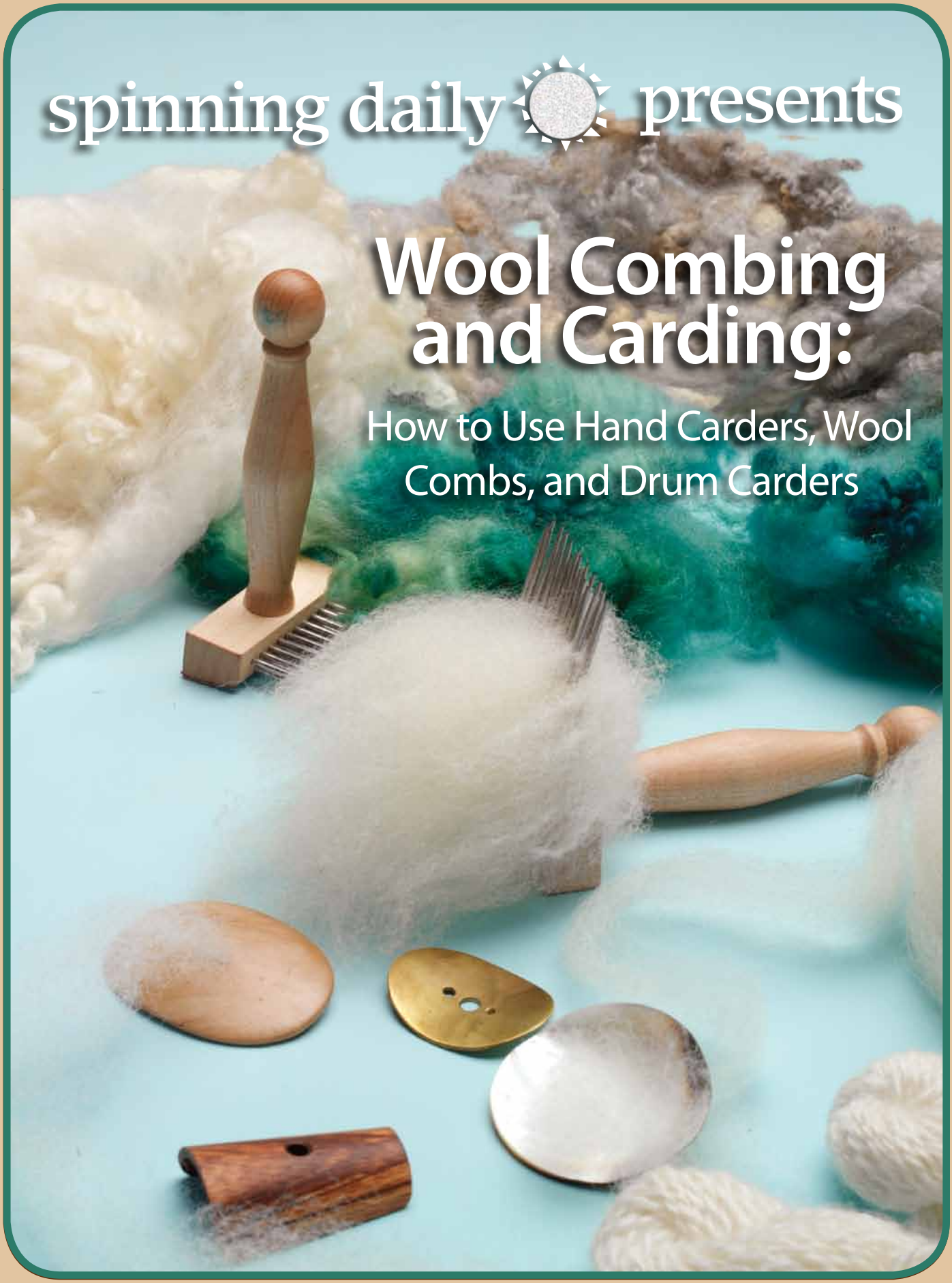
spinning daily presents

Wool Combing and Carding:

How to Use Hand Carders, Wool Combs, and Drum Carders



Combing and carding your fiber for spinning can be as engaging and delightful an experience as spinning your yarn—especially when you have spinning experts such as Robin Russo, Carol Rhoades, Susan Douglas, and Rosemary Thomas leading you by the hand. If you've always spun commercially prepared fiber, then you're in for a treat. Spinning from freshly prepared fiber is akin to eating strawberries straight from the strawberry patch or bread hot out of the oven.

Get the most out of your fiber combs and cards: learn how to comb and card your wool so that it is ready to spin. Find tips for how to hold your handcards, set up your wool combs, and feed your fiber into the licker-in of your drumcarder.

One of the oldest of Interweave's publications, *Spin·Off* is a quarterly magazine that has been around since 1977 inspiring spinners new and old to make beautiful yarn and find enchanting ways to use it. We also host the spinning community, spinningdaily.com complete with blogs, forums, and free patterns, *Spin·Off* Autumn Retreat (SOAR)—an intense and inspirational week with like-minded spinners, and our series of workshop videos where the living treasures of the spinning world share their knowledge with you. We're devoted to bringing you the best spinning teachers, the newest spinning ideas, and most inspirational creativity right to your mailbox, computer, and ultimately fingertips.

We hope you enjoy your spinning journey—come tell us about it at spinningdaily.com.

Happy spinning,

Amy Clarke Moore
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Combing

Organizing fibers to spin

by Robin Russo

Combing organizes fibers so that they are parallel; it also separates different lengths of fibers.

Combing is a process of fiber preparation that removes the short fibers and impurities (vegetation, kemp, neps, and weak fibers) to leave longer fibers lying parallel to one another in the form of top. The waste from this process is sold as noils to the woolen industry, and the longer, more lustrous, parallel fibers are sold as top to the worsted industry. Fibers should be at least 3 inches long for both industrial and hand-combing purposes.

Today's combs come in a wide range of sizes and accommodate the preparation of many types of fibers. The combing process is well-suited for the separation of the hair and down fibers found on double-coated animals. Combing can also be used to organize fibers for spinning without eliminating shorter fibers. This technique is especially helpful in the preparation of many shorter, exotic fibers.

Combs

Hand-held combs are called Viking combs. Many agrarian-based cultures around the world have similar devices. Today a wide range of Viking combs are available to accommodate a range of fibers, not just wool. The combs have one or two rows of teeth, with the largest combs traditionally used for long, lustrous, coarse wools.

Paddle combs (peasant combs) can be used as hand-held combs or mounted to be stationary. Never intended to produce a true worsted top, these combs are amazing in their ability to clean and organize a large quantity of wool very quickly. They have one or two rows of teeth and are ideally suited for medium wools.

English combs have more than one row of teeth, and one comb is always held stationary (on a table or post) while the other comb is swung across it to catch the fibers. Available in a wide range of sizes, English are also the most expensive of combs, but they can accommodate the widest range of fibers, from fine and short to long and coarse. Take care, though, because the teeth on English combs are very sharp.

