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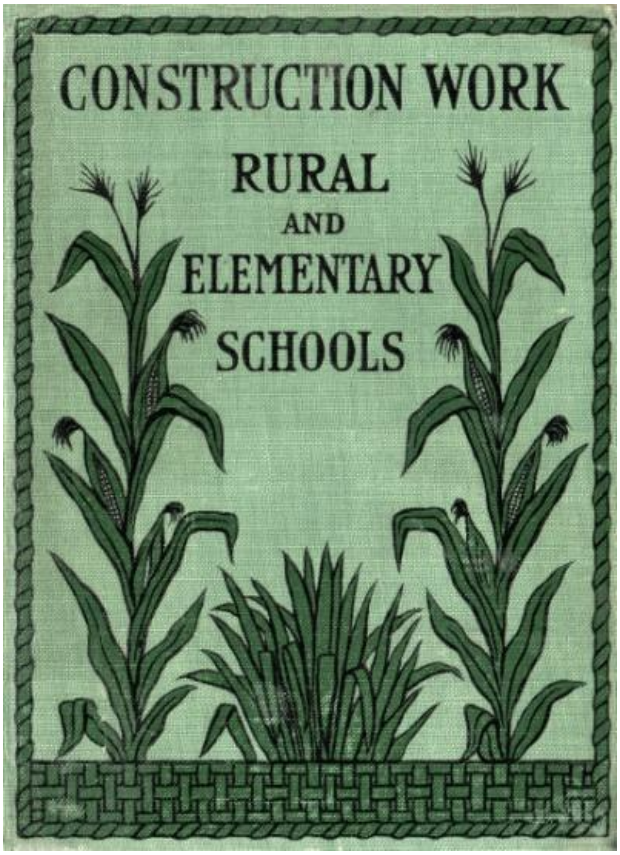

Construction Work

FOR

Rural and Elementary Schools

BY

VIRGINIA McGAW
Teacher in the Elementary School
of Baltimore

A. FLANAGAN COMPANY
CHICAGO

PREFACE

In offering this volume to the public the author has but one wish—namely, that it may supply a want in time of need and help some one over a difficult place.

Most of the subject-matter in Parts One, Two, Three, and Four was written for and has been previously published in the *Atlantic Educational Journal*, with a view to assisting the rural teacher. The present volume comprises a revision of the articles published, together with a short account of one season's work in a school garden, and has the same object—that of aiding the rural teacher by means of a few simple suggestions.

The work is divided into five parts—"Cord Construction," "Paper Construction," "Wood Construction," "Basketry," and "The School Garden." No subject is dealt with at length. The aim has been to give simple models that may be made without elaborate preparation or special material.

Believing that a child is most likely to appreciate his tools when he realizes their value or knows their history, a brief introduction to each part is given, and wherever possible, the place of the occupation in race history is dealt with, and an account of the culture and habitat of the material is given.

As clear a statement as is possible is made of how the model is constructed, and in most cases both a working drawing and a picture are given.

VIRGINIA McGAW.

BALTIMORE, MARYLAND,
April, 1909.

ACKNOWLEDGMENTS

To the *Atlantic Educational Journal* for the privilege of revising and relinquishing the articles on Cord, Paper, Wood, and Basketry.

To Mr. George M. Gaither, Supervisor of Manual Training in the Public Schools of Baltimore, for five of the woodwork patterns.

To President Richard W. Silvester, of the Maryland Agricultural College, for the inspiration to write the *Garden Bulletin*, his consent to its republication, and his hearty coöperation in its revision.

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PART I

CORD CONSTRUCTION

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CORD CONSTRUCTION

Introductory Remarks

To a child one of the most attractive of possessions is a piece of cord. He has so many uses for it that it becomes part of the prized contents of his pocket. Since this commodity affords so much pleasure to the untrained child, how greatly may the pleasure be enhanced if he is taught how to make the number of beautiful things that may be wrought from cord or twine! Having this knowledge, he will unconsciously employ many otherwise weary moments in fashioning some coveted article.

Among the things he can make are chains, reins, bags, nets, miniature hammocks, portières, and rugs for the dollhouse. He must be guided step by step from the simplest to the more intricate. He must be taught that only when a thing is well done has it any use or value, therefore the best effort is necessary to the success of his work. If he ties a knot, it must be properly tied or it will not hold. If he makes a bag or a hammock, the meshes must be uniform and the color blendings pleasing or it will lack beauty, and even he, himself, will not care for it. Should he make a chain or reins, they ought to be attractive-looking as well as useful; hence the aim should be for artistic combination and perfect execution. The success the child will meet with will depend greatly upon the attitude of the teacher toward the work and the amount of spirit she may be able to infuse into it.

KNOTS

Aim—To teach the names of different knots, how they are tied, and the utilitarian value of each.

Begin by teaching how to tie a knot, and that all knots are not alike nor tied in the same way. There are three kinds of knots—the overhand knot, the square knot and the "Granny" knot. Each of these has its use, its place, and a utilitarian value. [Pg 10]

1 Overhand Knot

Material—One 10-inch piece of heavy twine.

Hold one end of the twine firmly in the left hand and throw the other end over with the right hand to form a loop; then pass the end in the right hand under the loop; and draw it through tightly, making a firm knot.

OVERHAND KNOT

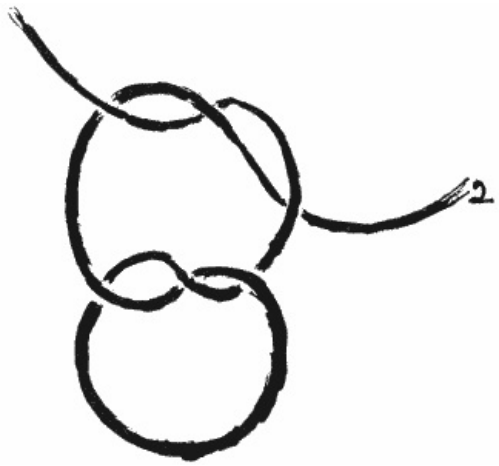
A long piece of twine in which are tied either single knots at regular intervals, or groups of three or five knots with spaces between, will make a chain which will delight any small child.

2 Square Knot

Aim—To teach how to tie a knot that will not slip.

Material—One 12-inch piece of heavy twine.

