Legend:
- knit
  - RS, knit stitch
  - WS, purl stitch
- purl
  - RS, purl stitch
  - WS, knit stitch
- "c2 over 2 right"
  - RS: sl2 to CN, hold in back, k2, k2 from CN
- "c2 over 2 left"
  - RS: sl2 to CN, hold in front, k2, k2 from CN

Chart A

Chart B

Chart C

HISTORY
The raglan sleeve style is relatively new in fashion history. The "raglan" name is attributed to Field Marshal FitzRoy James Henry Somerset (1788-1855) who became the First Baron Raglan in 1852, but it is not exactly certain when the sleeve style was developed or when it started being referred to as a raglan sleeve. Lord Raglan's right arm was amputated after being wounded in the Battle of Waterloo against Napoleon in 1815, and it is thought that his tailor developed the "raglan" sleeve to accommodate his amputation.

A raglan sleeve is constructed with a seam that runs from the underarm to the neck on the front and back of the shoulder of the garment, rather than a seam that runs from the underarm, around the shoulder back to the underarm like a set-in sleeve or drop shoulder sleeve. The raglan sleeve is constructed without the use of a shoulder seam. In the evolution of knitted sleeve construction, the style of the slanted seam from neck to underarm is the transition style between the shaped saddle shoulders style and a full yoke as described by Priscilla Gibson-Roberts in Knitting in the Old Way.

Initially raglan sleeves were used mostly in men's overcoats and outer wear, but started crossing over into sportswear near the end of the 19th century because of the roominess and ease of motion afforded by its construction as well as its durability during sports. Due to the nature of its construction, it is much harder to rip a raglan sleeve from a garment than a set in sleeve while being worn. In the early 20th century, when women started wearing more sportswear types of clothing, the raglan sleeve crossed over into women's garments. There are reports that raglan sleeves were first seen in knitwear around 1912-1913. Published patterns for hand knitting dating back to the 1930's can be found which use raglan sleeve construction.

BASIC CONSTRUCTION OVERVIEW
Raglan sleeve sweaters can be knit flat and pieced together or more commonly knit in the round leaving underarm stitches to graft or seam at the end.
If the garment is knit flat, the front, back and sleeves are knit separately and then the raglan seams are joined, the side and arm seams joined and then the neck edging is applied last.

If knitted in the round a sweater can be either started at the neck opening and knitted down to the cuffs and bottom of the body or started with the cuffs and bottom edging and knitted up to the neck opening. Molly Ferrante covers the top down method in her Fashion Framework Series Lesson in this issue.

A bottom up sweater can be started with either the cuffs or the bottom of the body. Either way both need to be knitted for the desired length to the underarm, at which time predetermined underarm stitches from the sleeve underarm and sides of the body are bound off or placed on waste yarn or stitch holders (to be connected later) and the rest of the stitches are all placed on one circular needle, placing markers between the body segments and sleeve segments - body front, marker, left sleeve, marker, body back, marker, right sleeve, marker, as an example. At this point the entire garment is on the needle and while continuing to knit in the round, the raglan sleeve seams will be formed by decreasing one stitch on each side of each marker (see below for variations) every other round until you run out of sleeve stitches. If the front neck opening is to be lower than the back, this will need to be planned in advance and the front neck stitches will need to be cast off or placed on waste yarn or a stitch holder and the neck opening shaped at the same time as the last few rows of the raglan seam decreases. The neck can then be finished as desired.

THE MATH – OR HOW TO DESIGN YOUR OWN RAGLAN SWEATER
All you need to design your own Raglan sweater are a few basic numbers and some graph paper. Numbers you need:

• The body measurements of the intended recipient of the sweater. You will need the desired length from the base of the neck to the bottom of the sweater, the desired sleeve length from the cuff to the under-arm, the desired circumference at the wrist and the desired circumference of the finished sweater body. Also plan the style of the neck opening.

• The stitch and row gauge of your swatch. If your sweater will contain textured or stranded knitting, be sure to check that gauge also. Knit the swatches on the same needles with which the garment will be knit and also in the round or flat depending on how you will knit the sweater.

• A percentage system to figure out proportions of upper sleeves, cuffs, body, neck opening, etc.

Body Measurements
A quick and easy way to determine the sweater numbers is to measure a similar sweater that you know fits you or the intended recipient and use those numbers for starting. If you do not have a sweater at home that works, an alternative would be to go to your local department store and try on sweaters until you find one that fits the way you want, and measure it carefully.

Gauge
Once you have your basic measurements you will need to convert those inches to stitches. Using your gauge swatches, determine your stitch and row gauge. Then multiply the stitch gauge (stitches per inch) by the number of inches of the desired finished body circumference.

This will be the base number of stitches that you will use to determine all the other stitch counts that you will need. You will use this base number combined with one of the percentage systems mentioned below to start charting your sweater. An example of a base number would be a sweater body circumference of 40 inches times a stitch gauge of 5 stitches to the inch equals 200 stitches to cast on for the body – 200 would be the base number.

The row gauge is important if you are incorporating a design into your sweater and you want to start and stop the design at certain points. Knowing the rows per inch and the length of the sleeves and body, you will be able to plot your design on your chart before you begin knitting. This is always a good idea to make sure that stripes, circles, dots, crosses, etc., do not fall over unflattering areas in your sweater.