Fiber organization

A true worsted preparation has had all short fibers removed to leave the long fibers in the top. Yarn spun from this top will produce a very smooth, durable, and lustrous yarn. In industrial combing, the remaining short fibers are sold to the woolen industry for spinning woolen yarns. When I comb long-luster wools, my remaining noils go into felt. On the other hand, when I comb very fine wools such as Cormo, Merino, and CVM, the noils are not pleasant to work with and I generally throw them out. I use my English combs to produce true worsted top because they are the most efficient tool for that job.

Viking and peasant combs lend themselves well to fiber organization, a process that does not eliminate all the short fibers but merely opens and fluffs the locks of wool and allows the chaff and vegetation to fall out. Some


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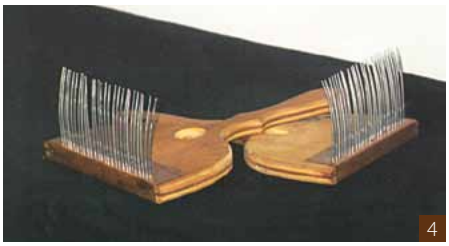
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PHOTOS BY ROBIN RUSSO

1) Combs are useful for separating fiber from double-coated animals such as llamas. **2)** Viking combs (left to right): Indigo Hound, Valkyrie double row, Valkyrie single row, Majacraft, Forsythe, and Louet minicombs. **3)** English combs (left to right): Craftsmen, Teal, and Meck. **4)** Indigo Hound paddle combs. **5)** Louet minicomb, Meck, Majacraft, Teal, Forsythe minicomb, Louet table-mounted comb, Valkyrie minicomb, and Indigo Hound Viking comb. **6)** Teal combs (4 pitch), Craftsmen (4 pitch), Meck (5 pitch), Lani (2 rows). The angle of pitch in these combs ranges from 62 to 90 degrees.




1) Draw fiber through a diz off paddle combs. **2)** A four-pitch Teal comb loaded with Border Leicester. You can spin directly from the comb. **3)** Make a roving from sliver by winding the fiber gently around your fingers to make a nest. **4)** Tuck the end into the center hole so that you can find it when you are ready to spin.

Combing Safety

When I was learning to comb, I accidentally pricked my fingers and thought little of it. Twenty-four hours later, however, I was at a medical facility trying to explain what wool combing was all about. My hand looked like I was wearing a baseball glove. I learned then how difficult it can be to cure infection in an appendage. Have a little more respect for your equipment than I did and perhaps you can save yourself from my learning experience. Keep some antiseptic and bandages at hand and always concentrate on your task.

noils and short fibers will be caught in the combs, but not a significant amount, so your waste is reduced. Sometimes, one or two passes of the combs are all you need. Fiber organization produces a very pleasant top to spin from and yields a semiworsted yarn. Since the area holding the fiber is 6½ inches wide on peasant combs, it may be easier to pull the fiber from each side of the paddle instead of from the center. It is also possible to spin directly from any comb, either by holding it with one hand or mounting it on a stand next to your wheel and drafting the fibers as you would from a distaff.

Butts and tips

If you are trying to produce true worsted and you feel that the direction of the scale is important, then lash the butt end (the shorn end) of the fiber on the comb. If you follow the process through (as later described) then all the scales will be going in the same direction when it is time to pull the fiber off the comb.

I do not find that keeping track of the direction of the scale makes any difference to my final product. Keep in mind that during industrial combing, fibers are carded first and then combed. This order means that the fibers are going in different directions. Certainly, if you are organizing fiber on hand-held or paddle combs you just pick up a handful of fiber and lash onto the comb in whatever direction it happens to lie.

Choosing the combs for you

When you are purchasing combs, consider how heavy they are and how comfortable they are to use. Heavy combs may discourage you from spending any significant time at the task. The comfort level of combs is very personal. Find combs that work best for your hands and for the kinds of fibers you work with most often.

1. Consider the diameter of the steel used to create the teeth. Fine teeth set closely together accommodate fine short fibers. Large teeth set further apart accommodate coarse long fibers.
2. Most combs range in height from 2¼ to 6½ inches. Since you lash on fibers only halfway up the comb, the longer the teeth, the more fiber the comb is able to hold.
3. Each row of teeth works to hold back the noils, vegetation, and short fibers. Therefore, the more rows on the combs the quicker the separation of fibers and production of top.
4. The angle of the teeth on most combs ranges from 62 to 90 degrees. The angle of teeth on the English combs allows the moving comb to enter the fiber on the stationary comb at an angle. When the teeth are straight, you risk catching the teeth of the comb instead of the fiber when you swing the comb. Hand-held combs have the teeth at a 90-degree angle because you are always combing straight into the fiber (with the combs held perpendicular to each other). Check to make sure that the angle of teeth is comfortable to use while combing—if the combs have too much angle, you'll be forced to bend your wrist at an uncomfortable angle.

Dizes

A diz is a small, curved device whose center hole is used to pull the combed fiber off the comb. Originally made from horn or tortoise shell, dizes today come in every imaginable medium: plastic, wood, brass, shell, and cardboard. They work best if they are curved to keep the fibers funneling together toward the hole. The size of the hole determines the size of the sliver. If you plan to spin yarn very fine, then pull the fiber through a very small hole—1/16 inch; for a medium yarn use a diz with a 1/8-inch hole; for a heavy yarn, pull the yarn through a 3/16-inch hole. The simplest diz I have ever seen was cut out of the curved portion of a plastic milk bottle and had a hole poked in the center. It is difficult to use a diz with hand-held combs because you do not have a free hand to hold and guide the diz. However, I always use a diz with English-style combs because the mounted comb allows the free hand to hold the diz while the other pulls the fiber.

Moisture

It would be very frustrating and counterproductive to try to comb fibers without moisture. The static created during combing makes fibers uncontrollable. You can spritz fibers with water or olive oil or you can use a combing oil which combines oil and water. Although I no longer remember the origin of the following recipe, I find it works very well.

1 ounce rubbing alcohol
2 lecithin capsules
3 ounces water
4 ounces olive oil or other vegetable oil

I keep this liquid in a fine spitzer and shake it before using.

It may not feel right to put oil back on wool because you go to great lengths to remove lanolin, but oil is necessary to control the static. I do not comb fibers and set them aside to be spun at a later date. I comb one evening and spin the next and con-

1) Coopworth; **2)** Polwarth; **3)** Icelandic; **4)** Romney; **5)** Border Leicester.

The size of the hole in the diz determines the size of the combed top. Make sure the concave side faces the combs.

tinue in that manner until I am ready to use the wool in a project. I always wash yarns after spinning as part of finishing the skein, and the combing oil is removed at that stage. Even if fiber sits around for a while before it is washed, it will not become tacky (stiff and sticky) the way it does before lanolin is removed.