Take an end of the twine between the thumb and the forefinger of each hand. Holding in the left hand end No. 1, pass it to the right over end No. 2; then pass it under No. 2; finally, pass it out and over, making the first tie. Now, holding end No. 1 firmly in the right hand and end No. 2 in the left, pass No. 1 to the left over No. 2, then under, out and over; draw the two ties together, and you will have a firm, square knot. [Pg 11]



SQUARE KNOT

3 "Granny" Knot

Aim—To teach the name of the knot one usually ties and how to tie it.

Material—One 12-inch piece of heavy twine.

Take an end of the twine between the thumb and the forefinger of each hand and hold firmly. Pass end No. 1 to the right over end No. 2, under and out. Next pass end No. 2 to the right over end No. 1, under and out.

We now have the knot known as the "Granny," which we ordinarily tie.

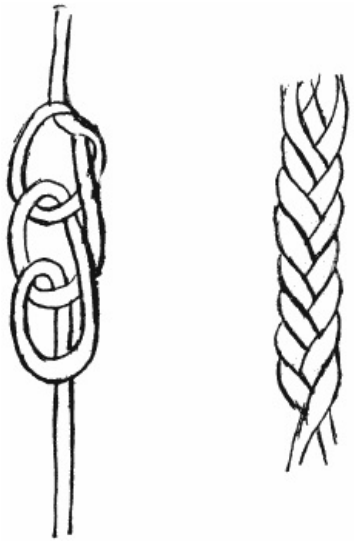
CHAINS

4 Loop Chain

Material—One piece, 5 yards long, of macramé cord, No. 12, one color. (See page 12.)

About five inches from one end of the cord make a short loop. Using this loop as a starting-point, work up the length of the cord to within about eighteen inches of the other end, by repeatedly [Pg 12]

drawing a new loop through the one previously made as one does in crocheting. The child can easily manipulate the cord with his tiny fingers. Aim to have the loops of uniform size. Finish with a loop five inches long, leaving an end of the same length. Now, placing together the two ends of the chain, we have a loop and two single ends of cord. Take these single cords together and buttonhole them over the loop for about three inches, then twist. Tie the single ends with a square knot, and fringe them out; leave the loop.



LOOP CHAIN
Showing how stitch is made and appearance of finished chain.

Instead of being fringed, the ends may have a large bead attached to each, and a whistle may be strung on the loop. This would both make the chain attractive to the child and demonstrate a use for it. [Pg 13]

5 Overhand Knot Chain

Material—Macramé cord, No. 12: one piece 2 yards long, white; one piece 2 yards long, red.

OVERHAND KNOT CHAIN

Fasten the two pieces together in the middle. Pin them to a board or slip them over a hook where the cord will be held firmly. Using the overhand knot, tie each color alternately, until all except about four inches of cord is used up. Taking four ends as one, tie a slip-knot close up to the point where you stopped forming the chain. Next, fringe out the four ends close up to the knot. The result is a circular cord with stripes running diagonally around it, very pleasing to the eye of a child.

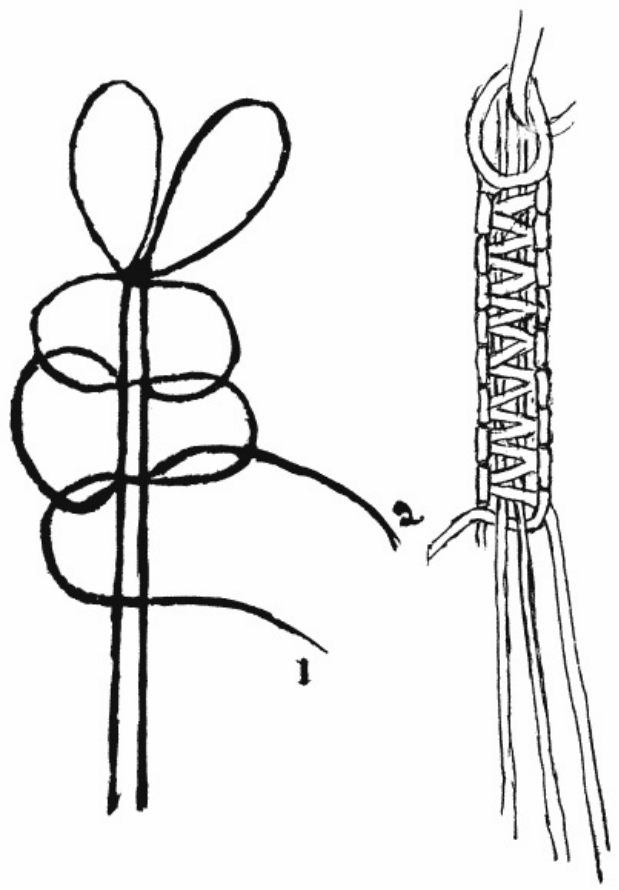
The lengths here given make a fob-chain about five inches long.

6 Solomon's Knot Chain

Material—Four pieces of macramé cord, No. 12, 2-1/2 yards long, of one color. (See page 14.)

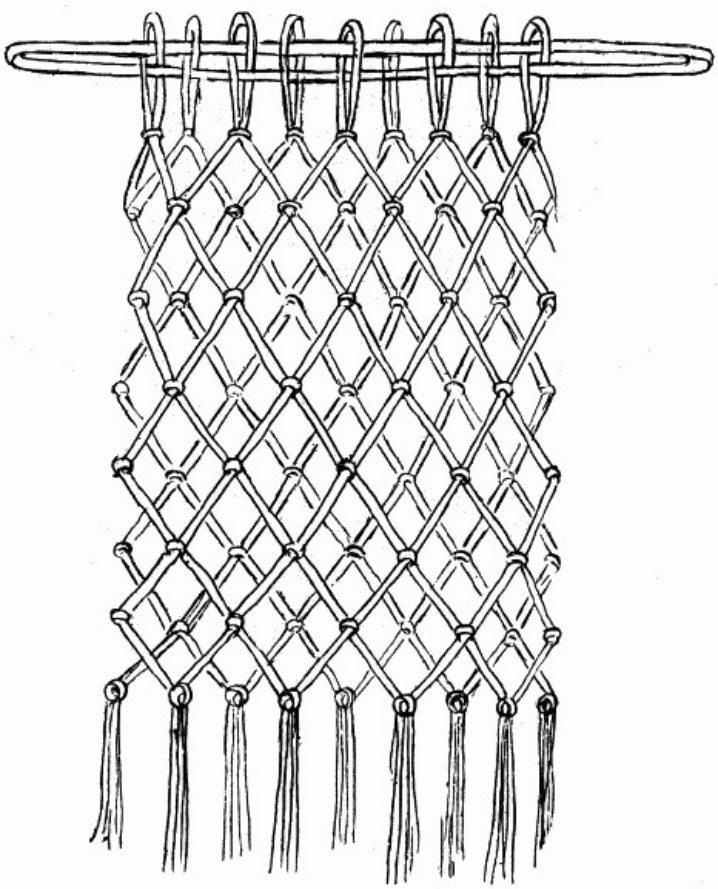
Double in the middle and leave two loops, each two inches long. Take two strands as the center and foundation and attach them to a hook or a board where they will be held firmly. Loop the two remaining threads alternately over the two central ones, first the one on the right, then the one on the left. For instance: Take a single cord on the left, form a loop to the left of the double cords, draw the end over the two foundation pieces and hold firmly. Then take a single cord on the right, pass it over the piece of cord which forms the loop, then under where the three pieces cross and up through the loop; draw it tight. Then work with a single cord on the right in the same way and continue, alternating the two single cords, until there is left about four inches. Clip

