

Weaving and Dyeing Processes
in Early New York

with a Description of Spinning Fibers

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WEAVING AND DYEING IN EARLY NEW YORK

Patterns and Weaves

American weaving derives from much older forms and like our people comes of mixed ancestry. It was brought to the New World by the early colonists, the Dutch of New Amsterdam, the Mennonites who settled in Pennsylvania, the Scotch who took up land in the South, the Irish who came to New Hampshire, and the English of New England. All of them contributed the weaving patterns of their homelands and before hand loom weaving was eclipsed by the power weaving of the eighteen hundreds these patterns of many lands had spread and intermingled until the same patterns could be found all through the country.

At the time of the first settlers every homestead was a textile factory. All the members of the household worked at times at the textile trade. The youngest children wound cops and quills for the warping creel and the shuttles; older children carded and spun; the housewife herself leaned over the dyepots for hours at a time and her husband often worked at the loom. It was among these domestic manufacturers that our American art of weaving developed its forms and great variety of patterns.

The most typical product of American weaving was the colonial coverlet or "coverlid." This was a bed-covering woven in patterns in colored wool over a plain tabby foundation, usually of linen or cotton in white or natural color. The number of these coverlets still in existence is amazing.

Why these early weavers so developed their art on bed-coverings can be explained by the conditions of life in that day. Bed-places were not always separate from the living rooms, and a great four-poster might be a prominent feature of the kitchen, therefore a covering that would be decorative and also protective in the day time, as well as warm at night, was necessary. A plain dark colored fabric would have served but human beings cannot long live comfortably without beauty so it is not strange that time was found to contrive ingenious patterns for these coverlets. In that day it was one of the few outlets for the creative impulse.

These old patterns grew as simply as frost crystals. Due to the narrow limitations of the simple looms on which they were woven they became abstract and geometric. If you take four squares that

vary in size, but within definite proportions, and arrange them anyway at all it seems that beauty results. Among the hundreds of patterns it is hard to find one that is really unpleasing.

In the arrangement of four elements the pattern possibilities are of course endless. We find in these old coverlets dainty feminine patterns, patterns whose solidity is masculine, irrational patterns, stern and solemn patterns, prim patterns and exuberant patterns each with its own name.

We do not know who first wove "Rose in the Wilderness," "Chariot Wheels," or "Granite State." We cannot tell whether it was some inspired domestic manufacturer who either copied the "draught" for friends or kept it secret. Some patterns now are rare, existing perhaps only in a single old coverlet, some were confined to a particular locality, while others were known and woven wherever there were looms. When noted down on paper, in form for guiding the threading of the loom, these patterns look like music, so that one feels it should be possible to play or sing them.

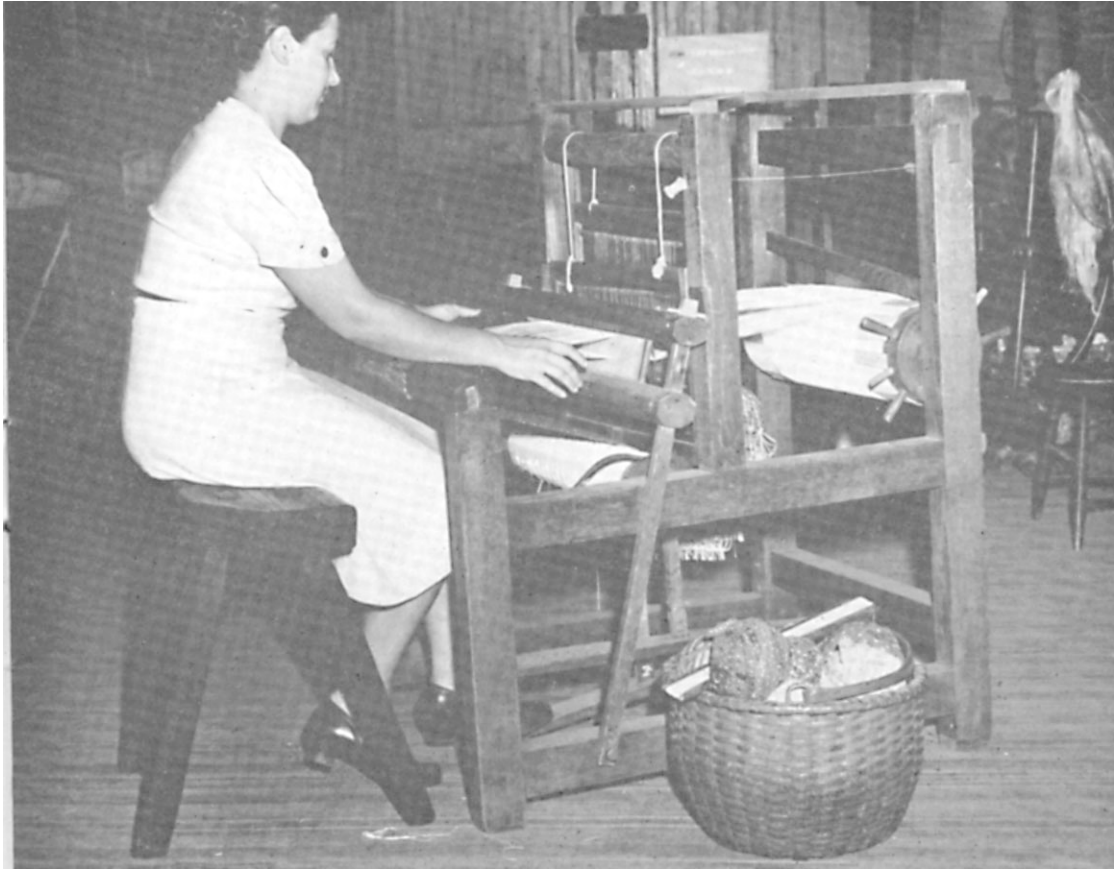
Drafts traveled from hand to hand and were sent to far places by infrequent riders, perhaps by peddlers. They were written on scraps of paper and stitched together with careful stitches. They turn up in old letters found in garrets or in old note or receipt books; often they were written on the backs of other documents, for paper was precious.