Combing with hand-held Viking combs

Work some combing oil into a small pile of clean wool (the wool should not look wet). Begin with a small amount and add more oil as necessary. Work it in with your hands so that you can feel moisture in the wool. Hold one comb with the teeth pointing up. With your free hand, carefully lash the moist fibers onto the teeth of the comb until it is half to two-thirds full. With your free hand pick up the other comb and with the teeth moving away from you and perpendicular to the comb containing fiber, make a pass through the tips of the fibers only. Each subsequent pass should be made further into the fiber mass until most of the fiber has been transferred to the moving comb. Be sure to fully separate your hands each time you make a pass or you will catch the fibers back on the moving comb. You may occasionally take too large a bite and make it difficult to pass the comb through the fiber without great effort. Back off and take a smaller bite. Combing should not be strenuous work. The fibers should become open and fluffy with a few, effortless passes. Adjust your combing angle if you're locking the teeth together. With the teeth perpendicular to each other, keep the combs parallel. The fiber remaining on the stationary comb should be short and dirty. Remove it and throw it away. If the combed fiber is compacted toward the bottom of the comb, lift the fibers

1a and 1b) Plank the top by breaking it into 30" lengths to be regrouped, lashed onto the comb, and combed one more time. Planking redistributes fiber lengths to make the final top more consistent. **2)** Use a diz with a large hole for coarse wool, such as Border Leicester. **3)** Use a diz with a small hole for fine wools such as Polwarth.

and spread them over the face of the comb to facilitate the second pass.

Now, while holding the comb with the fiber in the stationary hand, use the moving comb to comb the wool once more, always moving from the tip of the fibers toward the teeth of the stationary comb. When most of the fibers have been transferred to the moving comb you should have only a small amount of noils on the stationary comb. Throw them out. If your fiber was very dirty to begin with, you may have to make another pass. There is no set rule about how many passes you need to make. Do as few as necessary to get a good preparation. Look the fiber over, and if you do not see any chaff or noils, then it is ready to pull off and spin.

Many spinners like to spin directly from their combs. Doing so keeps the fiber in perfect alignment. If you can get into a comfortable position at your wheel, you may find the direct method a pleasant way to spin. If not, remove the fiber carefully so that it stays organized (parallel).

Worsted spinning does not allow the twist to enter the drafting zone.

Hold the comb with the fiber firmly on your leg. With your free hand, bring the fibers gently to a point and pinch the tip. With a small, circular (wiggling) motion, begin to pull. The length of your wool will dictate how far you pull. You do not want a break in the top, so pull less than the full fiber length. After you have made the first pull, drop the fibers to your lap and without running your hand along the wool, move your hand up to the beginning of the next group of fibers. In other words, you are always moving your hand the length of the fiber. Now continue to pinch, wiggle and pull, let go, pinch, wiggle and pull, let go. Stop pulling when you begin to see noils coming from behind the teeth of the comb. Wrap this long coil of fiber gently around your hand, creating a little nest and tucking the end into the center so that you can always find the end to begin spinning when the time comes. As you wrap the coil around your hand you are placing a small amount of twist into the top to make a roving. The twist helps to keep the fiber organized for later spinning.

Combing with English combs

I have yet to see a modern set of English combs that are not equipped

Nest of combed fibers—
(A) fine (Polwarth) and
(B) coarse (Border Leicester).

with a mounting device to keep one comb stationary during combing. Each maker has come up with a unique device. Make sure the one on your set is designed so that the comb is secure and does not move around while you comb. Also check to make sure that you can secure the comb in both an upright position (teeth perpendicular to the table) and a sideways position (teeth horizontal to the table).

Most makers also provide a tool for straightening teeth. Use this hollow metal tube to straighten the teeth when you accidentally hook them together and pull. As you become better at combing, this hooking will become less of a problem, but it is something that all beginning combers experience.

Heating the combs before combing helps to distribute the oil throughout the fiber, which in turn makes combing easier. I use an electric teapot that is just the right height so that only the teeth of the comb are exposed to the water when the comb is resting on the lip. Use whatever works for you. The combs need heat for only a few minutes. Keep your warming device close at hand so that you remember to use it.

When you wash fleeces that are to be combed and spun worsted, keep the locks organized so that you know which is the butt end and which is the tip end. Moisten the wool with combing oil and gently work it in with your hands. Secure one warm comb to the mounting device in the upright position. Lash the moistened locks on the first two rows of teeth and fill the comb evenly until it is half to two-thirds full.

Now change the stationary comb to the side position. With the free, warmed comb (teeth pointing toward the floor) comb the fibers by making passes through the stationary comb, beginning at the tips of the fiber and working your way toward the teeth in a swinging motion. Remember to take small bites and keep the combs parallel so the teeth don't interlock. I use my free hand to organize and lift the fibers on the stationary comb until the moving comb is ready to make another pass. Keep working your way into the fiber mass until most has been transferred. Remove the noils from the stationary comb. Because the fibers will now be pushed to the bottom of the comb you must redistribute the fibers over two-thirds of the comb face so the fibers will transfer easily to the stationary comb.

In the second round of combing you move the fiber from the moving comb to the stationary one. Do so with a sideways movement (counterclockwise) with the teeth of the moving comb pointing down. Begin at the tip of the fiber and work your way in until most of the fiber is transferred. Now the fiber is back on the original comb with the butt ends in. If the fiber is sufficiently cleaned and organized you are ready to move on to the next step. If not, repeat the first two steps. Bring the fiber to a point and begin pulling by first pinching from the sides and then from the top and bottom, hand over hand, each time pulling the length of the fiber so that you do not have a break or weak area.

At this point you must plank (layer) the fibers and comb them once more. You do so to redistribute the fiber lengths because the longest fibers came off the comb first. Break the long coil (top) every 30 inches or

so and bring each piece to a bundle in your hand. Now lash these fibers back onto the upright, stationary comb, turn the comb to the side position, and begin the combing process all over again. This time it will go very quickly because the fibers are already combed.

When you've transferred all the fiber to the stationary comb, bring the fiber to a point (like a beard) and pull the tip through the diz. The concave side of the diz should face the comb. Holding the diz in one hand and the tip of the fiber in the other, begin to pinch and wiggle and pull the fiber, remembering to let go of the fiber and repinch it at the beginning of the next group of fibers (the staple length). If you pull too far, you will have a break or weak area in the top. If you are working with fine wool and pulling through a very small hole, you will be amazed how long the top will be. It seems to go on forever. If the fiber is not flowing smoothly, you may have to adjust the position of the diz so that just the right amount of fiber comes through the hole with ease. You will quickly learn to feel where to place the diz. If you do not like the looks of your first try, put the fiber back on the comb

Lani combs are versatile because they are made with interchangeable heads.

Loaded paddle and Viking combs.

and go through the process again.