the middle cords so that the four ends may be of equal length. Finish by tying them in a square knot and fringing the ends. This forms a flat chain one-quarter of an inch wide and one-eighth of an inch thick, which may be made any length desired. [Pg 14]



SOLOMON'S KNOT CHAIN
Showing how stitch is made.

[Pg 15]



KNOTTED BAG

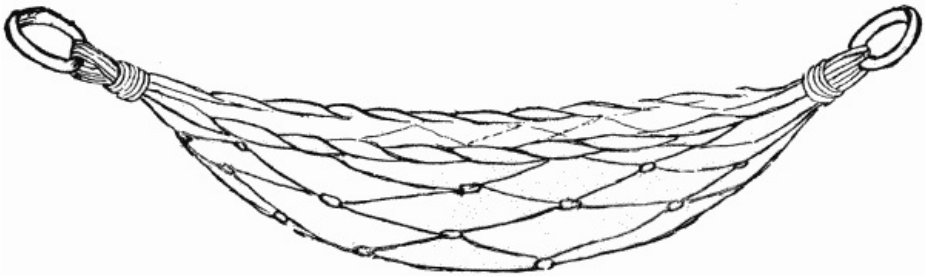
COMBINED KNOTS AND CHAINS

7 Knotted Bag

Material—Macramé cord, No. 12, one or two colors; twelve pieces 1 yard long or six pieces 1 yard long, of each of the two colors.

Double each piece of cord in the middle and tie it in a loop over a pencil or some other object that will make the loops of equal size. Slip the loops from the pencil and string them to a cord, alternating the colors. Join the ends of the cord so as to form a hoop. You now have twelve loops on this hoop and one row of knots. Form a second row of knots by tying cords of different colors together. The meshes should be uniform and of the size of the loops. Continue knotting one row below the other until about three inches of cord remain. Now stretch the bag out straight and double and tie together the four cords, which operation will form the bottom and close the bag. Fringe the ends and trim them off evenly. [Pg 16]

Make a loop chain, and run it through the top loops, having removed the working cord. Small brass rings may be used at the top instead of loops, and the drawing string may be run through them. A larger bag may be made by the addition of more and longer pieces of twine.



MINIATURE HAMMOCK—KNOTTED

8 Miniature Hammock—Knotted

Material—Twelve pieces of seine cord, No. 12, each 2 yards long. Two iron rings, 1 inch in diameter.

String the pieces of cord through a ring, taking care that the ends are of the same length. About three inches from the ring, knot each piece of cord. This will make twelve knots and form the first row. For the second row, knot alternate pieces of cord. Continue until there are twelve rows of knots. Be careful to make the meshes the same size. Leave about three inches unknotted and attach these ends to the second ring. Make a twisted cord (of four thicknesses of macramé) of some contrasting color and run through the meshes of each side, taking it twice through each mesh and attaching it to rings at the ends of the hammock. The meshes should be about an inch square. Make the cords a little shorter than the sides of the hammock, in order to give it the proper spring. Take an extra piece of cord the color of the hammock and wrap it around the cords close up to the rings, winding it evenly and firmly for about an inch from the ring; fasten it securely. [Pg 17]

9 Miniature Portière—Knotted

Material—Twelve 36-inch lengths of macramé cord, No. 12.

Double each piece in the middle and, using the overhand knot, tie it over a stout lead pencil or a very narrow ruler. See that each knot is pressed close to the foundation holder, that the loops may be of equal size. These loops and knots form the first row. Do not remove them from the holder. Separate the cords and knot together each two adjacent ones, alternating at every other row. Continue knotting until about three inches of cord remain to form the fringe at the bottom. Before tying the last row of knots, slip a colored glass bead over each set of cords, then make the knot so as to hold the bead in place. These beads are an ornament, apart from giving weight to the portière to make it hang well. Trim the fringe evenly, slip the portière from the foundation holder, and it is ready to hang.

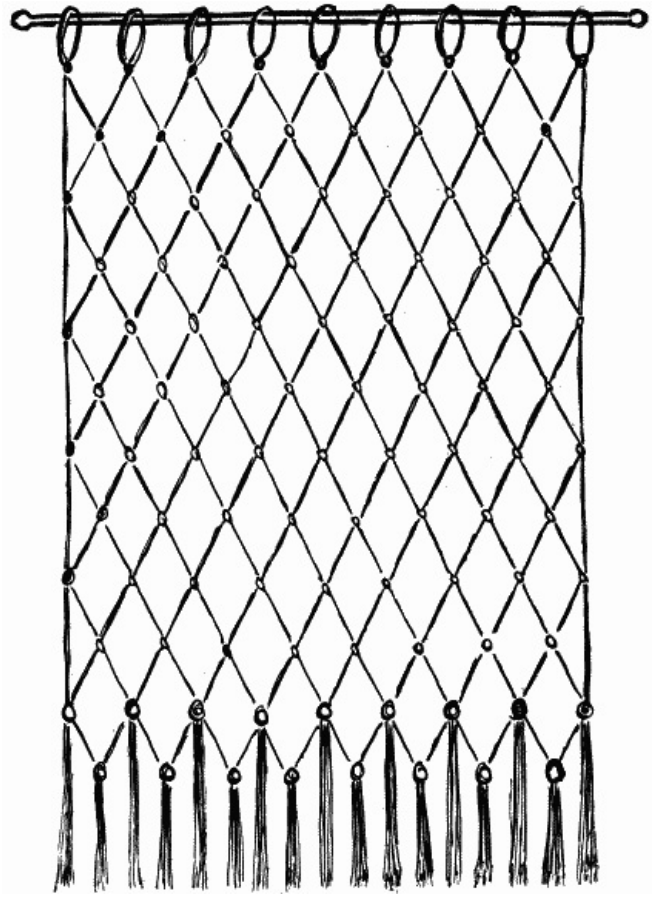
Use beads the color of the cord, or of some effective contrasting shade. If a child is expert enough, a bead may be placed at every knot, adding decidedly to the attractiveness of the little portière. (See page 18.)

