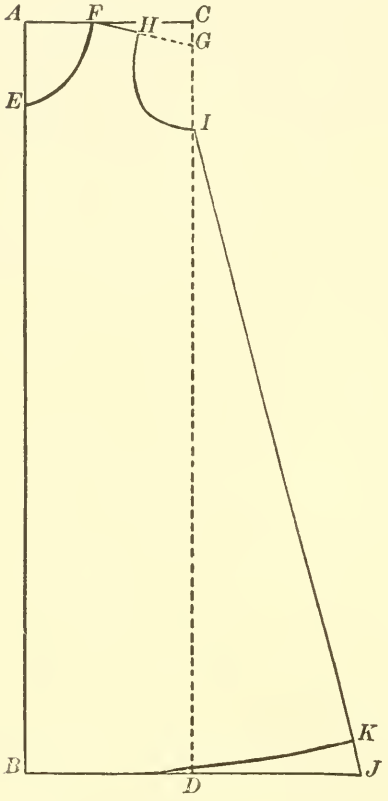

FIG. 118. The front of an infant's Gertrude

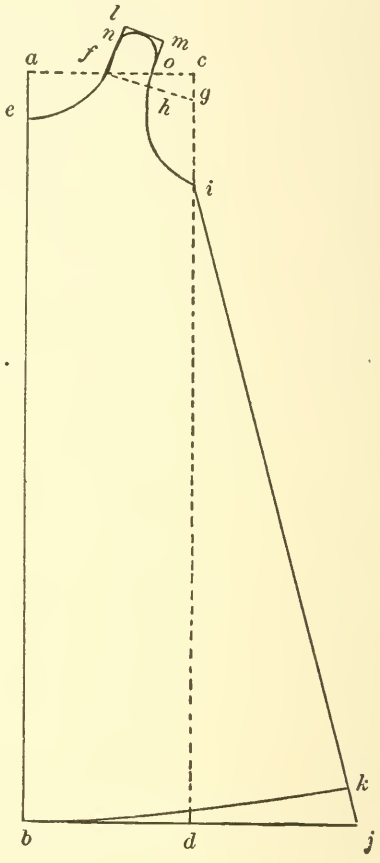

FIG. 119. The back of an infant's Gertrude

around the curves smoothly. Hem on the wrong side and featherstitch on the right side to hold the binding flat.

Fastening of the tabs. The front or the back shoulder strap may be extended for the lap. Fasten the tabs on each shoulder with one or two tiny buttons and buttonholes or with snap fasteners.

CHAPTER VIII

MORE ABOUT CLOTH AND TOOLS

Cotton

The cotton plant grows on plantations in warm countries. Most of the cotton used in the world is raised in the United States, where the two principal varieties are short-staple cotton or cotton having short fibers, and long-staple cotton having long fibers. The short-staple or upland cotton, which is chiefly raised, grows on a plant from two to three feet in height. Long-staple or sea-island cotton grows fifteen to twenty feet high, and is found on the islands near the coast of the Southern states. Sea-island cotton is much more valuable than upland cotton.

The seed is sown in March and April, and early in June the plant begins to bloom. The blossom resembles that of the hollyhock. After the flowers fall, the pods or bolls grow rapidly and when ripe burst open, showing the fleecy cotton ready for picking, which is done by hand or by a machine.

The cotton is separated from the seeds by being run through the cotton gin, then baled, and shipped to the manufacturers. The bale is opened, and the cotton is put through a beater and picker-machine, which loosens the matted fibers, and separates a portion of the sand and leaves. It is subjected to a second and sometimes a third process of picking, which forms it into laps, or rolls of cotton similar to cotton batting.

These laps are taken to the carding machines, where they are carded, and sometimes combed, until the fibers become sufficiently clean and even ; they are then called slivers. The slivers

pass to the drawing machine, where they are drawn even and parallel, and several of them are united into one. Then they are twisted on the roving frames into rovings, which are wound upon bobbins. They are next spun into yarn, by passing the rovings through the spinning machines.