If you are using any of your combs to separate guard hair from down, you will notice that once the fiber is combed, the long guard hair will pull off first. It becomes very obvious when you have pulled off the hair that the fiber left behind (down or undercoat) is much softer, shorter, and not as lustrous.

Combed skeins.

Spinning worsted yarns

You may already be spinning in a worsted style and not even realize it. It is a technique often referred to as inchworm or pinch and pull. Worsted spinning allows no twist to enter the drafting zone. One hand holds back the twist while the other drafts the fibers. Only when you are content with the drafting do you allow the twist in. In woolen spinning (from carded fibers) the twist enters the drafting zone prior to or at the same time you are drafting the fiber. Watch the fibers as you spin in the worsted style. They remain parallel so the fiber ends can be tucked in as the yarn is forming. Worsted spinning makes a smooth surface and shows off any luster in the wool. Because no fiber ends stick up, you will have no pilling. Although worsted spinning is a slower process than woolen spinning, you can get into a rhythm that allows you to move along at a good pace.

Working with luxury fibers

Do not oil luxury fibers. Oil only wool. I use water or water with hair conditioner or fabric softener to control static on hair and fur fibers such as angora, alpaca, llama, mohair, and silk. The very small, fine teeth of the Louet minicombs work really well to organize small amounts of angora and qiviut, but these small combs are not well suited for use with most wool.

I have used Lani, Majacraft, and Forsythe minicombs successfully with Merino and CVM, although you can comb only small amounts at one time. I use a midsized minicomb made by Valkyrie to comb alpaca, llama, mohair, and some medium wools. The traditional Viking combs made by Indigo Hound are ideal for Border Leicester, Coopworth, and Lincoln. Medium wools work well on most of the above combs and exceptionally well on the paddle or peasant comb. Lani combs have the unique feature of interchangeable heads that allow for a great range of fibers. ⌘

Robin Russo lives in Bradford, Vermont, where she spins, felts, and dyes. A fiber enthusiast for over twenty-seven years, she has taught at numerous gatherings of spinners, knitters, weavers, and historical societies.

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Handcarding with a *Light* Touch

Or how to make perfect rolags

by Carol Huebscher Rhoades

When handspinners explain their craft to others, they often start by showing some wool and explaining the basics of carding; then they demonstrate spinning a yarn. However, I've noticed that many spinners don't handcard their wool. Some prefer to spin from the locks, to flick or drumcard, or to comb their fibers, while others have their fibers prepared commercially. It's easy to see why many spinners don't handcard. It seems to take a long time; it doesn't always give easy-to-spin results; and it can be stressful on muscles and joints in the arms and hands. However, carding doesn't have to be that way. It can be fast and easy on the body, and it's the key to quickly-spun and controlled woolen yarns.

Carol Rhoades shares her secrets for making perfect rolags.

Before you start

Clean your carders.

Quick, efficient carding starts with clean carders and fibers. Make sure your carders are rust-free and that all the teeth are in the correct position. Adjust any misaligned teeth. Remove any fibers caught in the carders. If there are fibers left on the carders, especially greasy ones, they simply invite more to bed down with them and carding becomes even more difficult. My secret weapon for cleaning the carders is a roller pick. Your hairdresser will probably give you a couple or you can purchase them at a beauty supply store. The plastic picks slide easily between the teeth without damaging the teeth or backing.

The most important idea to keep in mind is that you want your carding to produce a rolag that will be spun into a light and airy woolen yarn. Woolen yarns can be up to 60 percent air, and the air pockets between the fibers produce a lightweight yet warm yarn and garment. At every step of the carding process, from selecting your fibers, to cleaning, carding, and spinning them, think *light*, think *airy*.

Choose fibers that are open and easy to card, that is, choose a fleece with no matted or felted sections and little or no vegetable matter. Open the fibers by hand if the cut or tip ends are at all matted.

Choose appropriate handcards for the fibers. For fine fibers, use carders with closely-spaced teeth that are thin and flexible. For coarse fibers,

use carders with fewer, longer, and thicker teeth.

Your body position

It is more comfortable to card when the handcards are well-supported. Position the passive (usually the left) carder on your left thigh. Hold the active carder (usually the right one) so that your thumb and forefinger are


Spread out your thumb and forefinger.

spread out. This position keeps the active carder steady as you work so that it meets the passive carder evenly and squared on with each stroke.

While you are carding, keep your elbows and shoulders relaxed and low. Embedded fibers and ridged rolags are most often the result of the active carder meshing through the passive at a right angle when the wrist and elbow are raised.

Placing the fibers on the carder

Fiber length will partially determine the position of the fibers on the carder. I prefer carders with a slight curve to them, and I catch the cut ends of the locks at the highest point of the curve on the carder. Working from the curve forward lessens the opportunities for ridges to form in the rolag since there is less rocking and embedding movement, particularly if your carders have a strong curve. If you use flat carders, position the fibers about one-fourth of the way down from the handle. Fibers caught in the back teeth near the handle tend to show up as little U shapes


Placing the fibers on the carder.

in the rolag. I also position the fibers at least two teeth rows in from the sides so that they don't flare out during the carding. The flaring out can also be controlled by starting with the staple tips facing away from the handle. Keep in mind, though, that as soon as you start transferring the fibers from one carder to another, the tip and cut ends will mix and blend.


Spread fibers evenly.

Be careful not to put too much fiber on the carder. There is some leeway—if you want a dense rolag, use a bit more fiber than usual; for a fine, light yarn, use less fiber. In the long run, carding less at a time is more efficient and faster than trying to thoroughly card too much fiber in one rolag.

For even yarns, card equal amounts of fiber each time. To spread the fibers evenly across the carder, take a lock and catch the cut end on the teeth, using an index finger to hold the cut end as you pull the lock forward and away from the teeth with the other hand. This motion opens up the lock. Take the remainder of the lock and catch it next to the fiber on the carder and repeat the motions until the lock is used up. Depending on your fibers, one lock may be enough to fill the carder, although two to three locks are usually needed. Using the same number of similar-sized locks in each rolag makes it easy to control rolag size. If the fibers look a little uneven across the carder, move some to fill in the gaps or remove the excess fibers.

Carding motions

Now you are almost ready to card. Remember to work *lightly.* Keep those elbows and shoulders low and relaxed. The carder teeth should always be parallel as you card. In other words,


Don't mesh the teeth.

don't mesh the teeth but let the active carder float across the top of the passive carder, following the angle of the carder. For flat carders, that means a movement straight across; for curved carders a slight angle downwards follows the curve of the teeth but does not intermesh the teeth.

Before you make the first stroke, look at the position of the fibers on the carder. Notice that they form a rectangle with the width equal to the staple

length. If you keep your fibers in that conformation while you card, always positioning the fibers during the transfers to maintain the rectangle at the same place on the carder, then you will end up with parallel layers of fiber. These parallel layers can be rolled into a rolag with even layers of fiber throughout. If the fibers have shifted into several stairstep layers, the rolag will have thick and thin spots.