WEAVING

10 Miniature Hammock—Woven

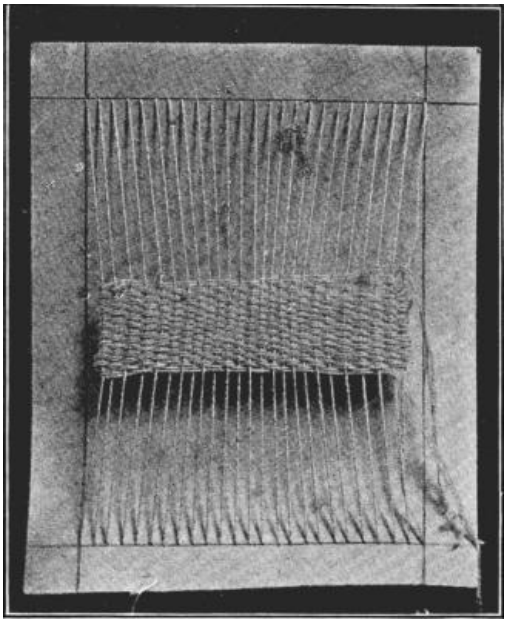
Material—Tag-board loom 8×10 inches. Cord of one, two or three colors. Two brass rings, 1/2 inch in diameter.

[Pg 18]



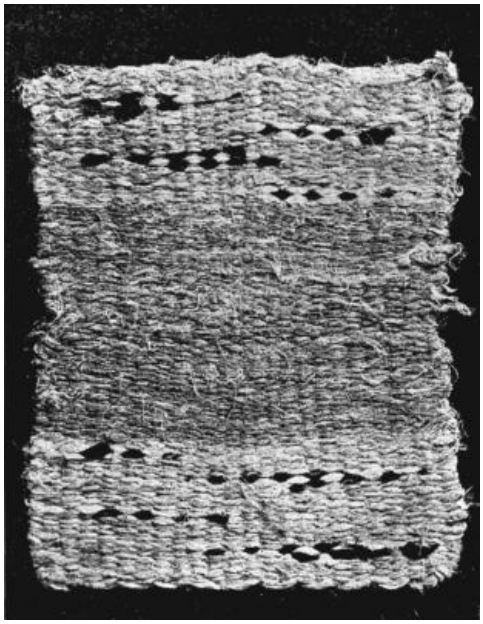
MINIATURE PORTIERE—(For description see page 17.)

To make a loom, take a piece of tag-board 8×10 inches in size. Measure off one inch from the back edge and draw a line parallel to the back edge. Measure off one inch from the front edge and draw a line parallel to the front edge. Measure off one inch from the right edge and draw a line parallel to the right edge. Measure off one inch from the left edge and draw a line parallel to the left edge. You have now a 6×8-inch rectangle marked off, leaving a one-inch space around [Pg 19] the edge of the tag-board. Start at a point where a vertical and a horizontal line intersect and mark off the six-inch ends into spaces one-fourth inch apart. Next with a large needle pierce the board at each point of intersection. This will make twenty-five eyelets at each end. On the reverse side of the board draw diagonals to determine the center. Tie together the two brass rings and fasten them firmly to the center of the reverse side.



BLANKET FOR DOLL'S BED
Showing how it is started.

To string the loom requires about fifteen yards of cord. Divide the cord into two lengths. Thread a length into a needle and tie one end of it to one of the brass rings. Next carry the cord from the ring through the thirteenth perforation, then across the face of the loom to the thirteenth perforation at the opposite end, through again to the reverse side and pass through the opposite ring from which it started. Repeat this operation by carrying the cord in a reverse direction each time until one-half the loom is strung. Then with the other length of cord start, by attaching it to the same ring to which the first piece was tied, and work in the opposite direction until the second half is strung. Should it be necessary to add to the cord, arrange that the knot be on an end near a ring. A knot in the warp hampers the weaving. [Pg 20]



A RUG
Made of narrow strips of cotton cloth.

Have the warp threads and the predominant woof thread of the same color.

To begin weaving, cut a quantity of ten-inch lengths. Take one of these lengths, start in the center of the loom, and weave in and out among the warp threads, allowing it to extend two inches beyond on each side. Have a perfectly smooth, narrow, thin ruler and weave it in across the warp threads. As each horizontal or woof thread is added, shove it close to the preceding one with the ruler, which acts as a pusher. Weave first on one side of the center and then on the other, until the entire 6×8-inch space is covered. If a border is to be put in, gauge equal spaces [Pg 21]

from the center and work in the border of a different shade or color. The borders must be placed equally distant from the center and the same distance from each end. Take the overhanging cords and knot each alternate two together along the line of the outer warp thread. This will hold the woof threads in place, as well as finish the edges of the hammock. Comb these ends out and trim them, to get the fringe even. At each end where the weaving stops, take a needle threaded with a length of cord and run in and out along the warp threads, first to the right and then to the left of the final woof thread. This makes a secure finish and holds the woof threads in position. Next unfasten the rings and remove the hammock from the loom by tearing the tag-board along the lines of perforations. Finally, where the cords pass through the ring, hold them close to the ring and wrap them with a piece of cord for the distance of an inch, then fasten off by forcing the needle up through the wrapped space toward the ring; draw the end through and clip close to the ring. The hammock is now finished.

The question may arise: Why begin weaving in the center of the loom? The answer is: Because small children, and even older ones, sometimes, are not able to keep their warp threads parallel and as they approach the middle, where these threads give more, they naturally draw them in. This tendency is remedied to a great extent by beginning in the middle and weaving toward the ends, where the warp is confined in the board and keeps its place with no effort on the part of the child.