When *thread* is to be made, the yarn is doubled and twisted more than for weaving into cloth, as greater strength is required. It is then reeled off into loose hanks for washing, bleaching, and dyeing, after which comes the reeling onto bobbins and the spooling. In spooling, after the machine-tender has set the spool on the spindle and attached the end of the thread from the bobbin, the machine does the rest. It runs the thread on evenly, without overlapping or leaving a hairbreadth between, and even adjusts its work with the same precision to the widening of the spool with every layer of thread. It runs on exactly the required amount, and at the right time and place cuts the fine slit in the edge of the spool, draws the end of thread tightly into the slit, cuts it off, and drops the finished spool into a tray. The spools are labeled and packed in boxes containing a dozen each.

If the yarn is to be woven into cloth, the warp is prepared on one machine and the woof on another, the warp being made stronger than the woof, as a greater strain comes on it. Then they are woven on the loom, great care being taken that every thread is kept in its proper position. In weaving, the warp threads are first passed from the warp beam at the back of the loom to the cloth beam in front, on which the cloth is to be wound. Plain weaving is done by passing the woof, in a shuttle, alternately over and under each thread of the warp; this may be readily discerned by unraveling a piece of cotton cloth. Twilled cloth is woven by varying the number of threads passed over or taken up by the woof. In piled cloth, like velvet, extra warp threads are woven in with the woof, making loops, which

are afterwards cut and sheared evenly. Mixed cloth is woven with the warp of one color and the woof of another. In striped cloth the warp is of two or more different colors, and in checked cloth the warp and woof are both of two colors, one set of stripes crossing another.

White cloth is bleached after weaving. When percale is made, the cloth is singed, then bleached, and the coloring applied by a printing machine.

Wool

Wool is obtained chiefly from the sheep, also from the alpaca, angora, and cashmere goat. It is brought mainly from Australia, South Africa, and South America, but the highest grade is obtained from the merinos of Saxony and Silesia.

Wool consists of wavy fibers varying from six to twelve inches in length, and differing in grade. Each fiber is covered with little sawlike teeth or scales overlying each other, and sticking out wherever a bend occurs. The points of the scales are exceedingly small, but when spun they fit into each other and keep the thread from untwisting.

After the wool has been sheared from the sheep, which is done yearly, it is separated according to fineness and length of fiber into sorts, by experienced men called sorters. Then, as it is full of grease and dirt, it is scoured, or washed, until most of the impurities are removed. After scouring, the wool is dried, and it is then ready for further processes. At this point the question must be decided whether the fabric to be manufactured is to be a woolen or a worsted.

We will first describe the method of manufacturing *woolens.* After the wool is scoured, it is passed through a willowing machine in order to remove any dirt or dust that may still adhere to it, and also to break up the matted pieces. Then it is carded, by which process the wool is thoroughly cleaned

from sticks and lumps, and the fibers are torn apart and then interlaced with each other, coming out in the form of a loose rope called a sliver, in which the separate fibers stand in an infinite variety of positions with reference to each other. If the fabric is to be wool-dyed, the next process is the dyeing, after which it is drawn down by drawing, roving, and spinning frames into a woolen yarn.

If greater strength is required, two or more strands are twisted together making a woolen thread ready for the loom. If the fabric is to be yarn-dyed the dyeing process occurs at this stage. The yarn is now woven into cloth. It is fulled by being soaked in hot, soapy water, and subjected to heavy pressure, thus causing the fibers to felt together and the cloth to shrink in width. The fabric is now compact and firm, and is ready for the finishing processes. The fibers are loosened and raised to form a nap by passing the surface of the cloth over the sharp little hooks of the teasel which are set in rollers. (Teasels are the flower heads of a variety of thistle-like plants.) Then the cloth is sheared to give a uniform surface, and it is passed between steam rollers in order to receive the smooth, glossy finish that renders it attractive.

