

## AN UNUSUAL PATTERN-LOOM FROM BANGKOK

by

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Photographs by DR. ROBERT L. USINGER and NORRIS W. HARKNESS

WITH the recently renewed interest in the modern textiles of Thailand, it is perhaps reasonable to wonder what manner of loom produces these colorful silks. A somewhat superficial survey of such commercial weavers as could be found in Bangkok in the autumn of 1957 showed eight more or less distinct loom types in actual use—an interesting lack of uniformity, reflecting the divergent cultural and racial backgrounds of the weavers in that ethnological crossroads. Among them was a loom in which an ingenious arrangement of string and sticks produces the same results as the more conventional drawloom, famous for many centuries of textile history.

By far the larger numbers of looms, however, that I saw in Bangkok were simple horizontal 4-8 frame structures with overhead beaters, some with metal heddles (Japanese), almost all with metal reeds, though a few had split bamboo. Many others were elementary drawlooms, variously called “two-harness” or “draw-harness”, in which one set of frames (2-4) equipped with large-eyed heddles, or, in this case, usually heddle-loops, determines the ground; and a second set of frames—usually 8—determines the pattern. These frames, in these small numbers, can be and are treadle-controlled. (Were there more pattern frames, controlled by cord pulls, this loom would be a form of a true drawloom). This type of loom was found in several workshops operated by Chinese and was the one used to produce the bulk of the patterned fabrics seen.

However, having once seen a museum exhibit of a native Siamese loom (though so mounted that it could not possibly operate), and assuming that simpler looms must have been in use there before the influx of Chinese settlers, I searched for such a one in Bangkok. After many false clues, just one was found in actual use—as a matter of sentiment and out of family loyalty to the grand-parent who had owned it. It was a two-harness loom, much slower in operation than the commoner types of today, but well adapted to weave the conventional fine plain-weave silks (100 threads to the inch, warp and weft), common in Thailand for generations. This is the type in Ling Roth's book, *Studies in Primitive Looms*, p. 92, the traditional Cambodian loom. I describe here the one I saw, because an under-

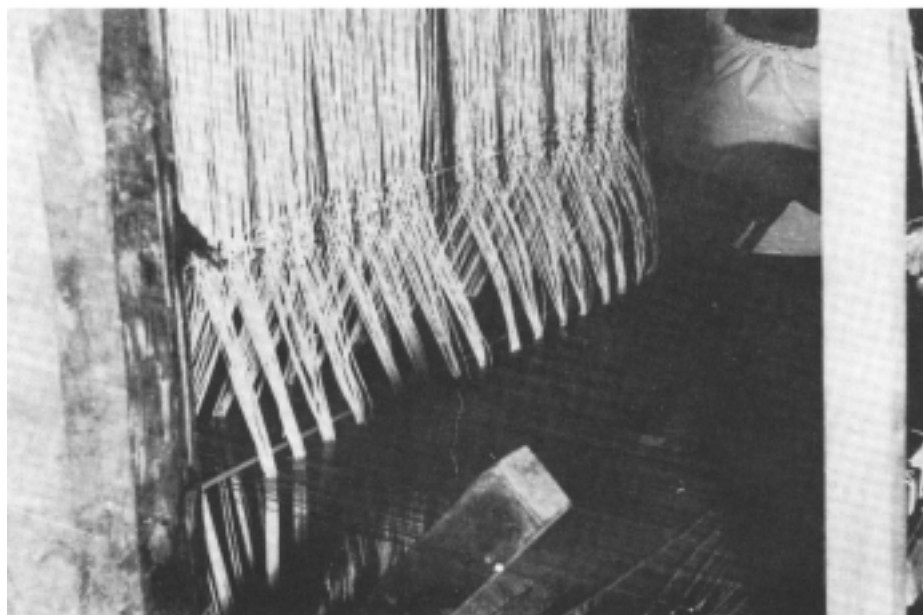


PLATE 1 — (Above) The Siamese two-harness-loom. The back harness is being drawn down by the treadle, while the warp-threads controlled by the front harness are raised.  
PLATE 2 — (Below) The "pattern-loom". The pattern-stick is being moved down and forward in part of the pattern-heddles above the warp.