PART II

PAPER CONSTRUCTION

PAPER CONSTRUCTION

[Pg 25]

Introductory Remarks

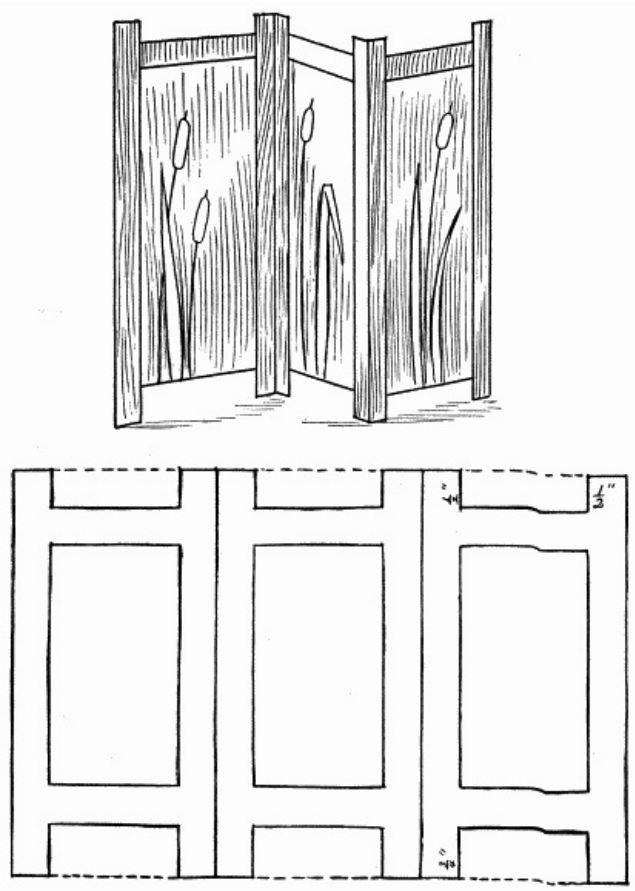
Whatever may have been the true origin of the art of paper-making, it is now lost in obscurity. It is almost certain that the earliest form of paper was the papyrus of the Egyptians and that they were the first to use it as a writing material. They manufactured it from the stem of the papyrus plant, from which the name *paper* comes.

It is also known that the Chinese were versed in this art before the Christian Era, and that they made paper from the bark of various trees, the soft part of bamboo stems, and cotton. In India and China the practice of writing on dried palm and other leaves still obtains. It is probable that the employment of these fibrous substances, together with observation of the methods of paper-making wasps and other insects, led to manufacturing by pulping the materials and spreading them out.

As the Chinese seem to have been the pioneers in so many great inventions, so also they appear to have been the inventors of this art. From the Chinese the Arabians learned, in the seventh century, the craft of making paper from cotton, and they established a manufactory at Samarcand in 706 A. D. Here the Moors learned the art, and through them it was introduced into Spain. It is thought that the Moors used flax and hemp in addition to cotton in their manufacture of paper. The products of their mills are known to have been of a most superior quality, but, with the decline of the Moors, paper-making passed into less skilled hands, and the quality of the paper became inferior.

From Spain the art spread through the other countries of Europe, and as factories were established further north, where cotton was not a product nor easy to import, the necessity of substituting some other material probably led to the introduction of linen rags; but when they began to be used is uncertain. England was far behind the other countries of Northern Europe in introducing the industry of paper-making.

[Pg 26]



SCREEN—SIX-BY-NINE-INCH CONSTRUCTION PAPER

In the United States to-day paper in all varieties is manufactured to an enormous extent, and almost exclusively from vegetable matter. The book and newspaper trades demand an untold quantity. [Pg 27]

There are three great types—writing, printing, and wrapping paper. Writing paper is made from rags and wood pulp. The staple for wrapping paper is old rope, and in some cases jute. The best writing and printing papers, however, are made from rags. From these as staples, all other varieties are developed, and we have paper for every use to which man can apply it.

Paper folding and modeling is not an ancient occupation, but a modern device, yet to the child it has a utilitarian value not to be overlooked. His nature demands that he be employed, and change of occupation is conducive to his happiness. Nothing is quite so restful to him as to do something with his hands; therefore, with his blocks he builds a house, fences it around with his splints, and strews the ground with imaginary trees and animals. He lives in this nursery play, and in it he is happy.

When he enters school, should he have only books? No, his hands still demand employment. He is now led to fashion from paper what he has already made with his blocks and toys. He is occupied, he is interested, and he is cultivating concentration and industrious habits. Is this worth while?

Begin the lessons with a talk on the manufacture and uses of paper. By a story, an association or the suggestion of a future use the child should be made to feel that he is doing something worth while. This will accentuate the interest and deepen the impression.

All models given may be increased or decreased in size if the proportions are adhered to, but the dimensions stated are those commonly used.

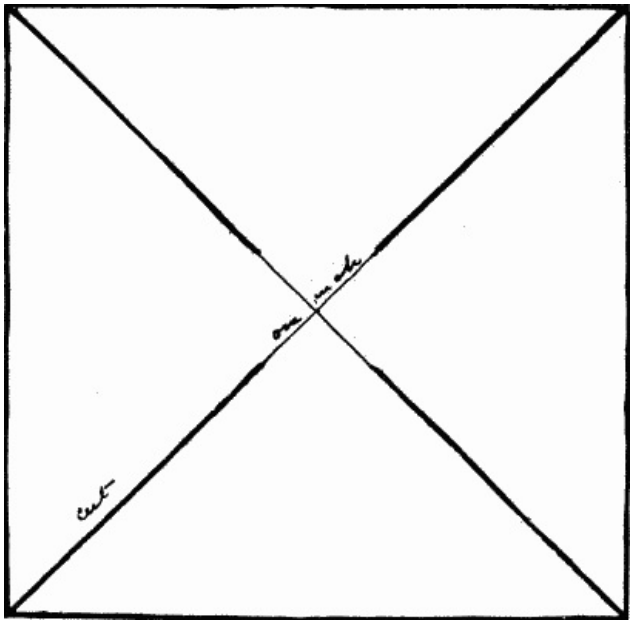
A Model Lesson

Aim—To construct a windmill or pin-wheel.

Each child should have a five-inch square, a slender stick five inches long, a pin, a ruler, a pair of scissors, and a lead pencil.

The children are supposed to know that every piece of paper, laid in position, has a back edge, a front edge, a right edge, a left edge, a right-back corner, a left-back corner, a right-front corner, a left-front corner, and that, in tracing, the forefinger of the right hand is used. [Pg 28]

Three questions after each direction will be sufficient. The questions aim to have a complete statement in answer, and to develop an unconsciously correct use of the verb. This may appear slow at first, but soon the replies will come quickly and the answer will be correctly given.



