Machine Knitting

The Technique of KNITWEAVE

Kathleen Kinder

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The Technique of Knitweave

B T Batsford Ltd

Photographs by Warwick Dickinson and George Kinder

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By the same author

Techniques in Machine Knitting
(Batsford 1983)

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For my mother

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Introduction

Of all stitch pattern effects possible on the Japanese single-bed machines, knitweave has suffered real neglect. Since it presents the knitter with one of the most exciting tactile experiences, this neglect is rather puzzling.

Perhaps the renewal of interest in the technique, especially in fine, fluid knitweave as well as in textured effects, is one result of the break machine knitting has had to make with hand knitting. Knitweave can never be described as a mechanised copy of anything the modern hand knitter is doing. Neither has knitweave much in common with loom-woven cloth, though there are similarities, which are discussed in the text.

There is a keen desire to bring a distinctive view of machine knit fashion and art-craft forms to the public's notice by independent means. There is a growing confidence among machine knitters, which must be the result of years of sterling work, done in the many local education classes and the hundreds of knitting clubs and gatherings that are proliferating throughout the country. We are also seeing an upsurge in creative writing, pattern and technical literature of greatly improved quality. It is also very encouraging to note that machine knitting is being given more emphasis by the Design Establishment; but until the craft ceases to be practised as an adjunct of hand knitting, we will continue to hear the complaint that machine knitting is 'too complicated'. Effects like knitweave, fine yarn and skirt knitting will go on being neglected. New knitters need time to learn the technology and then time to make technology the servant of creativity. This is certainly the case with knitweave. Though I cannot see knitweave being given a special category in teaching syllabuses, there is growing interest in this distinctive aspect of machine knitting. However, if we do not have a repertoire of techniques and a basis of understanding, creative ideas will be stillborn.

In this book, I have tried to explain techniques that can be used by the home and craft knitter who specialises in hand finishes and fully-fashioned methods, but I have had very much in mind the approach of the cut and sew knitter whose methods must be speedy, but who is also interested in good appearance. I assume the reader is familiar with the basics of knitting and with the charting device, and that she has access to correctly sized blocks from which to develop the garment shapes. The ones I use are to be found in my *Resource Book Pattern Supplement* and in *The Machine Knitter's Book of the Ribber*, Vol. 1. Basic information on the charting device is in my *Techniques in Machine Knitting* (Batsford, 1983). I continue to present patterns in traditional format and have given notes for knitters who like to use pattern literature as a source for ideas and inspiration.

Machine knitting now has its culture and terminology for the description of techniques and the exchange of ideas. It is important that we use that lingua franca to avoid confusion, if nothing else. For the first time, I can recommend yarns in the knowledge that the same or similar are available in several countries of the English-speaking world. Japanese knitting machine technology is based on the metric system. Readers are reminded, however, that the standard tension swatch of 10cm is equal to 4in. When a patterning system is outside the scope of the charting device, I employ a household calculator, and, where applicable, the Magic Formula (*see Chapter 9*). The standard tension swatch of stitches and rows per 10cm (4in) has proved its value and remains the norm.

There are, however, areas of no-man's-land where one strives to find a descriptive term for different applications for a new or established technique or effect. Seamless robe knitting and an ORR (one row repeat) pattern are two such terms.

As far as I am aware, no one has attempted a

classification of knitweave types before, and I simply had to find my own labels. I wish to stress that such terms, names and labels are descriptive only and are not meant to be authoritative in any way.

1 The technique, history and development

What is knitweave?

Knitweave is the term used by industrial and domestic knitters to describe an inlay effect, produced on the single-bed Japanese push button, punchcard and electronic machines, which creates a surface on the purl side of stocking stitch fabric similar in appearance to loom woven cloth. Though knitweave is the only stitch effect to have a yarn independent of its main structure introduced into its fabric, it is most certainly a member of the stocking stitch family and beyond a doubt it is knitting. Knitweave is dominated by its stocking stitch structure more than is any other fabric produced by a setting on the carriage. We cannot call knitweave a pattern stitch in the same way as we would call tuck, slip, Fair Isle, thread or transfer lace, because there are no special cams on the carriage which are responsible for the knitweave effect. The most we can say is that stocking stitch is knitted but the carriage is set to pattern to select the needles, while the brushes direct the weft to create the distinctive appearance. The inlay yarn alters the behaviour of the stocking stitch fabric which is produced behind it, by destroying the lateral stretch and making the fabric more like loom woven cloth widthways.

What we often do not realise is that the stretch laterally has been squeezed by the inlay yarn into the stretch vertically. The inlay yarn acts more like a strait-jacket than a true weft. The lack of lateral stretch prevents droppage, while the increased vertical stretch gives superb draping qualities, especially in ORR weaves, similar to loom woven cloth cut on the bias. We can exploit these qualities in sideways knitting particularly in fine yarns. It is important to point out that some stocking stitch fabrics drape nearly as well as knitweave, and that knitweave is not unique in this respect. We could describe knitweave as a type of stocking stitch, interlaced with an extraneous weft, with the same, but differently allocated, stretch properties as stocking stitch.