"Pattern" and "weave" are two different things. Just as the same melody can be played on a piano or may be sung, so a pattern may be woven in a number of different weaves. By "pattern" we mean design, and by "weave" the structure of the web.

The weave is limited to the capacity of the loom. The earliest looms were of the simple four-harness type. Several weaves are possible on this loom, but the one which admits the widest variations is the so-called "four harness overshot," so this was the foremost of the colonial weaves. The pattern in this weave consists of "skips" or "floats" of weft material woven over a tabby foundation. The earliest coverlets were made this way.

What may be called the middle period of American weaving, the century from 1725 to 1825 produced coverlets in the celebrated "double" weave and in "double-face" or "summer and winter" weave. These were woven on a much more elaborate loom than the simple cottage variety, but many of the patterns of the simpler weaving were carried over into the more complicated techniques.

American double weaving was probably in great part due to the work of skilled weavers among the Pennsylvania Mennonite



THE AUTHOR WEAVING ON A
TWO HARNESS LOOM

settlers, and no doubt the German weaving books brought over by them had a good deal to do with its introduction. Naturally its use spread over a considerable territory. There are beautiful examples in Schoharie County, both of cotton and wool and of linen and wool.

The web in this weave consists of two fabrics, one overlaying the other, and the pattern is produced by crossing the webs, which interlace only along the outlines of the figures. In the old examples the two webs are usually one of white cotton and one of dark blue wool, the pattern showing in white against a dark background on one side of the coverlet and in blue on a white ground on the reverse. Patterns woven in this way stand out with sharp contrast. Double weaving was well within the capacity of the domestic manufacturer who had a suitable loom, but was usually the work of professional weavers.

The "summer and winter" weave appears to be wholly of

American invention. Who invented it or where it was first used we do not know. Most of the old specimens appear to come from Pennsylvania but, as with the double weave, very fine examples are owned in New York State and it can be presumed that use of the weave traveled much farther.

The web in this weave consists of a tabby foundation in linen or cotton woven with a pattern of wool as in overshot weaving, but instead of making long skips as in that weave the pattern thread in "summer and winter" weaving is closely interwoven with the ground. As in double weaving the pattern appears on one side of the fabric in color on a white ground and on the other in white on a colored ground. The same patterns may be used for double-face as for double weaving.

In addition to the three main types of coverlets described there is one other that is very rare, the eight-harness overshot weave. The Bronson book (*The Domestic Manufacturer's Assistant*, Utica, 1817) gives five drafts for the eight-harness overshot weave, so that this must have been current among domestic manufacturers of central New York in 1820.

Then of course there are the coverlets in Jacquard weaving. To the person who is not a weaver, the distinction between Jacquard and the more elaborate harness weaving is not always clear. Coverlets showing more or less naturalistic designs and having a name and date woven into a plain square in one corner are always Jacquard weaving. If woven in one piece they are mechanical weaving of later date than 1825 and probably a good many years later. Coverlets woven by hand if of full width, two yards or more, are always woven in two or more strips and seamed. A coverlet woven full width is either fly-shuttle or power-loom weaving.

While the coverlets are perhaps the best known and easiest to come by in our day they were not as important as other fabrics to the people who wove them. Linens were a necessity and no textiles have more beauty. They are soft, shining and cool. While sometimes coarse and not so interesting in the plain weave, they were often patterned all over with delightfully simple little figures.

When most of us think of linen we think of damask, and much damask was hand-woven during the rich middle period. Two and three block patterns were the rule, indicating the limits of the looms on which they were woven. In structure damask is a satin weave; the pattern is brought out by weaving the figures in a weft-face satin on a ground of warp face satin. To do this it is necessary to have at least four harnesses for each block of

the pattern. The weave therefore, even in its simplest form, is beyond the reach of the weaver who uses a loom of only four harnesses. The weaves used for linens in the earlier times were simple four harness weaves and as a rule linen was not made in the overshot weave. Linen threads do not cling together as cotton and woolen yarns do and have a stringy appearance when lying on the surface of the fabric in long skips.

The most prominent of the weaves used for linen of the simpler sort were "Goose-Eye" and its many variations, "Huck," "M's and O's" in its hundreds of patterns, and an interesting little weave called in many old drafts the "diaper" weave. This weave was so featured in Bronson's book (of the 35 drafts in the book 12 are for "Diaper") that modern weavers often speak of it as the "Bronson" weave.

