Honeycomb Weaving

Chicago Park District
Burnham Park
Chicago

Modern Recreation Series
Honeycomb Weaving

As Conducted

Under

The Recreation Division

of the

CHICAGO PARK DISTRICT

THE BEES taught us our first lesson in honeycomb weaving, a process by which we make beautiful table mats, pillow covers and centerpieces which give the appearance of having been woven. It is not certain who first took the idea from the bees and developed it into a so-called weaving process. It has been used by the United States Navy and by various institutions to provide recreation and handwork for convalescents. One form of the process is known as waffle weaving.

Honeycomb weaving has been used for recreation in the Chicago parks for several years. The original procedures have been developed and modified by various groups in the park recreation centers. Consequently the directions for honeycomb weaving given in this book are based on the work done by many people and on the experience gained in showing them how to carry on this interesting craft.

HONEYCOMB WEAVING IS SIMPLE

The process is simple, the cost nominal. Equipment consists of four items: a darning needle; eleven or twelve balls (500 or 900 yards) of mercerized cotton, such as is used for crochet or embroidery work, in similar or contrasting colors; an alignment stick (see Figure 1) which you can make pointed, triangular and smooth from a piece of hard wood; and lastly a frame. Directions for making frames are given on Pages 15 and 16. Let us begin the work with a 10-in. hexagonal frame (Figure 1) although eventually you will want frames of various shapes and sizes.

After assembling your equipment and supplies, as described above, you are ready to begin the work.

WINDING: Because of the differences in winding and tying on the square frames, it is

Figure 1. This is the 10-inch hexagonal frame, a convenient size for beginners.
strongly recommended that you work first on the hexagonal frame. Place your hexagonal frame so that side A (which may be any one of the six sides) is directly in front of you. Tie thread with a secure knot to the fifth or sixth nail, counting to the right from the left-hand corner; next bring the thread around to the right of the seventh nail, then cross to the right of the seventh nail on side E of the hexagon so that the thread runs parallel to side F of the frame. Next bring thread around the nail and back to the left of the nail from which you started. Continue winding thread over to the eighth nail on side A, holding the thread each time tightly to the frame with first finger of left hand so that no slack will develop, then cross to the eighth nail on side B and return. Always wind thread first around the right side of nail, drawing it as tightly as possible without breaking. This is the first section of border.

CONTINUE WITH THE WINDING

After you have passed thread around the seventh and eighth nails as described, bring it directly over to the twelfth nail on side A, counting from the left-hand corner as before. Pass it around this nail and cross to the same nail on side C, this time parallel to side B of the hexagon. Returning on the left of this nail, wind thread in like manner around the thirteenth nail. This operation forms two sections of border as shown in Figure 2.

Turn the frame until side B is in front of you and wind the succeeding two portions of the border in the same way as before, as shown in Figure 3.

The frame should then be placed so that side C is directly in front of you and thread wound as shown in Figure 4. Again turn the frame and wind. Tie the thread firmly to a convenient nail, using knot shown in Figure 4A. This completes the winding of the first layer of the border. The whole border should preferably be of a color contrasting with that of the body.

The first layer of the body is begun by tying the thread to any convenient nail, winding it around the ninth nail, see Figure 5, crossing to the corresponding nail on frame side E, so that thread lies parallel to the border, then returning around the left of the ninth nail. Wind in this manner until you have reached the border on opposite side of the frame. Then hold thread taut with left hand and, with the first finger of right hand, press threads down to the frame at each nail on the side opposite you. Properly done, your work will now appear as in Figure 5.

Next turn the frame until side B is in front of you and wind the thread in the same way you did from side A. This process should be repeated on side C of the frame, which will complete the winding of the first layer of the body. The work should now appear as in Figure 6. Succeeding layers are wound in the same way, winding first the border and then the body.
alternately. The border for this frame consists of thirteen layers and the body of twelve layers. By winding the last border layer twice, you will make it somewhat more distinctive. The thread need not be cut after forming each layer but it should be securely tied to an adjacent nail to prevent any looseness in the winding. To eliminate, as far as possible, thread wasted in winding outside the nails, the border is not always started from the same point. Always start the body-winding, however, from the nail from which you first started. When you reach the end of thread, add a new spool; in doing so, make sure the knot lies outside of nails. You do this by winding surplus thread back and forth around several convenient nails until the knot lies outside, then resume the winding.

TYING: The next step is to turn your frame face down, as tying will be done from the reverse side. Ties are made at each point where the threads intersect, except the part that lies outside border and forms the fringe. To make these ties, use a large darning needle or bodkin with a piece of thread about three feet long. This thread may be of the same or contrasting color. Use the aligning stick (Figure 7) to align threads during the entire tying process, pushing it through triangular openings until the strands of thread in each line are pushed closely together. This need not be done on the entire piece of work at one time, but it should be done before tying. The outer border row is to be tied first; therefore align the border and several rows adjoining it with the stick, maintaining this margin until the piece is completely tied.