WINDMILL, A

Teacher: "Children, lay your papers on your desk parallel with the front edge of the desk.—John, where are you to lay your paper?"

John: "I am to lay my paper on my desk parallel with the front edge of my desk."

Teacher: "Mary, where did you lay your paper?"

Mary: "I laid my paper on my desk parallel with the front edge of my desk." [Pg 29]

Teacher: "Willie, where has Mary laid her paper?"

Willie: "Mary has laid her paper on her desk, parallel with the front edge of her desk."

Teacher: "Trace the back edge of your paper.—Anna, what are you to do to your paper?"

Anna: "I am to trace the back edge of my paper."

Teacher: "Harry, what did you do to your paper?"

Harry: "I traced the back edge of my paper."

Teacher: "Jessie, what have you done to your paper?"

Jessie: "I have traced the back edge of my paper."

Teacher: "Each child place the forefinger on the right-back corner of the paper.—Charles, what are you to do?"

Charles: "I am to place my forefinger on the right-back corner of my paper."

Teacher: "Anna, what did you do?"

Anna: "I placed my forefinger on the right-back corner of my paper."

Teacher: "Laurence, what have you done?"

Laurence: "I have placed my forefinger on the right-back corner of my paper."

Teacher: "Take your ruler and lay it across your paper from the left-back corner to the right-front corner.—Margaret, what are you to do?"

Margaret: "I am to lay my ruler on my paper from the left-back corner to the right-front corner."

Teacher: "Draw a line connecting the left-back corner of your paper with the right-front corner.—James, what did you draw?"

James: "I drew a line connecting the left-back corner of my paper with the right-front corner."

Teacher: "Alice, what have you drawn?"

Alice: "I have drawn a line connecting the left-back corner of my paper with the right-front corner."

Now have the children draw a line connecting the reverse diagonal corners and proceed as follows:

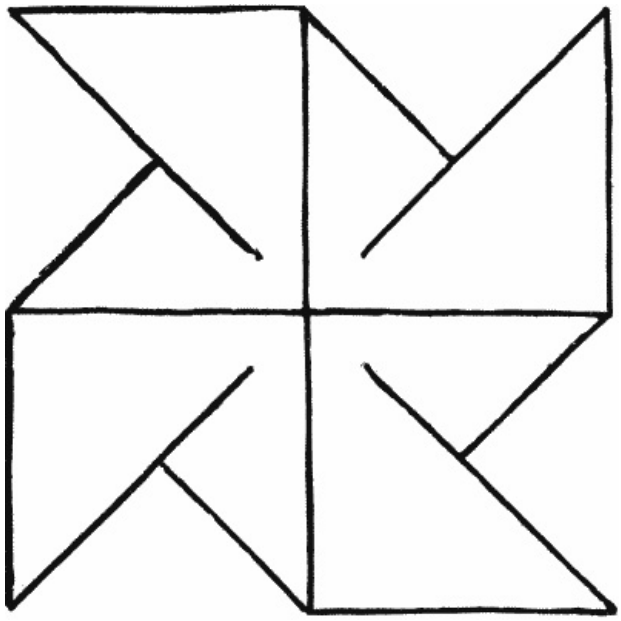
Teacher: "Find the point where the lines cross. This is the center or middle point of your paper.—Albert, what are you to find?"

Albert: "I am to find the point where the lines cross, which is the center of my paper." [Pg 30]

Teacher: "Measure one inch from this point on each of the four lines and place a dot.—Sara, what did you measure?"

Sara: "I measured one inch from the center of my paper on each of the four lines and placed a dot."

Teacher: "Lay your pencil and your ruler down. Place your paper on your desk parallel with its front edge and lay your left hand on the right-front corner. Turn the paper until this corner is directly in front of you. Take your scissors and cut along the ruled line from the corner to the point one inch from the center.



WINDMILL, B

"Lay down your scissors. Turn your paper from right to left until the next corner faces you. Cut. Move the paper from right to left again until the third corner faces you. Cut. Bring the fourth corner to face you. Cut. There are now eight points. Turn each alternate point to the center, run the pin through all of them and fasten the wheel to the stick." [Pg 31]

Final questions.

Teacher: "What did you make?"

Pupil: "I made a pin-wheel."

Teacher: "What have you made?"

Pupil: "I have made a pin-wheel."

Teacher: "What has Ellen made?"

Pupil: "Ellen has made a pin-wheel."

When older pupils have completed a model it is excellent practice to have them write a full description of how it is made and the materials used.

1 Windmill, or Pin-Wheel

Material—One piece of construction paper, 5×5 inches. Stick, 5×1/4×1/4 inches. One pin. (See pages 28 and 30.)

Fold the square on the diagonals. Cut the diagonals to within one-half inch of the center. Bend alternate corners over until the point of each touches the center. Fasten the four points in the center by running the pin through them and driving it into the stick.

2 Square Tray No. I

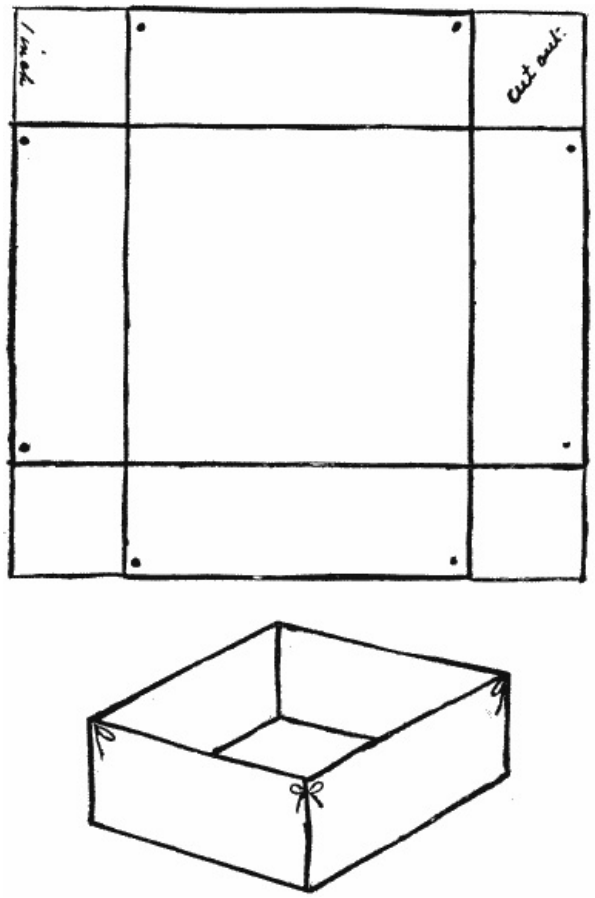
Material—Construction paper, 5×5 inches. (See page 32.)