standing of its structure and operation forms a reasonable basis for the consideration of the "pattern-loom" to follow. It is a simple frame affair (Plate 1), large enough for weaving fabrics to widths equal to the working space of the weaver's arms. Breast and warp beams are spaced a good ten feet apart, the warp sloping down away from the weaver. The beater and two harnesses are suspended from the usual box-like overhead skeleton on cords, the harnesses operated by two foot-treadles arranged transversely. Pressure on one of these pulls down the harness to which it is attached and at the same time raises the other. The heddles are not attached to harness-frames, but consist of cords laced about pairs of rods, interlocking at a point midway between the rods. Instead of each passing through a small eye, the warp ends pass between these interlocked cords. The warp beam is a flat board tied to the back frame of the loom. When the warp is let forward as the weaving progresses, the board must be untied and turned over, loosening six inches or more of warp at once. Some of the slack can be adjusted by the position of the warp beam itself, as it is tied more or less closely to the back of the loom. The very length of the set-up and the elasticity of the silk makes these adjustments somewhat less critical, of course. The shuttle is a simple bamboo tube, open at one end, plugged at the other, into which a plain quill is slipped, the thread feeding out the open end.

The step from this set-up to the more complex one next to be described follows most logically, though what it means in terms of distribution and age can only be guessed here. Again this loom-type, to be called for convenience a "pattern-loom", was found in very limited use, in fact only in one large workshop, owned and managed by a most skillful weaver from Laos. In this case, the horizontal 2-harness set-up and the heddle arrangement are as in the loom described above. Certain changes normal in the Chinese shops in Bangkok have been introduced. The flipping flat warp beam has been replaced by the more familiar round beam controlled by a large crude ratchet and paul. The wooden shuttle is the boat type, single or double, with a slot in the side for the bobbin to emerge. The side-to-side treadles are replaced by the more familiar lengthwise ones, while the beater is equipped with fly-shuttle boxes and rope rig.

Its operation is shown in the photographs. To form the series of sheds needed for one repeat of the pattern, the shedding-order, marked by the sticks in the pattern heddles, must be transferred from the vertical web to the horizontal warp. Thus the pattern heddles, which are held in front of the others by the lowest stick (Plate 2), are lifted with the hand to raise



PLATE 3 — (Above) The “pattern-loom”. Lifting pattern-threads to form a warp-shed. Pattern-stick being inserted into the shed thus formed.

PLATE 4 — (Below) The “pattern-loom”. Pattern-sheds transferred by the warp and marked by sticks. Sword in place for first pattern-shot with one of the many color skeins.

the attached warps. Another stick is then inserted into the shed so marked and pushed toward the ground-harness (Plate 3). This shed is shown performe in the vertical heddle-strings both above and below the warp, and the stick which marked it above the warp is shifted to the same shed, appearing in the heddle-strings below the warp to preserve this shed for the next repeat. The next pattern-rod is then lowered in the vertical heddle-strings and the process repeated. By this means, the series of pattern-sheds is transferred from the upper vertical web to the horizontal warp and preserved in reverse order in the lower section of the string heddles. When all the sticks marking the pattern are inserted in the warp, the first one is lifted, a wide sword is inserted behind the ground-harness in the shed thus formed, and turned on edge, raising the threads for the first pattern shot. (The stick is removed.) Plate 4 shows how the flexible ground-harness accommodates itself to this. The pattern is laid in by as many small colored skeins as may be needed, the sword is let fall, and two tabby binder-shots are put in by treadle and flyshuttle (Plate 5). Then the second pattern-stick in the warp is moved forward, raised, and the sword inserted in this shed, and the whole procedure goes on.

As the weaving progresses, a reverse of the original order of pattern-shedding, transferred from the part of the vertical pattern heddles above the warp to the warp, occurs when the shedding from this upper part is completed; the order of pattern-shedding is then to be transferred to the warp from the pattern-sticks now marking the pattern-shedding-order in the part of the pattern-heddles below the horizontal warp. This is because the order of pattern-shedding with pattern-sticks in the vertical heddles must always proceed from the stick nearest to, to that farthest from, the horizontal warp. Areas of plain-weave (tabby), resulting from the use of the ground-harness only, may alternate with patterned areas. By this simple arrangement, the most intricately patterned silks may be produced (Plate 6). The only necessary further elements are patience and time.

The loom we have here called the Siamese loom is a logical step beyond the typical Malayan loom described by Ling Roth (*loc. cit.*, p. 89); in the latter the warp beam is tied to a fixed frame, while tension is maintained by a back-strap kept taut by the weaver's body. (Neither of these looms is to be confused with the simpler "back-strap" type still used in Northern Siam, Burma, Cambodia, and elsewhere, in which there is no turning, winding-on warp beam at all (see Ling Roth, *op. cit.* p. 74) and which can be rolled up and carried about.) Simple patterns can be made on any loom by supple-