The old linen patterns may have at one time had individual names but these have become greatly confused and they are now usually classified by their weaves only. "M's and O's" in its simplest form produce a fine little all-over figure, used for plain toweling. Some of the large patterns, rich and beautiful, were much used for table-cloths. "Huck" was often used for toweling as it is today.

The name "Diaper" as applied to patterns means simply any small all-over repeating figure, and it is misleading to use the term of a special weave. It would be better to call it "Bronson" after the author of the book where it makes its only known appearance in print. For some reason it was written there in five or more harnesses but can be woven on four.

There were many other small weaves used for linens; some of them formed no figure but only served to break up the surface of the fabric. Of course many household linens and blankets as well as clothing material were woven in plain or "tabby" weave and they were often checked or striped in color. When woven of woolen on a linen warp "linsey-woolsey" was produced.

The weaves classed as linen weaves were often used for woolen also and the twill weaves alone would fill a book. The small twill weaves were used chiefly for the weaving of materials for clothing, though several were used for linen and blanket weaving. The simple twill weave, the foundation of many elaborate patterns, was often woven with stripes or checks of color and white and used for clothing and blankets of woolen.

The variations "Herring-Bone" and "Bird-Eyes" were often combined with it to form very elaborate patterns and for further elaboration the number of harnesses could be increased from the necessary four to as many as the loom permitted.

Blankets were often woven either in simple twill or "Goose-Eye" but with fancy plaids produced by warping in stripes of several colors and weaving with the same color stripes in the weft.

Selecting a suitable pattern for any piece of weaving was neither the first nor the last task to be performed. If the fabric was to be linen the flax necessarily must have been planted perhaps a year or more earlier. It had been weeded and cared for in the field, pulled by hand, rippled to remove the seeds, retted in water or by the dew of the field, broken by hand in the great flax brake, swingled, hatched and finally spun into literally miles of fine thread on the flax wheel.

If the fabric chosen was woolen the sheep had been sheared after scrubbing in the brook, the wool further cleaned, carded with hand cards, spun out on the great wheel by many steps of patient walking to and fro, reeled off into measured skeins on the clockreel and further washed and perhaps dyed by hours of stirring and boiling. These yarns whether of flax or wool still had to be wound off from the "swifts" onto quills for the shuttles and spools for the warping creel. The spools of warp were placed in the creel and the yarn wound onto the warping bars from which it was taken to the loom and fastened to the warp beam, spread over a raddle and wound onto the beam. Each thread had then to be drawn forward and threaded through an eye of the harness, through a slot of the reed and tied to the cloth beam.

Now the filled quill could be placed in the shuttle and the treadling, shuttling and battening commenced. At last the selected pattern began to grow under the weavers fingers.

After such labor and time spent in creating even the simplest fabric it is no wonder that when the material wore past any ordinary use it was cut into strips and rewoven into carpet in order to get the last ounce of wear from something so hard to come by. This weaving of rag carpets was the only hand weaving to survive the power looms by very many years.

Cop, Copp—A tube on which thread or yarn was wound in conical form so warp could be wound evenly on warping bars.

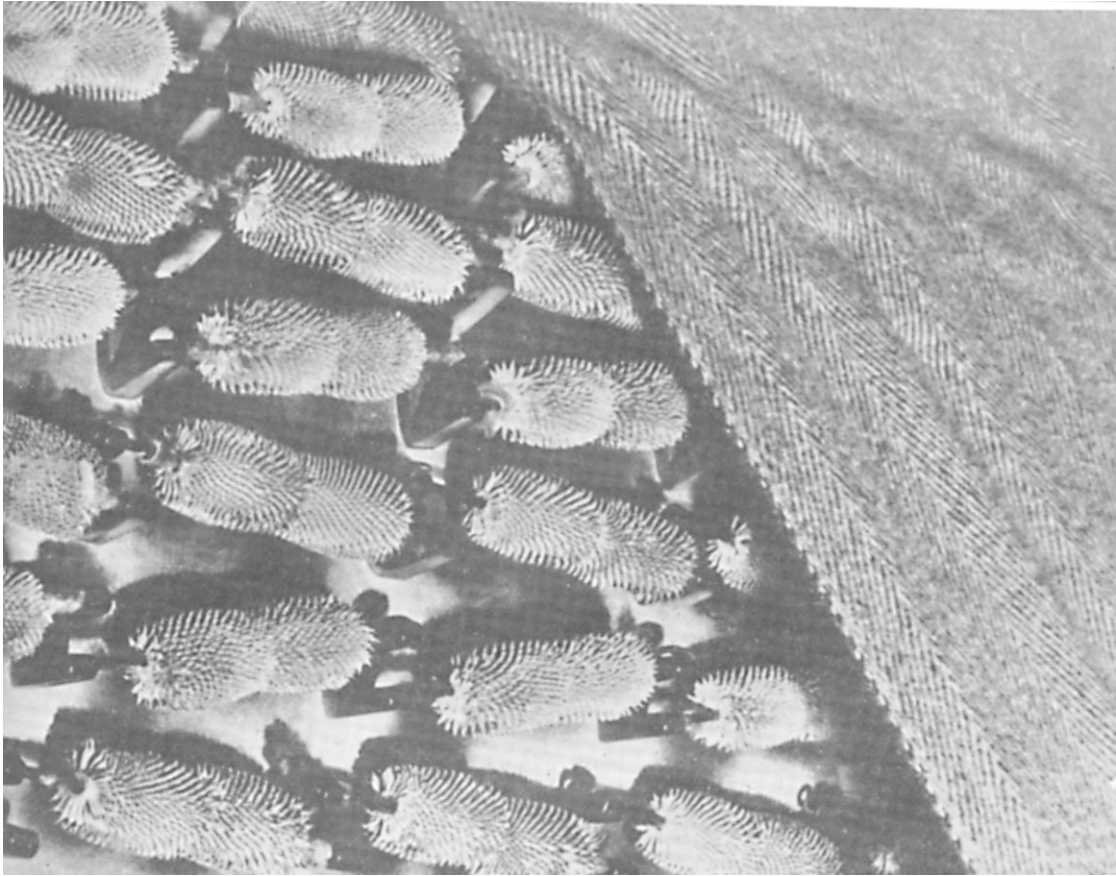
Harness—The combined parts of the heddles, heddle-rods and frame which rise and fall to cross the warp between shots of weft.