The processes used in making a *worsted* fabric are different from those just described in several respects. The object is to make a yarn in which the fibers shall be drawn out parallel to each other, and then twisted to the required degree.

The wool is put through various machines to straighten out the fibers, and to take out those that are too short for use. Long wools are put through preparers ; shorter wools are passed through carding machines, both of which bring the wool into a loose sliver, which, after being backwashed and slightly oiled, is passed through a combing machine, where the short fibers, called noils, are combed out, and there is formed a firm, smooth, clean rope made up of long, parallel fibers loosely adhering to

each other. This rope is wound into balls or wool tops, about one foot in diameter. Then follow the processes of drawing, roving, spinning, and twisting, care being taken to preserve the substantial parallel relation of the fibers to each other, until a smooth, level yarn is formed, ready for weaving into cloth.

After the cloth is woven it is dyed, if that has not been done in the yarn, and it is then ready for the finishing, which differs slightly from the method pursued in making woolens. The cloth is not teaseled, and is only slightly fulled, sometimes not at all. It is singed by being passed at a high rate of speed over a hot roller, is steamed, stretched, and pressed between rollers, and is then put up in proper shape for sale.

Linen

Linen thread and cloth are made from the fibers of the flax plant. The coverings in which the Egyptian mummies have been found enveloped prove that flax has been used from the remotest times in the manufacture of linen cloth. In the British Museum pieces of linen four thousand years old may be seen. The best qualities of flax come from France and The Netherlands.

The plant grows to a height of two or three feet, and bears delicate blue flowers. The stalks of the plant are hollow and consist of a woody portion called the boon and a fibrous portion from which the thread is made. The seeds furnish linseed oil — used for mixing paints. If a fine fiber is desired, the stalks are pulled up by the roots, when the leaves begin to fall off and the bottom of the stalks become yellow. By waiting until the seeds are ripe, a coarser fiber and seeds for oil are obtained.

After being dried in the sun the seeds are removed, and the stalks soaked, or retted, in water, to loosen the fibers from the boon. The fibers are dried and run through rollers, which break the boon. Then they are combed out or disentangled,

and the wood removed by the scutching machine. The flax, now ready for the mill, is put through the hackling machine, where the short fibers are separated from the long. The long fibers are called line and go through the spread-board, while the short fibers, called tow, pass through the carding machine, both varieties entering cans, called sliver cans. The sliver then passes through a number of drawing frames, and after being doubled and drawn out it goes to the roving frame, where it is again drawn out, then twisted and wound onto bobbins. The rovings are spun on the spinning frames and reduced to yarn, which is either woven into cloth or twisted into thread. The linen is bleached for white goods, or dyed for colored.

During all the operations the fibers must be kept damp.

Silk

There is no more interesting subject than the source and manufacture of silk. The manufacture of silk doubtless originated in China. Although some silkworms are raised in this country, the greater part of the raw silk is imported from China and Europe.

The silkworm moth lays the eggs from which the silkworms are hatched, and they in turn become moths. The moth is about an inch long, having white wings marked with broad pale-brown bars. One moth lays from three hundred to seven hundred eggs, so small that it takes three or four hundred of them to cover a space as large as a silver dollar. In a warm, dry temperature the eggs will hatch in a few days. The young silkworm or caterpillar is dark colored, and not more than a quarter of an inch in length. When full grown the worm is about three inches long ; the body is made up of twelve joints, and it has sixteen legs. It reaches maturity in about a month, and during this time feeds upon the leaves of the mulberry tree, requiring constant feeding ; it also changes its skin four

times. When about to spin its cocoon on some convenient branch or roll of paper, it ceases to eat.

