

# The Pros and Cons of Fly-Shuttle Weaving

BY FLORENCE B. CATHCART

IS fly-shuttle weaving to be classed as hand-weaving? As our cautious lawyer friends answer, yes, and no. A fly shuttle in the hands of an intelligent weaver, using the same care to distribute the amount of weft necessary to produce good edges and to lay in the desired number of picks to the inch, produces cloth which cannot be distinguished from that made with a hand-thrown shuttle. In the hands of a speed-mad operator, whose chief thought is of daily yardage, material may easily become flat and uninteresting in appearance. It loses the qualities which give a surface varied enough to produce differences in light reflection. This does not mean differences large enough to be noticeable and amounting to flaws. Care-

less weavers sometimes rationalize these flaws as proofs that the material is hand-woven. Such flaws as "streaks," which are picks beaten too closely, and "spaces," or picks not beaten closely enough, are legally sufficient cause for the refusal of material. They occur in power woven material when the machinery gets out of order. They are quite as much a proof of the inefficiency of the human weaver.

Let us examine a foot-power loom equipped with a fly shuttle and see how it differs from one requiring a hand-thrown shuttle. The beater, which may

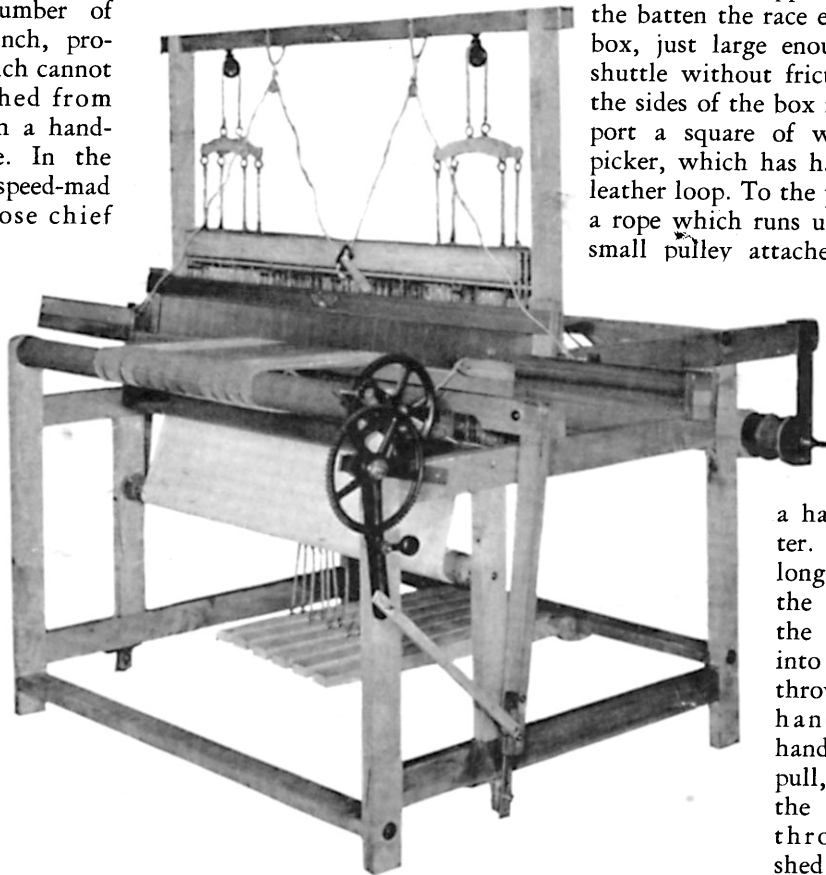
swing from above, or pivot from below, has a strip about two inches wide fastened in front of the reed and on a line with its lower edge. This strip, called the shuttle race, must incline slightly backwards, so that gravity will assist in keeping the moving shuttle on its support. At each end of the batten the race ends in a shallow box, just large enough to hold the shuttle without friction. Grooves in the sides of the box near the top support a square of wood, called the picker, which has hanging from it a leather loop. To the picker is fastened a rope which runs up and through a small pulley attached to the super-