Begin carding with a four-stroke sequence, covering one-fourth, one-half, three-fourths, and then all the fibers on the passive carder with the active carder.

With each stroke, the active carder floats across and parallels the teeth of the passive carder and then moves completely away from the passive carder until there is a break between the fibers on each carder. Adjust this movement according to the fiber length. For longer fibers, the sweep-


Sweep away stroke.

ing-away stroke is longer.

To make each successive stroke, move your wrist so that the active carder goes up, over, and then down to the passive carder. Notice the position of the carders. The active carder does not completely cover the passive one. Instead, the carders meet so that the next stroke begins at the top of the curve of the passive carder, with the front teeth of the active carder coming down at the top of the ridge of the passive carder. This keeps fibers from tangling around the back teeth and keeps the layers one on top of the other. Also, be sure that the fibers on the active carder come down flat. A common cause of folded fibers in rolags is too short a sweep away (no break between fiber sections) followed by the active carder kept low and parallel to the passive as it moves into position for the next stroke.

Transferring the fibers

After the initial four-stroke sequence, I usually make one more full stroke and then transfer the fibers from the

carder. I partially card the fibers back onto the passive carder in two to three strokes, then transfer the remaining fibers onto the passive carder. This transfer ensures that the fibers originally on the bottom of the passive carder layers move to the top and get an equal amount of carding.

Transferring the fibers from one carder to another can be a bit tricky. I think of the carder that will receive the fibers as *lifting* them off the other. I begin by carefully positioning the carders so that the carder to receive the fibers is flat and balanced on one thigh while the other is held at a right angle to it. The teeth of the carders face each other. The fibers are aligned so that they will lie in the same place they had at the beginning of the carding process. With a quick upward motion, lift the receiving carder against the giver and sweep up the fibers. The fibers should now all be on one carder.

What to do when the fibers won't transfer

If the fibers do not all transfer, it could be because some fibers have become embedded.

Causes for embedding include

- Carding too vigorously and/or at angles so that fibers are forced down into the teeth.
- Fibers caught in the teeth attract more fibers.
- The rough surfaces of teeth catch fibers (condition the carders by using them more often or see Beverly A. Nissen's article, "Conditioning Hand Cards," in the Summer 1994 *Spin·Off*, pages 112–115).

Carding just enough

If the fibers are tangle-free and well-aligned, I card two to three more strokes and then prepare to form the rolag. If the fibers look as if they need a bit more carding, repeat the transferring and carding sequence. Be careful not to overcard your fibers, especially fine ones—or you may end up with tangles and noils.

Forming the rolag

Transfer all the fibers to the active carder and then directly and lightly back to the passive carder, arranging the fibers so that they are completely supported by the passive carder. The batt should be floating on top of the teeth. With the teeth of the active carder facing downwards, use the wood surface on the front edge of the active carder to begin lifting the batt. Place the passive-carder hand, palm up, just behind the roll that is forming. Gently roll up the batt with the front edge of the active carder pushing the fibers and use the long, straight side of your passive hand to shape the rolag. The active carder remains parallel to the passive one and pushes straight toward the passive's handle. Your palm-up-ward hand moves in tandem with the carder, with slight moves downward and foward under the forming rolag so that the fibers are tucked neatly into the rolled shape. When the rolag is at the back of the passive carder, roll it into your open palm and then place the rolag at the front of the passive carder. Keeping the active carder parallel to the passive one and just barely touching the top of the rolag,

A perfect rolag.

gently roll the rolag straight back toward the handle. Voila . . . ! the perfect rolag!

This method of forming the rolag is not only quick but it keeps the rolag even. By contrast, using the fingers to form the rolag dents it and makes places where the yarn will thin a bit during spinning.

Lay the rolags in a smooth box or basket. You may want to put tissue paper between the layers of rolags. Spin the rolags as soon as possible. Rolags, especially ones of angora, mohair, or silk, tend to get squashed when stored over time.

Adjusting the technique for length of fiber

Short fibers will be positioned close to the front of the carder; long ones will still have the cut ends at the top of the ridge of curved carders but will hang over the front edge more. When carding those long fibers, be sure that, as you sweep away after a stroke, there is a clean break between the fibers on each carder.

The diameter of the rolag should also be suited to the fiber length and fineness. For short fibers and fine yarns, form a small diameter rolag. For long or dense fibers, form a large diameter rolag. If your rolags are proportionate to the yarn you want, drafting will be effortless.

Carding exercises

Long fibers require a long sweep away motion.

After you've practiced this method of carding for a while, try some exercises to see clearly what happens to the fibers as you card and transfer them.

Exercise 1: Place one thin layer of a dark fiber across the carder and then put a layer of a light fiber on top. Card one or two light strokes (so that the colors aren't blended). Transfer the fibers from the passive to the active carder and card them back onto the passive one. You should see

Short fibers form small rolags.

Problems and Likely Causes

Problems	Likely Causes
Ridges in rolag. Fibers are caught around back teeth; fibers on the active carder bend as they come down onto the passive carder.	Carding too vigorously.
Stairsteps. Instead of one layer of fibers in a rectangle with the width equal to the staple length, there are several overlapping layers.	Usually some fibers are dragged out farther than others. This happens when a raised wrist or elbow makes the active carder meet the passive one at an angle and the teeth intermesh. Remember to keep the carders parallel as you work. Stairsteps also occur when the active carder starts the stroke in the fibers hanging off the front of the carder. This movement causes some fibers to be dragged forward, away from the carder teeth and away from the other fiber layers. Be sure to start the strokes at the top of the ridge. Another cause of stairsteps is improper positioning of fibers during transfers.

Long fibers form large rolags.

how the underneath fibers are shifted so that they can now be carded.

Exercise 2: Arrange the locks so that a light colored section is centered on the passive carder. Flank it on both sides with a dark fiber. Card and form the rolag as usual. If your carders always meet squared on during carding and transferring, then the colors will stay distinct. If each of your rolags has a consistent amount of fiber and you draft consistently, you can produce yarns with evenly-spaced stripes. (For ways to have fun with this technique, see my article, "Endless Stripes," in the Fall 1998 *Spin·Off*, pages 56–62.)

Other Exercises: Don't card for long stretches at a time. Get up; walk around; shake out and rotate your wrists and shoulders; do some neck rolls; flex your back. I usually give myself a certain amount to card and when it is done, I take a break.