The silk is produced from two small bags filled with a liquid gum. From each bag comes a slender tube, and the two unite into one near the mouth, through which the gum is drawn and spun into silk; thus each fiber of silk, when examined under a microscope, is seen to consist of two strands, one from each bag. The silkworm first makes an outer covering of coarse fibers called floss silk, then, bending itself like a horseshoe, and moving its head from one point to another, it entirely surrounds the body with silk, not spun regularly around the cocoon, but back and forth, so that sometimes yards may be unwound without turning over the cocoon. The inner silk is the finest. The cocoon is completed in a few days, and is about the size of a pigeon's egg. If left undisturbed, in two or three weeks the moth will eat its way through the cocoon, and in so doing break and injure the silk; to prevent this, it is stifled or killed by heat.

Each cocoon contains about one fourth of a mile of thread, as fine as a cobweb, and it takes three thousand cocoons to make a pound of silk. The cocoons are first sorted, and the outside threads removed. They are next placed in tepid water, where they are stirred until the ends of four or five threads are found and brought together into a single thread, which is wound onto a reel.

The silk, after being cleaned (all the knots or obstructions removed) and dried, is ready to be colored and woven into fabric on the loom. Silk is the strongest of all fibers used for weaving.

The reeling or spinning of the silk is very difficult, as the cocoons differ in color, quality, and length. The silk on the outside of the cocoon and that near the chrysalis is inferior and broken; so this, with that from cocoons which have been injured, is made into what is called spun silk. Raw silk is made from the perfect cocoons.

Scissors and Shears

Scissors and shears are made in various sizes and styles; strictly speaking, every pair over six inches in length should be called shears. They may be made entirely of steel, but in this country malleable iron with steel for the inside edges is used most often. Nearly all the work is done by hand, but the process of making depends somewhat upon the size. Each pair passes through the hands of fifty or sixty workmen before completion.

The iron is first melted at the foundry and run into molds of the different shapes desired. The steel is run into thin sheets, which are cut into strips, and these are punched and riveted to the iron by one blow of a hammer. These pieces are then dipped in water and again in powdered borax, to cleanse the surfaces of the iron and steel, which would not unite without this process. After being heated red hot in a furnace, the two metals are welded together and shaped by a die or stamp.

A large pair of shears is used to trim the steel that protrudes over the blades; after which the blades pass through the hands of a number of workmen, each doing his part towards shaping the shears. They are hardened by being plunged while red hot into a tank of cold water, which renders them very brittle. To remedy the brittleness they are put on a plate and again heated, until the workman knows by the color that they are properly tempered or toughened.

After various processes, in one of which the hole for the screw is drilled, a temporary screw is put in, and the points and handles are adjusted. This screw is taken out and the blades are numbered, in order that they may be kept in pairs. They are ground on a round stone, making a slight hollow on the surface of the blades; this forms an edge to cut on. A small

elevation is also made close behind the screw, which causes the blades to cant more and more towards each other as they are closed. Then the handles are japanned or nickelplated, and the blades are polished on emery wheels. After this they are taken to a stamping machine, where the maker's name is put on them. Then the edges of the blades are sharpened on fine emery wheels, the screw is put in, and the blades are adjusted.

Lastly they are carefully inspected, packed in boxes, and are ready for market.

Needles

Needles have been used by the women of every country, in every age. Bronze needles have been found in Egyptian tombs, and we have mention of them in the early history of the Greeks and Romans.

The common sewing needle is made from steel wire and is manufactured almost exclusively in England. Although simple in form, a needle passes through the hands of a hundred workmen before completion. The wire is cut from coils into pieces or blanks of twice the required length of the needle. After being straightened, the blanks are ground to a point at both ends, and flattened in the middle; on this flattened surface the groove for the thread is made, also two small indentations to mark the places for the eyes, which are drilled by machinery. The lengths are now separated, and the needles are hardened by being heated and dipped in oil; then they are tempered by again being slowly heated and cooled. After being scoured, rounded, and polished, they are sorted and folded in papers, which, when labeled, are put up in packages.