Finding the Percentage System of Proportions that Work for your Body Type
There are several percentage systems and the one that works for you based on your body type is the best (see Sweater Proportions Chart below).

Although all of these systems seem similar there are differences, mostly in the upper arm size and the neck opening.

continued on page 48

<table>
<thead>
<tr>
<th>Author</th>
<th>Neck Opening</th>
<th>Upper Arm</th>
<th>Cuff</th>
<th>Underarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elizabeth Zimmermann</td>
<td>40%</td>
<td>33%</td>
<td>20%</td>
<td>8%</td>
</tr>
<tr>
<td>Priscilla Gibson-Roberts</td>
<td>40-45%</td>
<td>35%</td>
<td>20%</td>
<td>8%</td>
</tr>
<tr>
<td>Jacqueline Fee</td>
<td>40%</td>
<td>33%</td>
<td>20%</td>
<td>8%</td>
</tr>
<tr>
<td>Ann Budd</td>
<td>33%</td>
<td>about 35%</td>
<td>about 25%</td>
<td>5%</td>
</tr>
</tbody>
</table>

continued on page 48
Design Your Own
Raglan Sweater

continued from page 47

So if you have thin arms in relation to your upper body, the Elizabeth Zimmerman system would be good for you, but if your arms are fuller in relation to your upper body, you would probably be happier with Priscilla Gibson-Roberts’ or Ann Budd’s system. The same applies for the neck: if you find your neck opening worked at 33% is too tight, try 40% or more. Or you can create your own system using all of these as examples.

At this point, I use the graph paper to chart a drawing of how the sweater will look. I start with a rectangular shape representing the width and length of the sweater with each grid on the graph paper representing one inch. I mark the underarm measurements, the neck opening, the total length of the sweater and the sleeve length from underarm to cuff. I write in the number of stitches for casting on the body and cuffs, the number of stitches for the underarms, the number of stitches for the upper arm, etc. This is also a good time to experiment with such design elements as cables or color work, to see where they will fall on your sweater.

Raglan Decreases
The decreases are usually worked one on each side of each marker on every other row, starting about one inch after the joining round. This works no matter what the gauge of the yarn or your knitting. You can see with the above percentage systems that the sleeves with greater percentage of stitches will take longer to completely decrease away, therefore creating a deeper armhole, which would fit with a larger arm, and the same for the relatively smaller sleeves which will decrease away more quickly with a more shallow armhole, fitting a more slender arm.

The decrease stitches that you use will create a design along the seam and you can create a variety of designs by choosing the type of decrease and how you place it. Leaning decreases should always mirror each other on each seam, but whether they lean toward or away from the seam is up to the designer. You can choose to work your decreases as knits or purls, whichever will fit more with your overall design. Central chain decreases and double central decreases can also be used. You can also place any number of stitches between the decreases or place the decreases right next to each other to create interesting effects (see Swatches 1 and 2). A yarn over or small cable can also be placed between the decreases or just outside the decreases to create a lace or cable pattern (see Swatch 3), to fit with your overall design.

If you are adventurous, you can experiment with the arrangement of the decreases, as I have in the Modified Raglan Cardigan in this issue. More description of this method is included with the sweater.

Putting It All Together
Once you have made the above calculations, there are just a few more decisions to make before you can cast on your sweater.

Do you want a pullover or a cardigan? What type of edging do you want for the neck, cuffs and body of the sweater? Do you want to bring the cuff and lower body edge in a bit, or not? Do you want waist shaping? What will the finishing be for your chosen neck line?

As an example: The first decision to make is whether you want a pullover or a cardigan. For a cardigan, you would use the same numbers as for the pullover but you would not be knitting the body in the round and would leave an opening at the middle front. Buttonbands can be knitted on as you go, in which case you would need to add stitches to accommodate them, or buttonbands can be added as part of the finishing, in

Swatch 1
Swatch 2
Swatch 3
which case you would cast on fewer stitches to compensate. These decisions should be added to your chart, along with button and buttonhole placements.

A basic pullover or cardigan can start with 2x2 ribbing for about two or three inches at the cuff and lower body edge (or you may choose any other type of edging). Some people like to start with 10% fewer stitches while in the ribbing and then increase evenly across to the full count prior to starting the non-ribbing sections. It is up to you and how you want your sweater to fit. If you want your cuffs to fit even more snugly, then measure your wrist, use your gauge to figure out the number of stitches you will need to cast on for the wrist, knit the ribbing, then increase evenly across to the 20% number, from the Sweater Proportions Chart, to start the sleeve. Add these changes to your chart also.

As Molly Ferrante discusses in her “Top-Down Raglan Pullover Lesson,” you can customize the shape of your sleeve by adjusting the rate of increases, but regardless of your rate, you will want to reach the full count of your chosen percentage system by the time you finish the length of the arm. Waist shaping and short row shaping are discussed in the designer notes with the Modified Raglan Cardigan.

Neck shaping is covered in detail in Vogue Knitting: The Ultimate Knitting Book, starting on page 179. Decide on your neck shaping now and add it to your chart.

At this point you can cast on and start knitting. Follow your chart at each decision point. Finishing includes adding desired neck edging and either seaming or grafting the underarm stitches. Sew on buttonbands and buttons if needed. Weave in ends and block using your preferred method.

References