Measure off one inch on four sides, and connect the points with a line parallel to the edge of the paper. Score lightly each line. Cut out the four corner squares. Turn up the sides, fasten the corners together with raffia or cord, tying a small bow.

3 Square Tray No. II

Material—Construction paper, 5×5 inches. (See page 33.)

Fold and crease into sixteen small squares. Score lightly the four lines nearest the outer edge. Draw one diagonal pointing toward the center of each corner square. Next draw half of the diagonal extending in the opposite direction. Fold the paper on the lines scored. Crease the diagonals 1-2, making the crease extend to the inside of the tray, and press until lines 1-4 and 1-3 meet. Now we have a triangle on the inside of the tray. Fold this over on half-diagonal, No. 5, and press to the side of the tray. This will fasten together firmly the corners of the tray. [Pg 32]



SQUARE TRAY No. I—(For description see page 31.)

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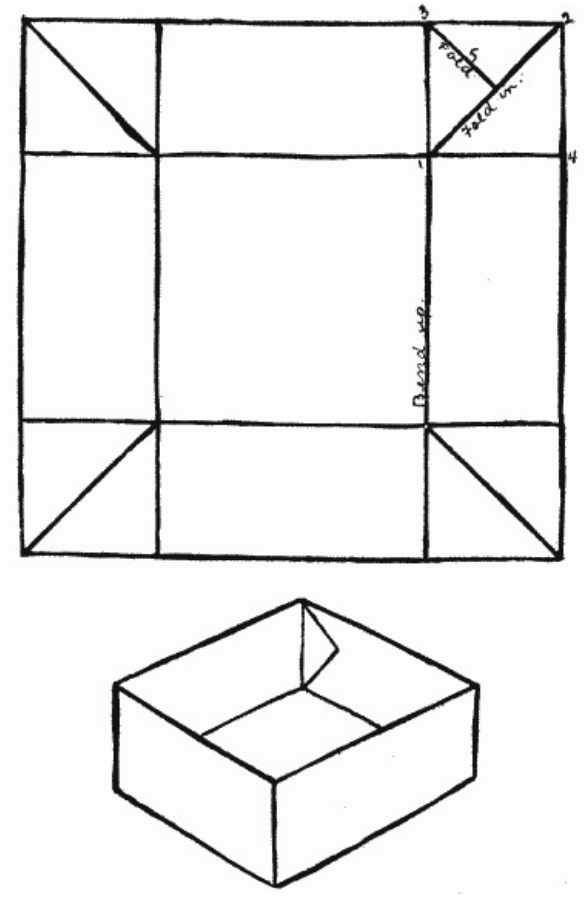
4 Square Box with Cover

Materials—Construction paper, 6×6 inches. (See page 34.)

Measure off from the outer edge two lines, one inch apart. Score these lines. In each corner there are four one-inch squares. Cut off 1, 2, and 3; then draw the diagonal of 4 pointing toward the center of the paper. Crease and fold on these diagonals, extending the triangle inward. Fold this triangle over to half its size; press to the inside of the box. Edges 5-6, 5-7 will meet to form the corners of the box, and cover flaps 8-9 will fall naturally into place. Result, box four inches square, one inch deep, with folding cover. [Pg 33]

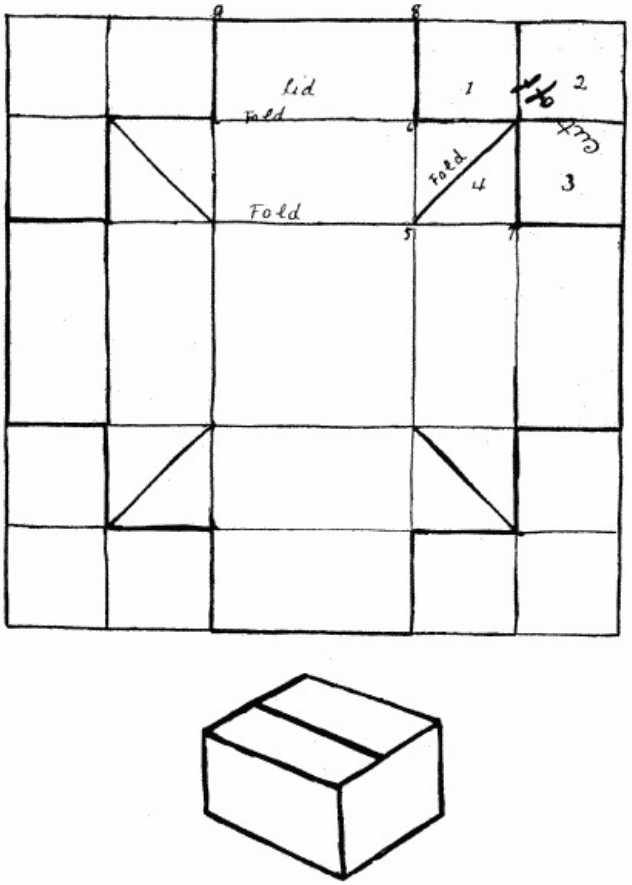
5 Square or Rectangular Box



SQUARE TRAY No. II—(For description see page 31.)