Heddles—cords or wires with eyes for carrying warp threads.

Quill—A paper tube for holding yarn in the shuttle.

Raddle—A stick with teeth which spreads the warp threads as they are wound on the beam.

Tabby—The weft thread used in plain weaving.



TEASEL AS USED IN MODERN
WOOLEN MANUFACTURE

Teasel, Teazle

The teasel has been grown by farmers since Greek and Roman times to supply woolen manufacturers with a means of raising a nap on cloth. The plant is a native of Europe. Only two varieties are known in America, *Dipascus Fullonum*, the fuller's teasel, the only kind having a commercial value, and the common wild teasel which is said to have value as a bee plant.

The teasel was brought from England to Onondaga County, New York in 1840 by William Snook. The industry of raising this crop for woolen mills still exists in the county, and fields of them are cultivated near Seneca Lake.

Apparently European teasels were imported for use before this date. The *Dyers' Companion* published in New York in 1815 describes the finishing of cloth with teasels and also gives directions for their culture. It states that "It is but a short time since

they have become a matter of note and speculation among us," and goes on to say, "save your money and raise your own teasels, and you will have them when you want them—they are nature's cards."

Teasels do best in limestone soils which have been made clean by previous cultivation. In the early spring the ground should be well-fitted and the seed sown in drills about three feet apart. One to two pecks of seed are used per acre. When the plants appear they are thinned to stand eight to ten inches apart in the row and a program of clean cultivation is instituted.

The second spring the field is given an early thorough cultivation, cleaned of weeds, hoed if necessary, after which nothing is done until harvest. During this second season, the plant grows into a bush about six feet high, with numerous side branches, at the extremity of each of which a teasel forms. The main stalk produces the largest teasel, known as the "king"; on the side branches there are a large number of "queens" or "mediums" as they are usually known. These are cut by hand as soon as the blossoms fall and dried carefully and completely. The climate where they are grown has a great effect on the stiffness of the hooks and teasels grown in different parts of the world are used for various types of cloth.

Willich's "The Domestic Encyclopedia," published in 1821, states that clothiers, "employ the crooked awns of the heads, for raising the knap on woolen cloths. For this purpose, they are fixed around the periphery of a large broad wheel; against which the cloth is held, while the machine is turned." The same authority, in the discussion of the finishing and fulling processes, states that after the cloth is milled by the fuller it is "dubbed with cards of teazle; stretched on the tenterhooks; dressed; sheared; pressed between heated planks and press-paper; and packed for shipment." The word cloth in these old texts usually means broadcloth. Not all fabrics received such heroic treatment.

When teasels are used in modern factories these springy burrs, which are about the size of hen's eggs and twice or three times their length, are fixed to rollers and the cloth passed over them so that the hooked awns of the burrs catch in the wool and raise the nap. This nap is later sheared to a uniform length. The teasel hooks are strong enough for the work and yet elastic enough to give before breaking the cloth.

At least one New York State factory still uses them. The Kenwood Mills of Albany finish their woolen blankets with teasels. Hundreds of burrs are trimmed, drilled and mounted on a large cylinder, and as this cylinder revolves the blanket fabric which

has been washed and damp dried is lightly passed over it in an opposite direction. As the teazles come in contact with the fabric the fibers are lifted up to form the furry-like nap.

Although mechanical wire knappers have been perfected in recent years, much of the finest woolen is still carefully finished with the more expensive but gentler and safer teazles.

Dye Processes

When a housewife of early New York State wanted to brighten her clothing or household fabrics with color she had to turn dyer after her yarn was spun. She usually dyed blue, for Indigo the most popular imported dyestuff dyed blue, or red hues from madder, another purchasable color which gave lovely brownish rose shades. These two colors were always fast. Cochineal, for scarlet, was very expensive so it was used only for very choice pieces.

Since she sometimes preferred duller colors for everyday and work clothes, and also because "boughten" dyes were expensive the frugal housewife frequently prepared walnut hulls, alder bark and butternut bark for browns; onion skins, golden rod, green peach leaves, mullen and yellow oak bark for yellow; and other weeds and herbs from the field and garden for various colors. Only by experience could she be certain of their fastness to washing and light.