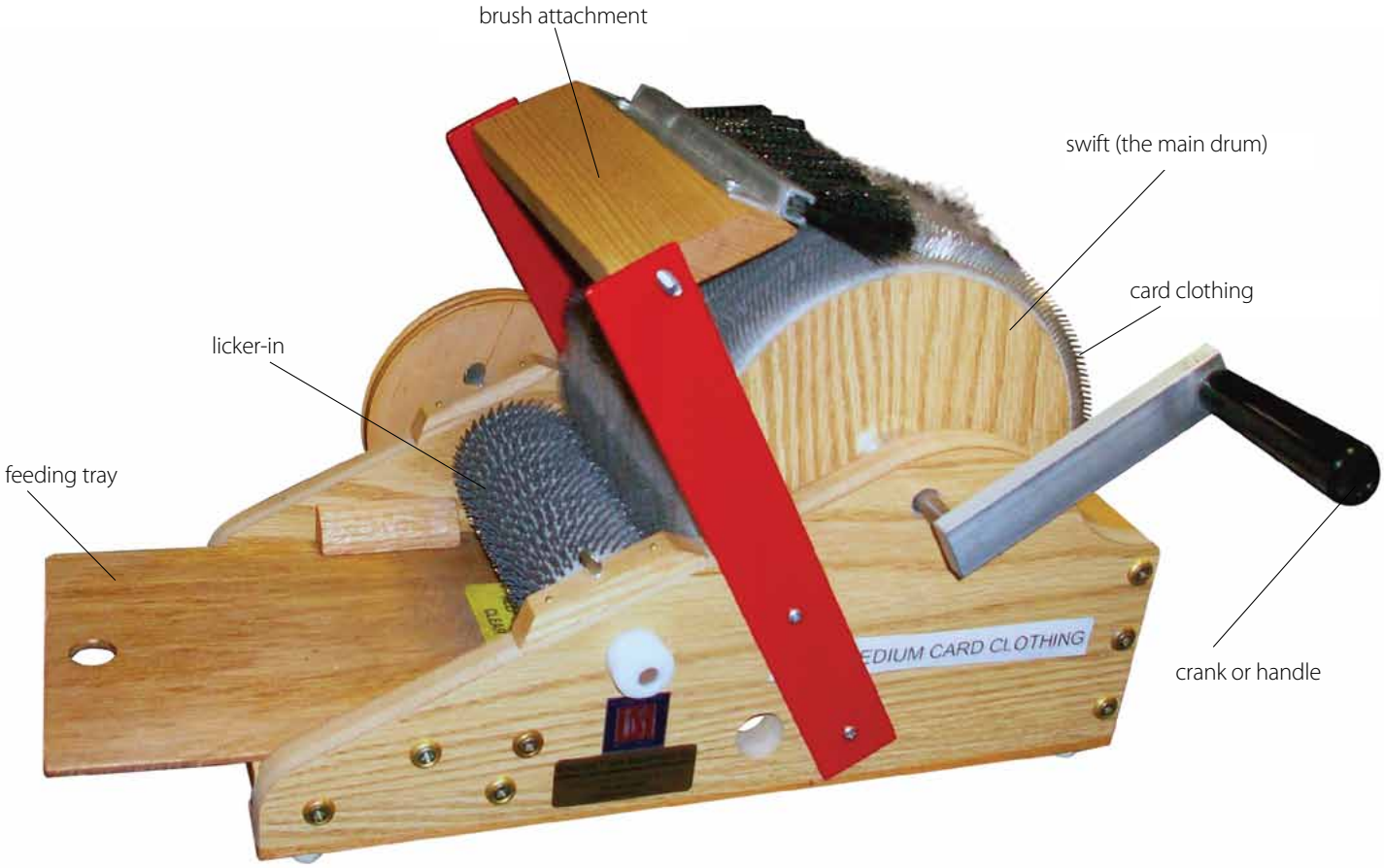
Handcarding should be a quick, efficient, and painless method for preparing fibers for light, airy yarns. The method shown here is not the only way to get wonderful rolags. Observe how others card and watch what happens at each step of the process as you work. Make adjustments and experiment until you get the method that works best for you. Then enjoy your handcarding and marvel at how quickly and evenly those rolags spin up into exactly the yarn you want. ⌘

Carol Rhoades of Madison, Wisconsin, almost gave up on carding early in her spinning career and admits to selling her first pair of handcards. However, she soon mended her ways and has been happily carding for many years since.

Use this technique to make yarn with evenly spaced stripes.

Tips for improving your handcarding techniques

- At first, you may want to just go through the process. It may take a few practice rolags to break old habits and acquire new ones. Then take some time to stop at each step and look at what is happening on the carders.
- Having someone observe you can help with troubleshooting. Watching someone else card can help you spot the nuances of the technique which you might not otherwise notice.
- If you don't have a carding partner, try videotaping and analyzing your carding session.
- Don't try to catch all problems at once—focus on one area at a time, adjust the technique and then go on to further refinements.
- Aim for a rolag that looks like a tube of air surrounded by an even layer of fibers. Think of drafting for a woolen yarn as simply elongating and thinning down that tube without losing the core of air.



Drumcarding

by Robin Russo

As a new spinner, I found handcarding for large projects to be a tedious task. I began to purchase roving and top to avoid the carding process but was soon dissatisfied with both the spinning and knitting of those prepared items. Then in 1978, my sisters, my daughter, and I entered a sheep-to-shawl competition and won a Patrick Green drumcarder. This event changed my outlook forever. I now view the purchase of fiber and its preparation to be as much a part of the journey as the spinning and knitting.

Carding is a process of brushing clean fibers over opposing sets of short wire teeth (card clothing) to open and separate the fibers into a uniform mass. This can be accomplished with a set of handheld cards, a small tabletop drumcarder, or a very large industrial carding machine. The size of your carded mass will be determined by the size of the carding device you are using. Carded fibers produce woolen yarns that are soft, lofty, fuzzy, warm, bouncy, and lightweight. However, woolen items made from these yarns have a tendency to pill because of short fibers that are not secured in the spun yarn and so stick out of the woolen yarn. In worsted-spun yarns, the fibers are tucked inward as they are spun.

Understanding your drumcarder and what it is capable of is important. Here are a few things to look at.

Card Clothing (wire teeth)

Examine the wire teeth on the drum. Are they tall or short? Set close together or far apart? I have counted as few as 48 and as many as 240 wires per

square inch of card clothing on the various devices I own. Short wires, set close together are best for fine, shorter fibers. Wires set farther apart are best for longer, coarser fibers. The taller the wire, the more fiber the device can hold. Manufacturers generally say how much fiber a particular carding machine can hold, but it is easy enough to figure that out by trial and error. Once the drum is full, it will begin to put fiber onto the licker-in. The licker-in is the small cylinder on the drumcarder that draws the fiber onto the main (larger) cylinder. When that happens, stop carding. The licker-in should only have short noily fiber on it. You can also see when the drum has reached its capacity. The drum is full when the fibers uniformly blanket the teeth. If carding continues when the drum is too full, the fiber will transfer back onto the licker-in, which is counterproductive.