Other points

The Japanese call knitweave thread-knitting or just weave. In industry the technique is known as knitweave or inlay. Please note that some Singer-Superba machines can also do knitweave.

Has knitweave any history?

Until I began to look at knitweave more closely, I would have said that it was a completely modern phenomenon, and that the Japanese single-bed machines with their pattern selection and brush assembly units were the first to produce it. Certainly, we have no record that knitweave was done on the Victorian V-bed domestic machine. A type of knitweave was, however, worked on the eighteenth-century handframe (from the 1770s onwards) to produce twilled, brocaded effects with silk as the inlay yarn. The modern Japanese single-bed machine has, in fact, more in common with the earlier handframe than with the handframe's Victorian successor. It must be said, however, that the type of knitweave produced in the eighteenth century was a true weave-knit hybrid. Selected stitches were removed from the needles and the inlay yarn was placed between. Then the stitches were returned to the needles. The above and below loops in modern knitweave occur over the stocking stitch background, and the stitches do not form a warp.

It is interesting that the framework knitters called their machine 'the stocking loom', and its fabric 'the web'. Weaving effects have never been far away from knitting. The ancient Sanskrit word *Nahyat*, which was often used to describe the prototype textile crafts, illustrates

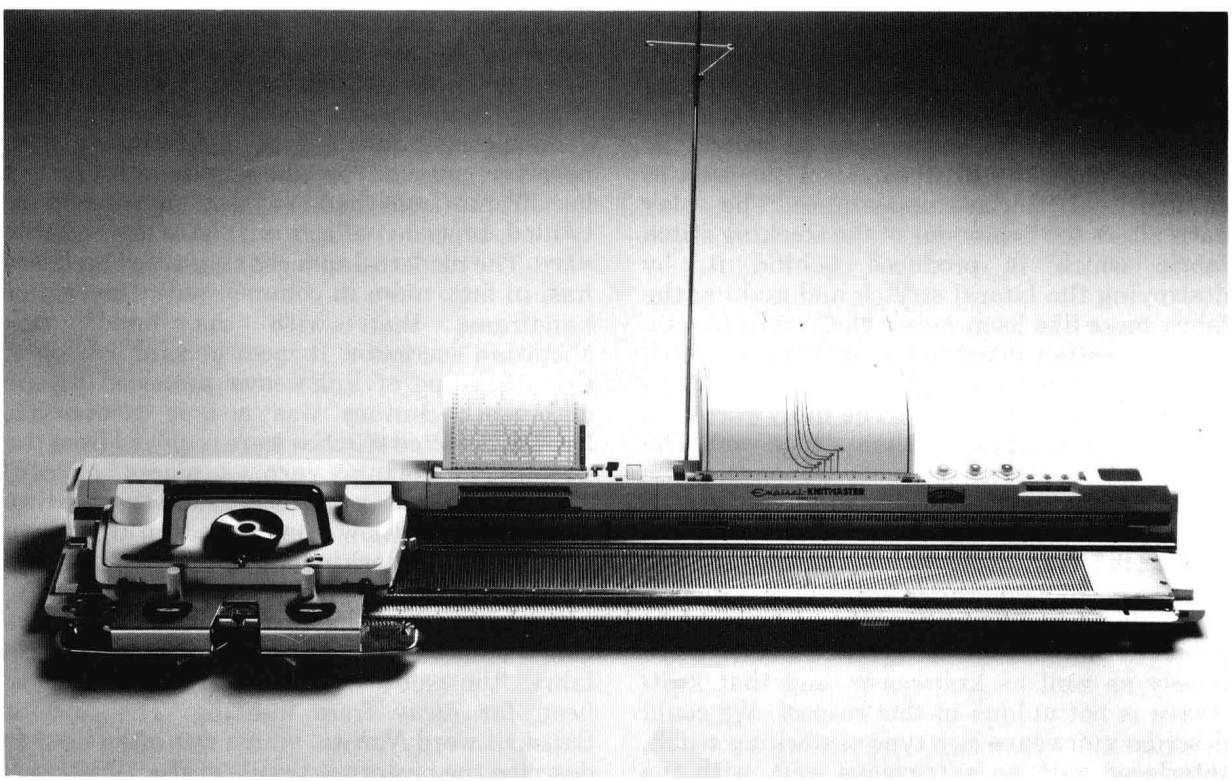
the confusion that was there at the beginning of man's experience with interweaving, linking and looping of fibre and yarn. Certainly, once knitters began to do the colour work we call by the misnomer Fair Isle, they were dealing with floats of yarn over and under at the back of their work, which were structurally independent of the main fabric.