Before you start tying make a slip knot in the end of thread. Start at any corner where the strands of outer border lines cross and put the threaded needle or bodkin through space shown at (a), Figure 8. Pull it through until you come to slip knot. Then bring needle back through space shown at (b) in Figure 8 and on through slip knot. Pull the thread up tightly. Insert needle in space (c) and return it through space (d), Figure 9, passing thread around needle in the man-

Figure 6. The work should look like this after first layer of body is wound from side C

Figure 7 (right) Details of the alignment stick used to align threads when tying

Figure 8. First step in tying thread intersections

Figure 9. How knot is finished in tying an intersection

Figure 10. Use this knot for adding thread, when working thread is used up
Figure 11. Two good designs for the hexagonal frame.

Figure 12. Two more good designs for the hexagonal frame.
Figure 13. This is the way you begin a rosette that forms the design.

Tie the entire outer border row in the same manner, then the next adjoining row and so on until the work is tied completely to the center. The firmness of the finished article depends to a large extent upon tight winding and tight tying.

DESIGN: The work is now ready for the design, which you may take from a pattern or develop by your own ingenuity. Figures 11 and 12 show several designs that have been considered appropriate. Much depends, of course, upon a proper choice of colors.

Designs are made up of a succession of spider webs or rosettes. To form such a web or rosette, tie the thread with slip knot around the spoke, as shown at (a). Figure 13, reversing the frame and working from the bottom side. In forming the design, you do not pull thread as tightly as when tying the intersections. Insert the needle through space (b) and return it through space (c) always keeping the thread behind needle, as shown, for in this case you make no ties. Continue in the same manner until you have built several wraps around each row as in Figure 14 which is viewed from face side. This is the basis of rosettes or spider webs of which all designs are made. The number of wraps around each row may be three, five, or more. Contracting colors may be used to bring out the design. The small hexagon center of the piece is usually filled in completely with two or three different colors for a flower effect.

If two different colors are desired in rosettes, two wraps of one color are usually made and contrasting color used to form the last three wraps. Each section of the design should be wrapped completely with the first color, then finished with the second, because this eliminates cutting the thread. When all thread in the needle has been used, a new piece is tied on as explained in Figure 10.

In forming different designs it is not always advisable to continue wrapping around the spoke in strictly consecutive order because, in moving from one rosette to the next, the thread must lie along the row and not cross the space where it will be visible from the face of the finished piece. Attention must be given, therefore, to the points where the wrapping is to end. This is illustrated in Figure 15, where the thread should lie along row (x). To obtain this result, make first wraps completely around spokes in consecutive order but, when going around the second time, make two wraps and three at spokes (e) and (f) as illustrated, enabling you to end at (d). This permits the thread to lie along the row when starting the next rosette as shown in Figure 15. This method will vary slightly as the desired point of termination varies but, in some cases, it is best to make two wraps at one or more of the spokes.

A distinctive touch is added by weaving a one-half inch ribbon of harmonizing color around the border of design. But the use of too much ribbon has been found to detract from rather than add to the appearance. When ribbon is used, it should be woven rather loosely through alternate rows of the winding and ends of the ribbon should be sewed together where they meet on the reverse side of the work. Figures 11 and 12 illustrate the use of ribbon and the method of weaving.

When large hexagonal frames are used the border is often constructed of three rows instead of two. A proportionate number of layers is also added to both border and body. After some experience, you will find that you can introduce many ideas that will add to the beauty of the work.
FRAMES: After you have completed the work, cut it from the frame with safety razor blade. Cut strands along one side of each nail as shown in Figure 16. In doing this, it is advisable to leave intact the threads on three nails at each corner; these hold the work firmly during the cutting process. Threads at these points should be cut last. When you have removed work from frame, lay it on a table or board and trim off long threads with scissors. Comb out fringe and trim it several times, if necessary, until edges are even.

HONEYCOMB WEAVING ON SQUARE AND OBLONG FRAMES

For explanatory uses, we take the twelve and one-half inch square frame. Referring to Figure 17, you will see that the border winding is begun at the ninth nail from the left on side A and is wound progressively as in Figure 17 and 18. These windings complete first layer of the border and, if the drawings have been carefully followed, the work will appear as in Figure 19. Each layer of the body consists of four distinct windings. Start the winding at the seventh nail from the left on side A, and wind as shown in Figure 20. The diagonal winding follows. Wind this according to the plan in Figures 21 and 22. A complete outline of both border and body is shown in Figure 23. This drawing should be studied carefully.

TYING SQUARE FRAMES:

As layers are thicker at many points, it is very necessary for you to tie temporarily with strong thread the intersections lying outside of border.

The aligning stick, is of slightly different shape from the one used with hexagonal frames. It is triangular in section but with only two sides equal, the third side being longer. On the square frames the entire piece of work should be aligned with the stick before tying is started and the stick should be used con-

tinually to keep the threads together in a straight line.

The principle of the tying is the same as that used on a hexagonal frame, but on a square frame there are more spokes at some of the intersections and fewer at others. The sectional drawing, Figure 25, illustrates the method used and the way in which the thread lies along the row when proceeding from one intersection to the next. After you have tied the entire piece of work, it is ready for the design.