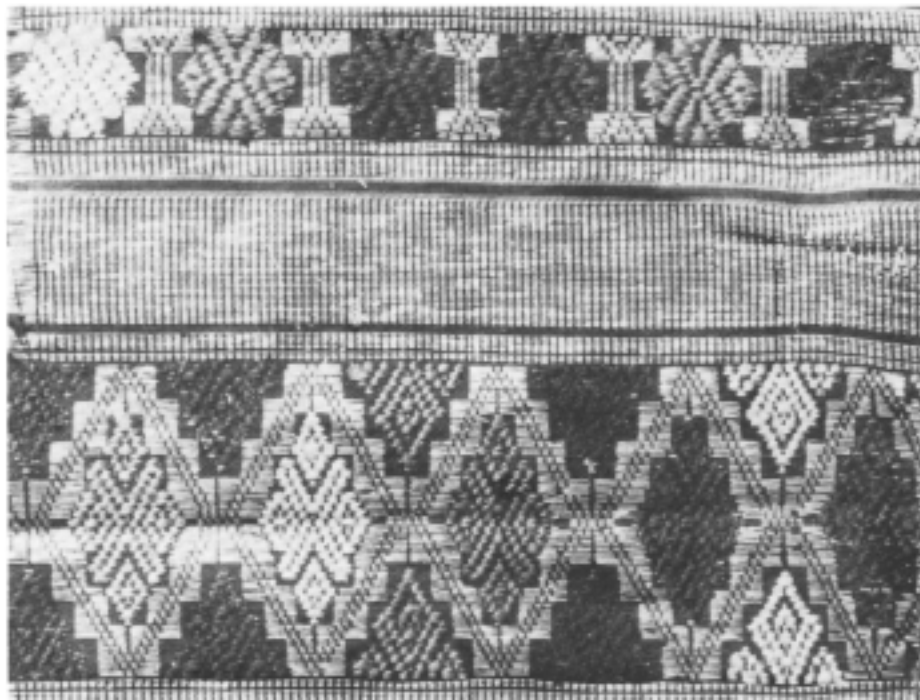
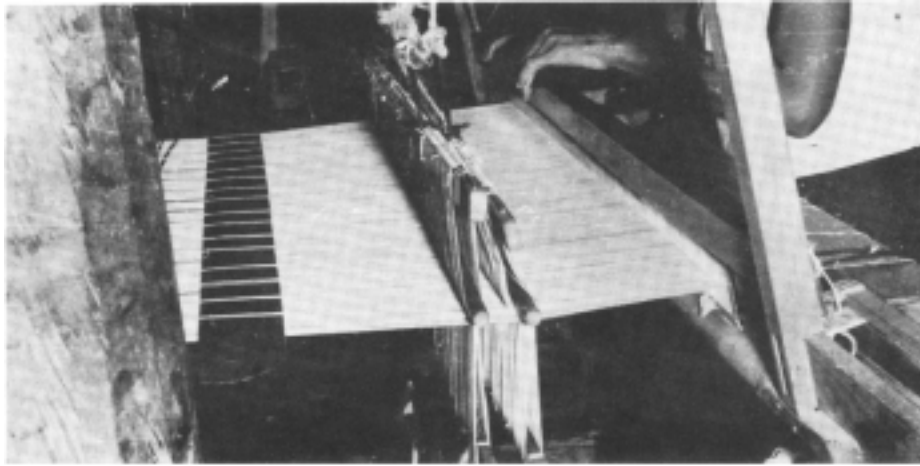


PLATE 5 — (Above) The “pattern-loom”. The sword flat, permitting tabby binder-shots — here beaten in.

PLATE 6 — (Below) Border detail of a traditional Siamese fabric of silk and wrapped gold, woven on a “pattern-loom”, in the workshop in which the preceding pictures were taken.

mentary heddle sticks of the desired length. The key to understanding this process of repeat patterning lies in the absence of rigid perforated heddles attached to a harness frame, and in the flexible nature of this heddling device, whereby the pattern can be shifted to the fell without loss of shed. It is tempting to regard the “pattern-loom” as a further development of the Cambodian loom principle, for on it many more intricate weaves can be produced than are practical or possible on the limited number of harnesses feasible with treadle control. Indeed, this ingenious arrangement of sticks and string may well have produced some of the historic textiles that we have always pictured as products of some kind of drawloom. Speculation on this point is tantalizing, but it should await further investigation.

This note is nowise to be considered a comprehensive survey of the contemporary handwoven-silk industry of Thailand. Only a small proportion of the Bangkok workshops were visited (perhaps a tenth), and of those the larger part used looms of the quite usual design that we think of as European—probably wrongly. It is highly desirable that a more skilled observer carry this matter further to determine the real extent of the distribution of the “pattern-loom”. Is it Laotian, or is it merely a clever invention of more or less local Bangkok use and development?