structure of the loom and near its side supports. The two ropes, attached to the pickers in the boxes, meet in

a handle in the center. The ropes are long enough to allow the shuttle to reach the end of the box into which it is being thrown. The right hand holding the handle gives a quick pull, which causes the shuttle to fly through the open shed and lodge in the

leather loop of the picker in the opposite box. Here it is held while the beater is pulled forward, distributing the weft and battening it into place. The foot seeks the next treadle, the batten swings back and all is in readiness for the throw in the opposite direction. Sounds easy? But it is much more difficult than a hand-thrown shuttle. Time, not strength, becomes the determining factor, and movements must be under conscious control. Coördination between foot, shuttle-hand, and beater-hand must

*(Continued on page 38)*



## FURTHER NOTES ON THE SPECK DRAFTS

*(Continued from page 11)*

3	4 times	6	2 times
4	4 "	5	2 "
5	2 "	6	4 "
6	2 "	3	8 "
5	2 "	4	4 "
4	4 "	3	2 "
3	4 "	4	4 "
6	4 "	3	2 "
5	2 "	4	2 "
6	2 "	3	2 "
5	2 "		

Reverse.

There are numerous possibilities in each of the different drafts, and at least two different treatments of each draft have been prepared. For those weavers who possess or have available copies of Mrs. M. M. Atwaters' arrangements of the John Landes Book of Drafts, it will be most enlightening to compare the drafts of these patterns with some of the drafts in the John Landes Book. None of the drafts yet analyzed are quite like those in the John Landes Book, but many of them are very similar and yet developed so differently that they are well worth the comparison. The arrangements in each book suggest possibilities of new and interesting developments of the drafts in the other book.

It is to be hoped that at some time the whole set of Speck Drafts may be made available as have the John Landes Set, as the publishing of them was a most valuable addition to the store of designs and patterns for the weavers to today.



## THE PROS AND CONS OF FLY-SHUTTLE WEAVING

*(Continued from page 26)*

be perfect, and capable of adjustment to the work in hand. The amount of weft laid in the shed depends on the length of time the shed is held open. A shed dropped on a shuttle still in motion will leave a small amount of weft to be distributed and will, therefore, cause a severe pull on the selvage threads, and prevent the weft threads from packing closely together. In open mesh work, such as scarfs, this is an advantage. In cloth to be closely woven and not narrowed in the weaving, it is fatal.

The motions must be perfectly rhythmical, following each other in the same order, and in the same tempo, or the appearance of the material will change. It is not often that weavers can interchange on a piece of work. A difference is noticeable at once, although each operator's work is excellent.

The appearance of material depends, however, on warp tension quite as much as on weft tension. A

warp tension secured by ratchets is not always restored exactly after the web is taken up and the warp let out. For evenness of tension, weights, not only on the warp beam, but also on the cloth beam, are desirable. A round, revolving breast beam, covered with sandpaper, grips the woven cloth and keeps an even tension. This breast beam is geared to a wheel having the number of teeth corresponding to the diameter of the yarn in use as weft. The beater is equipped with a bar controlling pawls which fit into the pick wheel. Thus the cloth rolls forward with each stroke of the beater, so that no time or rhythm is lost in stopping to adjust the warp. This device by no means removes from the operator the necessity for perfection of coordination. There are merely more ways to make flaws in the cloth.

Given an intelligent weaver, with a sense of rhythm, a capacity for concentration, an alertness of eye and ear and a control of muscular effort, quite as beautiful material may be woven with a fly shuttle as with a hand-thrown shuttle. It may be made with less physical fatigue, as motions are simplified and the force required is decreased. The rhythm so necessary also reduces effort and fatigue. And the output is multiplied by any figure from two to ten, depending on the ability and endurance of the weaver.

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