DESIGN: When you work in the design on these square frames, you will find that
Figure 21. The diagonal body winding follows the straight winding, one layer going to left. Figure 22. The diagonal body winding, layer to right.

Figure 23. This is the way the square frame should look with border and body windings completed.

Figure 24. Designs for the square frame from the face side.
the rosettes or spider webs have eight spokes. The intersections with four spokes in the center of the small squares are seldom used in the design. Rosettes or spider webs that make the design are formed in the same way as those on the hexagonal frame. Figure 94 shows two typical designs for the square frame. Square or oblong frames provide slightly more opportunity for complete expression of conventional designs as the worker will perceive.

After design is finished, remove temporary ties which were placed outside the border. Cut the work from the frame; trim and comb the fringe as explained previously.

**BILLS OF MATERIALS FOR VARIOUS HONEYCOMB WEAVING FRAMES**

<table>
<thead>
<tr>
<th>No.</th>
<th>Size</th>
<th>Material Part</th>
<th>Material Part</th>
<th>No.</th>
<th>Size</th>
<th>Material Part</th>
<th>Material Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
<td>12</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
</tr>
<tr>
<td>24</td>
<td>10&quot; lath</td>
<td>f.h.w.d. screws</td>
<td>24</td>
<td>10&quot; lath</td>
<td>f.h.w.d. screws</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>casing nails</td>
<td>1 oz glue</td>
<td>1 oz glue</td>
<td>20</td>
<td>casing nails</td>
<td>1 oz glue</td>
<td>1 oz glue</td>
</tr>
<tr>
<td>20</td>
<td>shiellac</td>
<td>1 oz shiellac</td>
<td>1 oz shiellac</td>
<td>20</td>
<td>shiellac</td>
<td>1 oz shiellac</td>
<td>1 oz shiellac</td>
</tr>
</tbody>
</table>

For 14"x14" Square Frames

<table>
<thead>
<tr>
<th>No.</th>
<th>Size</th>
<th>Material Part</th>
<th>Material Part</th>
<th>No.</th>
<th>Size</th>
<th>Material Part</th>
<th>Material Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
<td>4</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
</tr>
<tr>
<td>20</td>
<td>10&quot; lath</td>
<td>f.h.w.d. screws</td>
<td>20</td>
<td>10&quot; lath</td>
<td>f.h.w.d. screws</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For 16"x16" Square Frames

<table>
<thead>
<tr>
<th>No.</th>
<th>Size</th>
<th>Material Part</th>
<th>Material Part</th>
<th>No.</th>
<th>Size</th>
<th>Material Part</th>
<th>Material Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4&quot;x1&quot;x10&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
<td>2</td>
<td>4&quot;x1&quot;x10&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
</tr>
<tr>
<td>2</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
<td>2</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
</tr>
<tr>
<td>2</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
<td>2</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
</tr>
<tr>
<td>20</td>
<td>10&quot; lath</td>
<td>f.h.w.d. screws</td>
<td>20</td>
<td>10&quot; lath</td>
<td>f.h.w.d. screws</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For 10"x10" Oblong Frames

<table>
<thead>
<tr>
<th>No.</th>
<th>Size</th>
<th>Material Part</th>
<th>Material Part</th>
<th>No.</th>
<th>Size</th>
<th>Material Part</th>
<th>Material Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4&quot;x1&quot;x10&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
<td>2</td>
<td>4&quot;x1&quot;x10&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
</tr>
<tr>
<td>2</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
<td>2</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
</tr>
<tr>
<td>2</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
<td>2</td>
<td>4&quot;x1&quot;x12&quot;</td>
<td>birch frames</td>
<td>f.h.w.d. screws</td>
</tr>
<tr>
<td>20</td>
<td>10&quot; lath</td>
<td>f.h.w.d. screws</td>
<td>20</td>
<td>10&quot; lath</td>
<td>f.h.w.d. screws</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note.—Number of nails will vary, of course, depending on size of frame. One ounce of glue and one ounce of shiellac will usually be enough for these frames. To reduce cost and weight, these frames can be made of strips of birch for the top and of some soft wood, such as pine or whitewood, for the bottom. The hardwood should be used for the top of the frame in all cases.
Drawings for Building Square Frame

Perspective of Top View showing completed frame with overlapping construction at corners.

Perspective of Bottom View showing assembly of long and short pieces with screws in place.

**TOP VIEW**
- Holes located with nail spacing strip 25 mm. Drill 9/16 casing nails 11/2 deep. Use 9/16 drill.

**BOTTOM VIEW**
- Screw holes located with spacing strip. Strip 1/4. Drill from inner face for screws. Counterbore on outside 1/2. 1/4 wood screws.

**C** Perspective of nail spacing strip.

**E** Perspective of longer screw spacing strip with holding strip 5" nailed on.

**F** Perspective of shorter screw spacing strip, showing location of holes. Drill 3/8.

**G** Longer frame piece B as indicated in top and bottom views.

**H** Shorter frame piece A as indicated in top and bottom views.

Top View of shorter screw spacing strip, showing location of holes. Drill 3/8.