## QUESTIONS AND ANSWERS

by MARY M. ATWATER

(Questions for this department should be addressed to Mrs. Mary M. Atwater, Basin, Montana.)

Question: What does one do about broken warp-threads? My warp breaks constantly. How does one avoid knots?

Answer: If your warp breaks a great deal, find the cause. The fault may be in your loom: (1) you may have a roughness in the heddles or in the reed that catches and tears the warp. (2) the loom may be out of correct balance, so that part of the warp is subjected to undue strain. (3) Your loom may be too short from front to back, which strains the warp badly when the shed is opened.

The fault may be in the warp-material you are using. (4) a very soft and fuzzy yarn will always make a troublesome warp, and a weft-linen, if through mistake used for warp is usually impossible to weave. A good warp-dressing, however, helps matters. Boil some flax-seed in water — exact proportions are unnecessary. Strain the resulting solution and if it is very thick thin it down with water to about the consistency of thin starch. This dressing should properly be applied to the warp-material before warping, but in the case of a warp already on the loom the dressing may be dabbed on the stretched part of the warp from time to time as weaving progresses. It is not necessary to allow the dressing to dry before continuing the weaving. In fact fine worsted warps and "singles" linen warps weave better damp than dry. But do not put the dressing on the part of the warp directly in front of the woven web without letting it dry.

The trouble may be in the way the warp has been put on the loom. (5) Warping a soft worsted or fine linen from the chain, drawing it through the reed and heddles during beaming, greatly weakens the warp and gives it a tendency to break. Such warps should be beamed by the sectional process. (6) the warp may be uneven, with some threads much tighter than others. The tight threads will pull apart and break. (7) the warp on the beam may be either wider or narrower than the space in the reed. In this event it goes through the loom at a slant and the edge threads are likely to break. To have the warp on the

beam a little wider than in the reed makes little difference, but to have it much narrower will always break threads. The difficulty may be in the way you weave. (8) If you narrow in badly the selvage threads will saw off in the reed, inevitably - keep the weaving out to almost the width of the warp in the reed. (9) perhaps you stretch your warp too tight. Fine, light warps must be woven fairly slack. (10) perhaps you do not always remember to release the tension when leaving the loom. If left at a tension a fine worsted warp, unless very hard-twisted and strong, will pull apart if left at a stretch overnight, or even for a few hours. Then (11) your beat may be too heavy. Do not use a single heavy thump with the batten but beat this way: open the shed, give two sharp, not heavy, strokes with the batten; throw the shuttle; with the shed still open, beat again in the same manner. Change the shed, beat, throw the shuttle and beat, and so on.

A few knots are allowable in a cotton warp under overshot pattern weaving, as they show little or not at all in the finished piece. However if a warp-thread breaks do not attempt to tie the two ends together. Take a length of warp-material and tie it — with a "weaver's knot" — to the broken end at the back of the loom; draw this new thread through the correct heddle and the correct dent in the reed, and attach it to the web by winding it around a pin set in the web below the break.

Knots, however, are very disfiguring in a tabby fabric or a wool or worsted twill piece. If this is the type of weaving you are doing, take a strand of the warp-material and tie it to the broken thread at the back of the loom, close to the warp-beam. Tie with a bow or slip-knot and leave long ends. Attach the new thread to the web around a pin as described above, and weave till it is possible to bring the original warp-end back into the fabric. Weave in both the original and the new thread under a few weft shots and then eliminate the repair thread. By this procedure the knots are avoided and there is no repairing with a needle to be done after the fabric comes off the loom.

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