In the nineteenth century, woven hand knitting emerged as a technique in its own right and was a favourite with Victorian hand knitters. It was done with two or more threads. The thin thread was the main or backing yarn, while the thicker weft was worked in, above and below the stitches held on the needles, in exactly the same way as in modern machine-made knitweave. The fabric was embroidered in cross-stitch, and this knitwoven, embroidered material was often used to make waistcoats for the railway navvies. In my part of the Yorkshire Dales, there is a record of a Quaker lady teaching the navvies building the Settle to Carlisle railway how to knit. One wonders why we have heard so little of the knitted garments worn by the Victorian navvy. They sound just as interesting as the more celebrated jerseys and guernseys worn by the sailors and fishermen. Again and again, students of knitting history are coming across glaring omissions as well as gross distortions of fact; but it is this kind of anomaly which makes the study so fascinating and so compelling.

Modern British authorities on hand knitting are curiously silent on knitweave, but Mary Thomas has several interesting pages with illustrations in her *Knitting Book* (*see* Further reading). In fact these pages form a useful introduction to knitweaving by machine. I cannot better her descriptions of the weaving or inlay yarn as 'above' and 'below'. In any case, where terms are established by historical precedent they are part of our culture, and we should stay with them for continuity and to avoid confusion.

The first modern machine knitweave

Though it has always been possible to place an inlay yarn across and between the ribbed fabric of a double-bed machine, the first single-bed machines to produce what we understand as



1 Knitmaster 370 (courtesy Knitmaster)

knitweave were the Japanese push-button models of the early to mid 1960s. The Knitmaster 302 had an additional knitweave accessory, which was a separate brush unit operated manually across the bed to guide the weaving yarn above and below the stitches. I remember making my first full-length knitweave coat very slowly on the 305 in 1969. This machine had detachable weaving brushes.

On the Brother 585 and 588 models the weaving brushes were built-in, and we had only to press them into place. Like the relatively unknown Toyota machine of the period, and the Brother 710 of today, these earlier Brother and Knitmaster machines had a repeat system of eight stitches, so the weaving patterns were fairly basic. I have copies of the original Brother 585 and Toyota hardback pattern books, and they are still a great source of inspiration for their imaginative interpretations of small based patterns, ORR and rolling repeat designs. A few of the Brother ones are reproduced in the 710 pattern book.

Knitweave in pattern literature

Looking through machine knitting publications from the late 1960s onwards, one can see knitweave used in terms of a 4-ply base yarn with a double knit or Aran weight as weft. (We knitters, of course, used hand knit balled yarns at this time.) Most of the yarns were smooth and untextured. Though the punchcard machines from 1971 onwards introduced us to the larger pattern repeat of 24 stitches, the yarn factor has remained unchanged until comparatively recently. Knitweave was remarkably popular during this period. Today, of course, the fine gauge Knitmaster 370, as well as the heavy gauge Knitmaster 155 and Brother 260, can do knitweave by punchcard selection. The yarn situation has not altered even with the emergence of the electronic machines with their 60 stitch repeats. In fact knitweave seems to be the least used of all the effects on the electronic machines.

When smooth yarns are used in a 4-ply base with DK to Aran as weft, the resulting fabric is moderately weighty and is best for outer wear. Smooth heavy yarns can also create a strong surface pattern similar to folk weave or coarse embroidery. This fabric is attractive in its way and is very useful for coats, skirts, jackets and furnishings, but not particularly so for sweaters and lightweight dresses. Accordingly, there are plenty of patterns to be found in 1970s issues of Jones and Brother's *Stitch in Time*, and in Knitmaster's *Modern Knitting*, which echo this theme. I can find only one dress (reproduced from *Modern Knitting*) in the *Golden Hands Book of Machine Knitting* (1973), where 2-ply is knitted as the base yarn in a very modern-looking, sideways knitwoven bodice. The machine used was the push-button Knitmaster 305. *Modern Knitting* (November 1977) featured a fluid sideways knitted outfit incorporating knitweave, designed by Esther Pearson, a finalist in the Knitmaster Design Contest. Several designers who had access to industrial yarns were doing this kind of knitweave. One of the most famous was Mary Farrin. In the Victoria and Albert Museum costume and textile collections there are examples of total knitweave. One very distinctive coat, by Kay Cosserat, is sideways knitted. Her work in total knitweave is also represented in the Crafts Council slide pack *'Knitting'*.

Because nearly all the knitwoven garment patterns in magazines of the period were knitted conventionally and vertically from bottom to neck, the no-stretch situation widthways was emphasised in classic lines. Though the vertical stretch potential was there, the fabric was prevented from dropping by the horizontally placed inlay yarn. What only a few top designers had realised was that knitwoven fabric knitted sideways brought out the fluidity and the drape. In the Nihon Vogue book devoted to shadow-knitting there is a filmy, sideways knitted skirt and top incorporating knitweave, as fine and floaty as any done today. The Nihon Vogue weaving book contains some unusual and beautiful effects, and has patterns for conventional and sideways knitwoven garments. Unfortunately, both these publications are out of print.

What knitwoven fabric, knitted conventionally, did produce to perfection was the Chanel suit, and the Japanese still prefer that to any other. Perhaps the formal, trim, classic lines of the Chanel coat and skirt appeal to the situation of Japanese women; but one reason why we rarely see a more flowing look in circular skirts and tops in Japanese fashion knit magazines is that the Japanese have no coned yarn industry to support this kind of knitting. The yarns