She used kettles of iron, copper and brass. Iron was not only very hard to clean but was supposed to darken some colors. Brass or copper were preferred because they were the easiest to clean. They had to be scoured with salt and vinegar before using.

Enormous quantities of roots, leaves, bark and such materials were required for dye use. They needed to be boiled for long periods in order to extract the color and then the liquor had to be strained before cloth or thread could be dyed.

Elijah Bemiss, author of the *Dyers' Companion*, published in New York in 1815, states that for browns "butternut bark is the one most in use, and may be ranked as the first, it produces a great variety of shades and if rightly used its color is permanent, and is one of the greatest colouring substitutes (substances) in the Northern States."

Butternut bark could be used alone and the wool dyed at a scalding heat without special preparation. Cooperas added after the dye was exhausted and the bark removed made a darker brown. The bark was best when used green but dry bark made a different shade and boiling had the same effect.

Most of these dyeing directions were written for wool as that was the fiber most generally dyed. The methods for dyeing linen and cotton often differed slightly as these fibers were more difficult to dye successfully.

Cloth had to be treated with substances called mordants, to be certain some colors would attach themselves permanently to the fibers. This mordanting bath was sometimes called "the water of preparation" as it prepared the fiber to receive the dye. The most important of these mordants was alum which dissolved in water. In this solution the woollen cloth was soaked until it had absorbed as much alumine as necessary. It was taken out, rinsed and dried, or not dried, as the particular dyeing process required. Copperas and tartar were also used as mordants in somewhat the same way. Nitromuriate of tin was used in setting cochineal.

Alum and tartar were used together as a preparation for dyeing with madder, which could not be boiled as boiling heat extracted a brown dyestuff from the madder and spoiled the clearness of the color. It was always used at a scalding heat.

The same dyestuff was often used with various mordants for making different colors. Alder bark when used with a mordant of alum dyed a brownish yellow, with alum and copperas a handsome brown and with copperas alone it produced a black.

Many of these processes of preparation were very long and complicated. More time and care were evidently spent in mordanting the yarn and cloth than for the actual coloring of them. The process of preparation for dyeing yellow as described in the *Dyers' Companion* is as follows: "The common preparing water with tartar and allum, are used for wool or stuffs; to each pound of wool take one ounce of tartar and four ounces of allum, or to every hundred weight of wool, twenty-five pounds of allum and six pounds of tartar; put this into your copper caldron, fill with fair water; heat boiling hot, then immerse the wool, stir with poles to keep the wool open, that it may all receive the preparation alike; boil six hours, take it up, let it cool, place in a sack, covered close, to lay twenty-four hours that the pores of the wool may inhale the salts, and be the better prepared; then rinse well and shift the liquor from your copper, clean well, fill with clean fair water; if the waters are hard, or impregnated with minerals, to every hundred gallons of water, take four quarts of wheat bran, enclose it in a clean linen bag, let it boil one hour, or you may add three or four pails full of sour water; map off the scum that rises by the heat. The hard and rough waters which are natural to some wells and places, by this process may be rendered soft and fit for any colour; the cleansing of the waters requires strict

attention in all light and bright colours, as the yellow, the red, etc.; when the water is thus prepared, add of your colouring substances be they weld, yellow wood; roots leaves or plants, they all require boiling; add, boil and run, or stir, till you obtain the colour required."

Yellow was dyed with peach leaves, used green, over a mordant of alum. Also with hickory or yellow oak bark, onion skins or sumac stalks. Pokeberry was used with alum for red, without any mordant for purple. Elderberry and sumac berries also give a purple dye. Many of these natural dyestuffs were tried and were found to be very fugitive. The dye for indigo was a special fermented vat and sometimes took many days and much labor to prepare. In the South the dye vat still used requires raking at intervals of two hours night and days for many days before it is ready to work.

There are several books on dyes and dyeing in our libraries at the Farmers' Museum. One of them is the *Dyers' Companion*, already mentioned, from which two of the more interesting recipes are given. To judge by the length of the sentences and the preponderance of commas in them, these processes once begun apparently were intended to be carried out with scarcely a pause for breath.

Another method for producing blue for wool is quoted: "To set a tub of 6 gallons, take five gallons of good old sig, to which add 2 gills of spirits, half a pound of good indigo made fine; put it in a bag, wet it and rub it out in the dye, then add two ounces of pearlash, and 2 ounces of good madder; stir and mix it all together, let it stand 24 hours; then add half a pint of wheat bran, stir it up till well mixed together, let it stand 24 hours longer, and if your dye does not come to work by this time, stir it as often as once in two or three hours, but do not apply your goods before your copper scum and froth rises, and the dye looks greenish when dropping, and your yarn or wool looks greenish when applied to the dye, which are symptoms that your dye is in good order for use; but you must be cautious not to crowd your dye too full, for many blue dyes are destroyed in this way. Be careful also about reducing your dye too low; always keep indigo in the bag, rubbing it out when necessary; and you need not stop your dye to recruit it after it has come to work; but make your additions when you take your goods out, as you find it necessary. Wring out the goods, stir your dye well together, cover it close, and place it where it will keep lukewarm. It will not dye so quick as the other dye, but it will make a superior blue. It is commonly from two to three days in colouring for a

deep blue. "N. B. the yarn or wool should be wet in warm sig, before it is put in the dye, and the tub covered close, etc.