Drum Adjustment

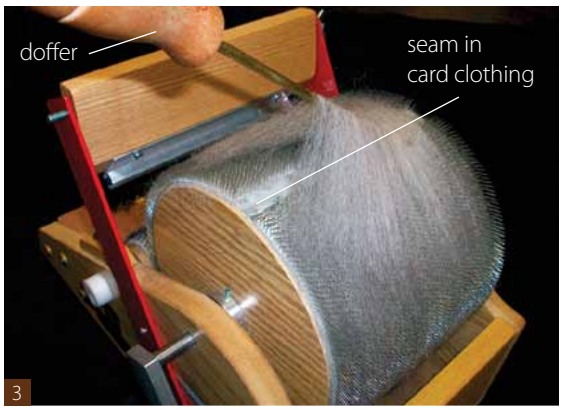
Are the drums adjusted properly? Do the teeth mesh together or do they just barely touch? The manufacturer may tell you what the adjustment should be on the equipment, but if not, you must make this determination yourself. Most carding machines have screws or wing nuts that can be used to adjust the drums. The teeth should not mesh, but should touch slightly. I refer to it as "kissing." Some manufacturers recommend slipping a piece of paper between the drums to determine the correct distance.

Oiling

Oiling should be done according to the manufacturer's specifications. If you do not have a guideline, look for oiling ports (small holes located near the metal rotating assemblies). Plastic and nylon sleeve bearings generally do not require lubrication. It is best to ask the manufacturer about oiling before you do so, just in case there are parts that can be damaged by the oil. I use automotive motor oil because it has a thicker viscosity than 3-in-1 oils or sewing machine oils that have a tendency to run.

Drive Band

On carding machines with a rubber or urethane drive band, I remove the drive band when it is not



1) Locks and teased fiber. **2)** Teased locks being fed into carder. **3)** Use the doffer to gently break the batt apart at the seam in the card clothing. **4)** Roll the batt off the drum using a paper towel tube. PHOTOS BY ROBIN RUSSO

in use to prevent it from "taking a set" (permanent stretching). Also, be sure drive bands are wrapped correctly before you card.

Carding Process

Following a few simple rules will help you produce beautiful, carded batts for spinning or felting with the least amount of effort.

Fiber: Make sure your fibers are clean. This means washed, dried, and reasonably free of chaff or other barnyard materials. If you have inadvertently felted your fleece during the washing process, do not expect your drumcarder to rectify the problem. Putting felted or very dirty fiber through your drumcarder only puts stress on the wires of the card clothing, making it difficult for the carder to produce a good batt. Bending the wires will adversely affect the look and quality of your batts in the future.

Picking: Pick or tease the fibers so that the locks are thoroughly opened up. You can do this by hand or with a picker. This is not as time consuming as you might think (unless you have felted the fiber in the washing process!). I put my wool in a box on the floor in front of my chair, and while I am watching the news, I pull the fibers apart *without* even looking at what I am doing. By the time the news is over, I have a very full box of fluffy fibers. This is especially important if you are blending two or more different types and/or colors of fiber. Mixing them up at this stage saves lots of time at the drumcarder. Remember to weigh out your amounts so that future batts will have the same proportions as the first.

Feeding: Place small amounts of fiber onto the tray that feeds the fiber under the licker-in, or small drum. Do not hold this fiber back by placing your hand on it. This will make the fiber wrap around the licker-in. The only fibers that should accumulate on the licker-in are the short, noily fibers that you do not want on the main drum. If you have overloaded your tray, stop turning the drum, pull back some of the fiber, and then begin carding again.

Removing the batt: When the drum is full, remove the batt. Look for the break in the card clothing on the large drum and move it to the top position. Place your doffer (the tool that looks like a thick ice pick) at an angle into the break and gently rock it up and down, breaking the batt apart as you head toward the far side of the drum. Once you have reached the far side and the batt is broken apart, use a paper towel tube or foam pipe insulation (cut to the width of the drum) to wrap the carded batt around as you roll it off the drum. If I have very fine, catchy fibers in my batt, I also use a piece of tissue paper, winding it on the tube with the fiber to prevent the fibers from sticking onto one another as the batt is rolled off the drum. Hold the tube or insulation against the teeth as you roll, and this will do a great job of picking up the majority of fibers on the drum. If you don't have a tube to roll the fibers onto, gather the "cut" edge of the batt and roll the drum forward so the batt is close to the wooden frame of the carder. If you pull the batt off against the frame, it will usually wind off smoothly.

Round Two

Break down your batt into three or four lengthwise strips or layers and feed each piece back into the drumcarder. If you want to blend the fibers from several batts, feed three or four strips (each from a different batt) for the new batt.

Finish

If your fibers are clean and well picked, your batt may be ready for spinning. Hold it up to the light and see how uniform and clean it is, making sure there are no noils or inconsistencies. If you are not satisfied, divide the batt into three or four pieces again and repeat the process. If your fibers are well teased, this third round should be sufficient to obtain a batt worth spinning.

When you sit down to spin, you will know if you did a complete enough job. Well-prepared fibers spin easily into beautiful, consistent yarns. If your batts become disorganized during the spinning process, simply put them through your drumcarder again to freshen them for spinning.

Batts for Felting

I use the same techniques for creating felting batts as I do for spinning, although felting tends to be more forgiving of any inconsistencies that may occur. The drumcarder is an essential tool for organizing the bits and pieces of fiber you create to lay out for a felting project. ⌘

Robin Russo lives in Bradford, Vermont, where she spins, knits, felts, and explores fibers and their many uses. She and her husband, Pat, also manufacture a line of products for handspinners. Over the past twenty years, Robin has taught at numerous gatherings of spinners, knitters, weavers, felters, and historical societies. When she isn't working as a paralegal, she enjoys spending time with her friends and family working out some new fiber-related idea. She has three sisters, a daughter, and numerous nieces who all spin, knit, felt, weave, and love to play with fiber.

On a Roll with Pseudorolags

A minimalist fiber-preparation technique

by Susan Z. Douglas and Rosemary S. Thomas

Use a small amount in each flicked lock.

Flick one end, then the other.

Lay the lock on a piece of fabric. Add another lock, overlapping slightly.

A new column of locks has been started.

Susan Z. Douglas (SZD): If the best ideas are brilliantly simple, then the pseudorolag is indeed one of the best. Rosemary Thomas began with a simple, extraordinary method for bundling fiber into a spinnable package.

Rosemary S. Thomas (RST): A friend gave me an old fleece which was, believe it or not, shorn in 1972! I had read about a new spinning technique, and I decided to try it using this old fleece. After a little experimentation, I felt that spinning from folded locks would give me the best results. However, the new technique called for a use of the hands that made it difficult to spin from a lock folded over my finger. Also, I wanted the not-having-to-stop convenience of spinning from a length of top.

I flicked a number of locks, laid them in a row, and then studied the matter. If I laid them out so that they overlapped slightly and I folded the whole bunch lengthwise, then wouldn't it be a continuous-feed fold? That first try didn't work because the whole thing fell apart. Then it hit me—*roll them*.