Machine needles are manufactured in this country by machines invented for the purpose. The work is similar to that done on the common needle, machines being substituted for part of the hand labor and the number of processes decreased.

Pins

Pins similar to those now in use were not known in ancient times, when thorns, and bone, wooden, gold, or silver skewers were used to fasten the clothing. In the sixteenth century, when first manufactured, they were so expensive that only the rich could afford to buy them; when first made in the United States, a paper of pins cost one dollar.

Pins are now manufactured by machines and are made in many sizes. The wire, after being reduced to the proper size and condition, is run through a machine, which cuts it into the required length, forms the head, and also sharpens the point and tempers it. The pins are next cleaned, and the imperfect ones thrown out by machinery. The third machine rolls them until they are bright and smooth. Another machine sticks them into the paper, and, after being inspected under a magnifying glass, they are ready for market. A machine has been invented which does the entire work. Black pins are prepared by japanning the common pins.

Thimbles

Thimbles have been in use only about two hundred years. They are made of metal or celluloid, with either an open or a closed top. The indentations on the surface are made to hold the head of the needle firmly.

In manufacturing metal thimbles, a thin disk, or blank, about the size of a silver half dollar, is first cut from sheet metal and is then drawn into a cap. This cap is heated and tapered, and the edges rolled; the top and then the sides are indented, and it is completed by being polished and plated.

Buttons

Buttons are made from many materials, and in many sizes and shapes. The cheapest are made of porcelain, which is pressed into molds and baked.

Vegetable ivory buttons are made from the seeds of the ivory plant. The plant grows on the Isthmus of Panama, and resembles a palm. The fruit is round, from eight to twelve inches in diameter, and weighs about twenty-five pounds. It is composed of six or seven portions, each portion containing from six to nine seeds. These seeds, when ripe, are pure white, free from veins or any dots, and are about two inches in diameter. The substance is so hard that it can be readily turned in the lathe.

The seeds or nuts are sawed into slabs, from which the buttons are turned. The next operation is that of drilling the holes; some buttons are drilled with four holes, others with two holes, while others are not drilled, but have what is called a self-shank.

After being dyed or colored they are finished by polishing and mottling. Horn and bone buttons are made in a similar manner.

Cloth-covered buttons. In the manufacture of cloth-covered buttons, two round pieces of cloth, one for the covering and one for the shank, two collets of tin, and a thick paper filling are used. The tuft of strong linen is placed in the under collet, and a die or stamp comes down and presses the tuft through the collet, making the flexible shank by which the button is sewed on. The cloth covering is then placed on the upper collet, or shell, and pressed up into a die. Just before the die holding the upper part of the button is pressed into the one holding the under part, the paper filling is put in. As the dies come together they turn the edge of the shell over

the collet, and the different parts are thus held strongly together and the button is finished.

Flat metal buttons. The four-holed metal button is manufactured from collets or disks cut from sheet metal. The under collet of the button is cut from tin, the upper collet from brass. Then the collets are shaped and the four holes punched by a machine. A piece of strawboard of the same form is prepared, and the three pieces are bound together by solidly lapping the edge of the brass or larger collet over the other two.

Hooks and Eyes

Hooks and eyes are manufactured from wire by machinery. Two hundred hooks and the same number of eyes, each being made by its own machine, can be manufactured in a minute. The wire, on being unwound from a reel, is cut into the required length and drawn into the machine, where it is bent into shape, and comes out completed. The hooks and eyes are silvered or blackened with japan varnish.

The machines run automatically. All that the machine-tender has to do is to see that they are supplied with wire. The hooks and eyes have to be sewed and stuck onto cardboard by hand.

Emery

Emery is a variety of corundum and is ranked among the hardest of minerals. It derives its name from Cape Emeri on the island of Naxos, Grecian Archipelago, where the best variety is obtained. It is also found in a number of places in the United States.

It is used for polishing metals. The stone is crushed and sifted into powder of different degrees of fineness.

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