"For Merron Red—To twenty yards of cloth, take six quarts of wheat bran, wet with vinegar, let it stand twelve hours, and sour; put it in a bag, fill your copper with water, heat boiling hot, and boil the pudding two hours; then take it out and let it drain; squeeze as dry as you can conveniently; than add one and a half pounds of allum, and half a pound of red argal made fine, run your cloth one hour boiling, air and let it lie all night and sour; then rince your cloth, shift your liquor from your copper, and fill it with fair water; when warm, add ten pounds of good madder, and four quarts of wheat bran, constantly stirring until it is near boiling, but not boiling, for madder must not boil; run your cloth and manage in this manner till the strength is well out of the dye, and the red well raised, then add one gallon of lant or sig, and handle till your colour pleases."

Flax

At the time New York State was first settled the people of England had come to depend in large part upon the fabrics manufactured in the factories. These fabrics, of course, were of handspun yarns and woven on hand looms but the manufacture was done in factories and not in the homes. Upon arrival in this country the settlers were compelled to spin and weave what they could not obtain, or could not afford to purchase, from abroad.

The materials which England sent here for sale were very expensive and even the people near the coast soon began to manufacture for themselves. Wild flax was found growing here and most certainly flaxseed was also brought from their homelands. A few sheep were brought over but raising them in sufficient numbers was impossible until enough land had been cleared and the surrounding forests rid of predatory animals. The main source of supply for fabrics was then in the home and if the people were to be clothed and protected from freezing weather it was necessary for every able person to spin at every opportunity. When other work slackened, as during the winter months, every member of the family might be found at work at the wheels, for there was never an over abundant supply of yarn made up in advance.

Not to spin in one's free moments was considered a gross neglect of duty and undoubtedly the neighbors had much to say about anyone so slothful. "Spinster" was hardly a derogatory

name in those times and was applied to both single and married women. To say that one was "a good spinster" was in the nature of bestowing a medal.

It is hard to imagine the amount of hand labor necessary to convert the flax plant into even the state of a fiber which could be spun. These long and laborious processes began in the early spring when on from one-half to three acres which had been set aside for it, the flax seeds were sown. Traditionally the seed was to be sown on Good Friday. It was seeded thickly so that when it reached its full height of two or three feet it would have long, straight, unbranched stems. By June it was covered with a mass of blue blossoms. The blossoms turned to seeds and the seeds ripened, the stalks became woody and by late July the flax could be harvested.

This was done by hand as the plant was pulled up by the roots so as not to waste an inch of fiber. Usually this job was done by the boys and girls whose backs were strong. The flax was pulled in small bundles, bound, and set up in wigwam fashion to dry. Later they were hauled to the barn. All this time the flax was handled very carefully so as not to lose the seeds which were highly valued as they yielded linseed oil when pressed.

One method of removing the seeds was to draw the heads of the bunch of flax through a comb called a *ripple*. Another method much in use was to spread the flax out on the threshing floor, weight down the root ends with a heavy plank, and beat the seed heads with a heavy wooden tool. This laborious job was certainly one for the man of the family; Next the stems were straightened out and tied in bundles and stored in a dry place. At this stage flax could be safely stored for several years.

When the flax was further prepared for use the core or *boon* had to be separated from the fibers which surrounded it. The first step was to spread it out in the field and allow the dew and the sun to rot and dissolve the gum which held the fibers. A faster *retting* could be done by placing it in bundles in a pond or stream and weighting these down with boards and stones. If the water was warm it retted faster than if cold. When the fibers would separate easily from the core it was "done." Then it was again gathered up, dried in the field, and hauled back to the barn to go through a process called *breaking*. This was the hardest part of flax-cleaning and required a man's strength to operate the heavy wooden machine called the flax-brake or "brake" which knocked the fibers apart and broke up and removed the core or boon. If the weather was damp, to make the flax more

brittle it was first heated on grates set over a slow fire. Two women or older children sometimes passed the flax bundles back and forth, inch by inch, while the male operator clopped the wooden break down on them.

It is said that a person passing by a farmhouse where flax was being broken by hired labor could always tell whether the man was hired "by the day" or "by the job" by the rhythm of the break. If he was hired by the day it would be a slow monotonous thud but if by the job it would be rapid fire.

Again the flax was gathered up, tied in bundles and taken to a shed or stable, to go through a process called *Swingling* or *scutching*. This operation, although dirty, was not one that called for great strength and could be performed by the children. The purpose was to remove the last traces of flax seed and fragments of boon. With a tool called a *swingle*, a wooden knife with rounded edges, the flax was carefully pounded across the beveled top of a board set firmly upright in a block of wood.

At this point it began to take on its characteristic gloss, appearing as a bundle of long hair-like fibers. It was next subjected to a process called *hatchelling*, *hetchelling*, or *hackling*, the object of which was to straighten out and separate the fibers into several grades. The *hetchel* consisted of a block of wood or board set with home-made spikes arranged in rows like the teeth in a series of combs. Three or four were used and were graded from coarse to fine. The results of drawing the flax through these combs was like combing hair. The first and second combings removed the last traces of foreign matter and the coarse, shorter fibres, leaving great snarls of it in the hatchel. These snarls called *tow*, were carefully set aside and saved, to be woven into coarser fabrics or made into twine or rope. This loss sometimes amounted to one half of the swingled flax. A good operator, of course, lost less flax to the tow and although his tow was useful it wasn't the purpose of the processing.