This fleece was too short-stapled to roll as I had originally planned, so I laid out two ranks of flicked locks, with the locks overlapping. I used a dog comb to aid in rolling the locks into a vaguely tubular shape. It worked! It worked perfectly! The fiber just flowed out of this tube like water from a jug. This preparation made the new spinning technique so much easier! I made lots of these tubes so that I could enjoy an uninterrupted spinning session. Seeing these tubes laying there on the table reminded me of something . . . what was it . . . oh, yes, rolags! And that's how these rolls got the name *pseudorolags*.

Why the prefix *pseudo*? Well, these aren't actual rolags because, as I understand it, rolags are the result of carding, and these are not carded but made from flicked locks. They spin much like spinning from the fold. I'll leave it to others to determine whether or not this is a semiworsted or woolen spin, but all I know, and Susan's experience concurs, is that once the pseudorolag is started, the fibers feed out of it much like they feed out of top.

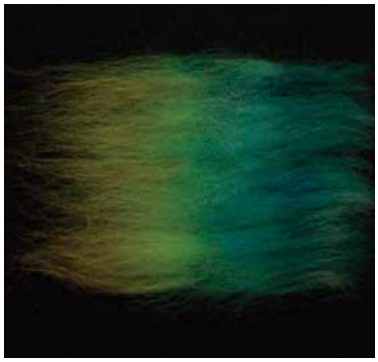
I was perfectly happy to spin like this forever, using flicked locks to make pseudorolags, until Susan e-mailed me out of the blue. Her e-mail read, ". . . I also loved your pseudorolags. I'm going to try them, maybe with some color striping. Would you mind if I incorporated the technique into a class I'll be teaching on color blending?"

Two columns of locks make a nice rectangle.

Begin to roll the fibers into a tubelike shape.

Roll a few times in the same direction, not back and forth. Don't push too hard.

Ready to spin!



Above, left: Three layers of colored wisps pulled from top, ready to roll.

Above right: Colorful pseudorolags.

Thus began a long and satisfying e-mail friendship and a long and satisfying two-person spinning study group that Susan named "On a Roll with Pseudorolags!"

SZD: I had in the past experimented with color blending using commercial top, hand manipulating the fiber using no tools. The results, while an interesting parlor trick, were not practical for preparing any quantity of fiber. So when I saw Rosemary's blog entry about her pseudorolag technique, I perked up, thinking of the possibility of using it with dyed top.

I had two ideas to try. The first was to layer more or less complementary colors. I just grabbed appropriate colors from assorted tops and staggered thin wisps of them atop one another. I found that these pseudorolags spun up delightfully and that I just wanted to make and spin more and more.

Now why take apart perfectly good top only to reconstruct it? Perhaps some of the colors in a painted top are not appealing. Leftover bits from previous projects can be put to use. Boring solids can be sparked to new life. Color combinations and sequences can be changed and controlled. I like the nuances created by stray bits of adjoining colors. Another effect I enjoy is that of *abrash*, a term used for handmade carpets to describe dye variances. Each pseudorolag is effectively its own little dyelot, giving a distinctive character to the yarn.

When making these early pseudorolags, I did struggle a bit with coaxing the rolls around a knitting needle. I was demonstrating the technique for some friends one day when Cheri Taylor-Quinn, watching, exclaimed, "Chopsticks!" Indeed, holding the edge of the fibers between chopsticks (two knitting needles work as well) to start the roll is, for me, a refinement that makes the process effortless.

My second idea was a variation of the first, but using stripes *and* layers of color. The resulting pseudorolag makes a striped yarn, but unlike spinning directly from a space-dyed roving, there is depth and variety in each stripe because of the layers of color.

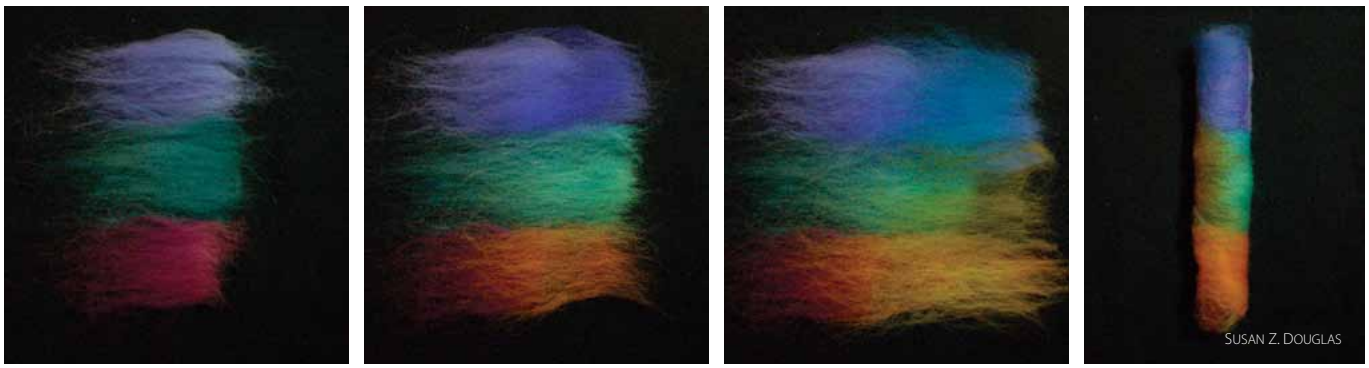
I shared the results of my experiments with Rosemary. . . .

RST: I just couldn't believe it! I couldn't run to my stash fast enough. I began playing with colors, too, and having so much fun! Forget flicked locks! Let's play with color!

Susan and I e-mailed back and forth and shared photos, and before we knew it, we were blending not only colors, but also different types of fibers, and even going so far as to make (*gasp*) art yarns!

Of course, this led to much discussion of how this gave us such *control* over our spinning projects. We also exclaimed, repeatedly, at how *simple* and *easy* it was to do. We didn't need much in the way of tools—no need for carders, hackles, and so forth—we just needed fiber, spindles, and *our ideas*. We also didn't have to worry about oddball items damaging our carders—we could throw any old thing into our pseudorolags, and we did! ⌘

By day, ***Susan Z. Douglas*** of Topsham, Maine, is a mild-mannered office assistant; by night, she knits, spins, and ponders life via e-mail with her friend Rosemary. ***Rosemary S. Thomas*** knits, spins, and generally enjoys life in Pueblo, Colorado. You can follow her meanderings at www.rosemaryknits.blogspot.com.



The layered and striped technique.

Rosemary Thomas developed the pseudorolags fiber preparation so that she could take full advantage of Tammy Rizzo's Navajo Ply on the Fly method of spinning. The Bluefaced Leciester yarn for these socks is Navajo-plied and measures 28 wraps per inch. Search for Tammy Rizzo's Navajo Ply on the Fly in YouTube.com to find Rosemary's tutorial videos on the subject.