Actually only about one fourth of the flax as it was pulled from the field finally reached the flax wheel as *line flax*.

Hatcheling was woman's work to be carried on in the attic. The worker took the comparatively small mass of fibers remaining in her hand and twisted it into a hank. These hanks were tied with string and hung from the attic rafters. The tow was spun first to get that massy, dirty job over. They aspired to complete the spinning of the flax by February—having begun it in early November. The flax wheel was used for spinning the flax fiber into linen yarn. This is a small wheel at which the spinner sits and treadles with her foot to turn the spindle. The hackled



A GUIDE AND TWO VISITORS
OPERATING THE FLAX-BRAKE

flax is placed on the distaff and a few slender strands drawn out and twisted by the action of the spindle. The fibers are kept moist by dipping the fingers of the spinning hand into a small cup or gourd of water hung from the distaff arm. The spun yarn passes through the hollow spindle over a guide or *heck* of the flyer and is wound onto the spool by the action of the wheel. The spun yarn is reeled from the spool onto the clock reel which measures it into skeins. A good day's work at the wheel completed two skeins of thread of 20 knots each, or 2400 yards. For this a girl who was hired to spin received about 8c a day plus her "keep."

There were several types of spinning wheels used for flax. All of them which have survived to this day are foot treadle operated. If hand operated flax wheels were used they seem to have disappeared. The wheel which is most familiar is the Dutch low tripod type. This wheel was used in Ireland and was the one which came to this country with the early settlers. Variations of it are the miniature sized wheels which appear to be of Pennsylvania-German origin; the Irish castle wheel, which is a tall tripod and used much less floor space in the small Irish homes; the chair frame wheel; the little upright two treadle wheel; and

the wheels with two spindles upon which especially gifted persons were supposed to have spun two threads simultaneously. All of these wheels are equipped with the flyer and spool spindles.

Reels were usually constructed with a "click" which made a small noise at the end of each 40 turns. At the click the skein-maker stopped and tied a knot through the skein. Later the yardage and the size of the yarn was figured from the number of "knots."

Yarns were sometimes skeined on a "niddy-noody" but this was a slow process as there was no click and the *bouts* had to be counted to put in the knots.

Linen skeins were supposed to measure 90 inches by Act of Parliament and wool and cotton skeins 54 inches. The full scale of linen measurements was:

- 1 cut —300 yds.
- 2 cuts— 1 heer —600 yds.
- 24 cuts—12 heers—1 hesp — 7,200 yds.
- 48 cuts—24 heers—2 hesps—1 spindle—14,400 yards.

The size or "grist" of the yarn is figured from the number of cuts to the pound. The grist is figured on the number of hanks to the pound.

Wool and cotton measurements were:

- 1 knot — 60 yds.
- 2 knots— 1 shift—120 yds.
- 14 knots— 7 shifts—1 hank 840 yards.
- 252 knots—126 shifts—18 hanks—1 spindle—15,120 yds.

While tow was usually left its natural color, the finest linen yarn had to be bleached, a complicated series of processes the final result of which was a shade of brown only a little lighter than the natural color. After the linen was taken from the loom, it was subjected to at least twenty more bleaching operations, involving baths in a lye from wood ashes alternating with baths in sunlight and then in buttermilk, until it reached the standard which that particular housewife considered necessary.

Eventually a surplus was built up and from their best flax they could take time to weave a patterned table cover, not for daily use but for best, which often meant that it was too good ever to be used. Looms were operated by the women of the family until travel conditions improved to enable itinerant weavers

to move about from farm to farm. In the remoter sections this meant that the women were released from the labors of the loom only by the advent of power weaving in the factories. Many and perhaps all of the traveling weavers were men. Loading their looms on carts and driving from place to place they set up shop in rented quarters in the village or in the farmhouse itself and wove up all the threads which the housewife had accumulated since the last visit. This might have included a gorgeous coverlet the pattern of which the housewife picked from his pattern book.

Wool

When enough land had been cleared of trees so that the bears, wolves, and pathers could be shot or trapped, it was possible to safely pasture sheep. To eke out the first scant supply of wool it was woven over a flaxen warp. This was "linsey-woolsey."

Sheep washing and shearing took place in May. The flock was driven to a convenient stream and after shearing the fleece was dried on the grass. All burrs and foreign matter were removed and tangled mats were cut out and set aside to be later spun into a rough yarn. The fleece was sorted into various grades from the finest which was for a shawl or coverlet down to the coarsest which was used for horse blankets and rugs. If the wool was dirty it was sometimes washed to cleanse it. If this washing removed the natural oil of the fleece a substitute oil had to be added to it so that it could be carded and spun. As oils and greases were very scarce the frugal housewife usually spun her yarn "in the grease" even if it was slightly dirty and smelly. She could hardly afford to be too fussy about such things.

After the cleaning and sorting it was the women's task to card the wool, a tedious process that filled in every spare moment. To card wool, the housewife took a tuft and combed it between two wool "cards." These were rectangular pieces of wood fitted with handles and set with teeth of fine wire. These wires were bent at an angle and the tuft of wool after being drawn between them until all the fibers were straight and parallel emerged as a fluffy roll of fibers ready to be spun. If there was a carding mill within riding distance the sacks of wool were carried there to be carded by machine.

The wool was spun on the large wheel which was known as the "great" wheel in Wales, the "long" wheel in Ireland, and

the "wool" wheel in the Colonies. This was the earliest type of spindle belted to a wheel. The wheel has to be turned by hand, or by a wheel finger or *boy*, held in the right hand, and the carded roll of fibers held in the left hand and pulled out from the spindle as the spinster walks backward all the while turning the wheel. When the spun strand of yarn is extended back the length of the wheel the spinster again walks forward winding the yarn onto the spindle itself as she walks.

Sometimes a piece of paper or cornhusk was wrapped around the spindle and the yarn rolled up on this in the form of a *broach*. This cone of yarn could then be slipped from the spindle and another core substituted so that the spinning could go on without stopping to reel off the yarn from the spindle itself.

The wool, like the linen yard had to be reeled off into measured skeins. A skein of wool weighing half a pound was sometimes called a *yard* because it was supposed to weave a yard of cloth.

Sometimes linen or woolen yarns had to be made stronger for warping or for knitting and two or more yarns were spun together on the wheel to form a plyed yarn or thread. In 1803, Amos Miner of Marcellus, N. Y. patented a double geared head for the wool wheel which greatly increased the output of yarn by merely increasing the speed of the spindle. By 1864 they were being manufactured at the rate of 6000 to 9000 weekly. Most old wheels are found equipped with them.

Later wheels were built which obviated the necessity of walking as the yarn was spun. One of these had a scissors arrangement moved by a foot pedal which slid the spindle away from and back to the operator as the wool was spun and another which swung away the spindle like a pendulum as the pedal was pressed. At both of these wheels the operator could sit but it was still necessary to revolve the spindle by the action of the hand operated wheel.

Wool because of its naturally light color and the fact that it was used so much for outside clothing was usually dyed. The farmer's working garments as well as his wife's dresses were most often dyed a butternut brown as this dye was readily available. Woolen cloth for men's clothing was often taken to the fulling mill to be finished but the women more often wore their woolen clothing just as it came from the loom. As the price of fulling and finishing cloth in 1770, according to *The History of American Manufacture*, was forty to fifty cents per yard, this may have been the reason so many wore the rough homespun.

The nicest wool was often saved and finally dyed blue with

indigo which had been purchased from the dye peddler. This wool was then woven over a linen or cotton warp to make a coverlet for the best bed.

Cotton

Usually found in combination with other fibers cotton at first was imported from the West Indies in its raw state and had to be cleaned, freed from seeds, carded and spun by hand. For the spinning of cotton, the wool wheel was used as the rolls of cotton spin very much like wool. By the time cotton was grown to any large extent in the South the spinning mills were in operation. There are records of these mills in central New York as early as 1808. Yarns from these mills were probably woven by the people of the surrounding country side and were carried by the itinerant weaver of this period. This weaver sold the cotton yarns to be used in making the coverlets from the homespun wool. This cotton seems to be found more often today as a warp and tabby in the coverlets but it must have been used for cotton, and cotton and woolen, or cotton and linen combinations at this time. The every day fabrics do not so often survive as the fancy coverlets.

The first power loom was put into operation in Waltham, Mass. in 1814 and marked the beginning of real production of factory fabrics and the gradual decline of hand spinning and weaving. While many fabrics were produced in factories or small workshops before this time, the looms used were the common foot power hand looms with sometimes the fly-shuttle added.

The earliest materials woven on the power looms were the utility goods such as gingham, bed-ticks, sheetings and shirtings and some canvas and velvet. The shirtings sold in 1816 for about 23c per yard and were usually woven only 24 to 27 inches wide. So it would not seem unusual for a family to manufacture their own materials as long as they were able.

As the price of cotton dropped the raising of flax for linen also decreased and flax as a crop was disappearing at the time of the Civil War. The fact that cotton could not be had from the South at this time caused a revival of flax growing and linen spinning and weaving but at the close of the war cotton was again the main textile fiber for everything but outer clothing and the flax disappeared from the fields of New York State.

Although cotton was accepted for almost every other use it was hard to get a mother to use it for dresses for her children or herself. One reason was that wool dresses down to the floor did

not catch fire easily at the open hearths and cotton blazed up quickly.

The hand spinning of wool continued for some time and in a few instances until the present time, not for cloth, but for the knitting of socks and mittens.

SHEEP SHEARING SONG (1817)

Come, come my good shepherds, our flocks we must shear,
In your holiday suits, with your lasses appear:
The happiest of folk are the guiltless and free,
And who are so guiltless, so happy are we?
We harbor no passions by luxury taught,
We practice no arts with hypocrisy fraught;
What we think in our hearts you may read in our eyes;
For knowing no falsehood we need no disguise.

When love has possessed us, that love we reveal;
Like the flocks that we feed are the passions we feel:
So harmless and simple we sport and we play,
And leave to fine folks to deceive and betray.

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