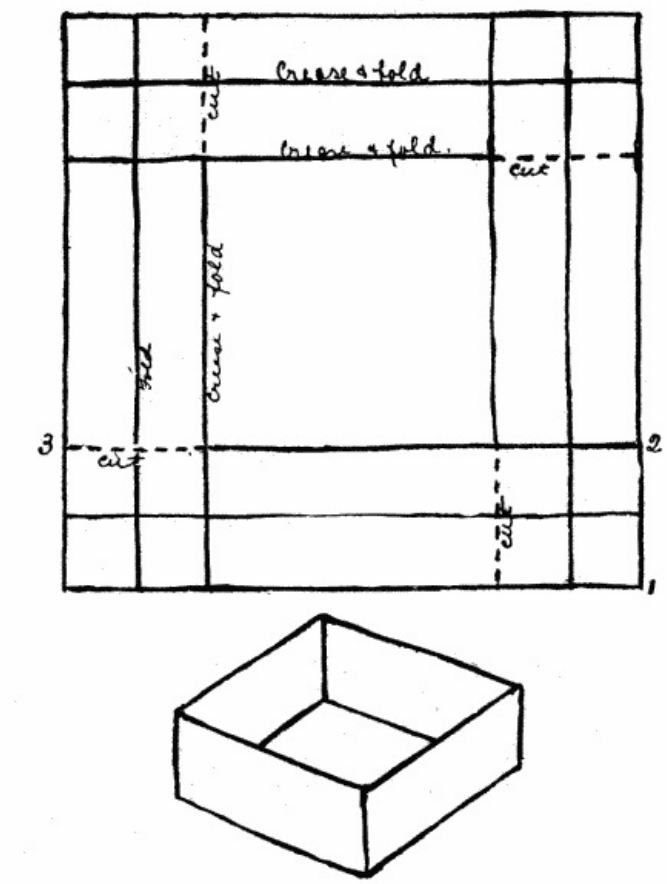
Material—Construction paper, 4×4 inches or 4×6 inches.

Measure off a margin one inch all around, and score. Cut as indicated on page 35. Fold over the border to half its width, as 1 over to 2. Bend up on line 2-3. When the edge is folded over a little tongue is formed at each end. Slip this tongue under the fold of the adjacent side, and it will fasten the sides of the box firmly together. A lid may be made exactly as the box is made. [Pg 34]



SQUARE BOX WITH COVER—(For description see page 32.)

A beautiful Christmas box may be made of red paper, or gray decorated with holly. Made of white paper, with a chicken (in yellow) painted on the lid, it is appropriate for Easter. [Pg 35]

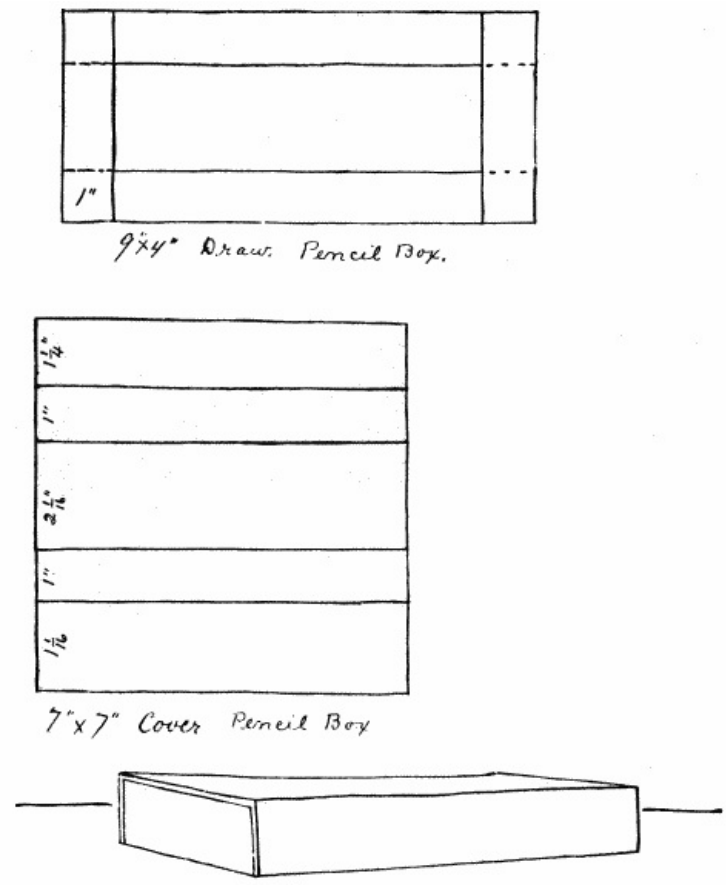


SQUARE BOX—(For description see pages 33 and 34.)

6 Pencil Box with Sliding Cover

Material—Construction paper: one 7-inch square; one rectangle 4×9 inches. (See page 36.)

Drawer. Lay the rectangle on the desk with the nine-inch edge parallel with the front edge of the desk. Draw a line one inch from the back edge and parallel with it. Draw a line one inch from the front edge and parallel with it. Draw a line one inch from the right edge and parallel with it; and a line one inch from the left edge and parallel with it. Score, bend and crease on these lines. Cut the lines on the right and the left edges to where they intersect the lines on the back and the front edges. Fold and glue. The laps are pasted on the inside and give strength to the ends of the drawer. [Pg 36]



PENCIL BOX WITH SLIDING COVER

Cover (seven-inch square). Measure off one and one-fourth inches, and construct a line parallel to the back edge. Measure one inch and draw a line parallel to this. Measure off two and one-sixteenth inches (shy) and draw a third parallel line. Measure one inch again and draw a fourth line parallel to the other three. Score and fold on these lines. Lap the space at the back edge over the space at the front edge until they form a rectangle two and one-sixteenth by seven inches in size, to correspond with the opposite one, which is the top of the cover. Glue. Slide in the drawer and the pencil box is completed. [Pg 37]

7 Seed Box with Sections

Material—Construction paper: two rectangles 8×9 inches; one rectangle 2×5-1/2 inches; one rectangle 2×4-1/2 inches. (See page 38.)

Take one 8×9-inch rectangle for the body of the box and lay off a two-inch space all around. Cut on dotted lines. Score and crease, fold and glue. The laps are glued to the inside and each one turned to the right. When the partitions are put in the laps mark where the ends go, as well as brace the ends of them. Take the two rectangles, 2×4-1/2 inches and 2×5-1/2 inches, and draw a line one-half inch from each of the two-inch edges. Score and crease. These form the laps for pasting the partitions in. On these partitions turn all four laps to the right, to coincide with the laps on the box. Dovetail the partitions by cutting a slit one inch deep in the center of each and slipping one over the other. Next glue them to the inside of the box.

Cover. Take the second 8×9-inch rectangle and mark off a two-inch space (shy) all around. Find

middle of nine-inch edges and draw lines 1-2, 2-3, and 2-4. Cut out these two triangles. Cut the corners on the dotted lines. Score, fold, and glue. Notice that in the lids the laps are not turned as in the body of the box. Here, as in the drawer of the pencil-box, the laps are glued to the ends of the cover, concentrating strength there and producing symmetry in construction.

8 Picture Frame No. I—Diagonal Folds

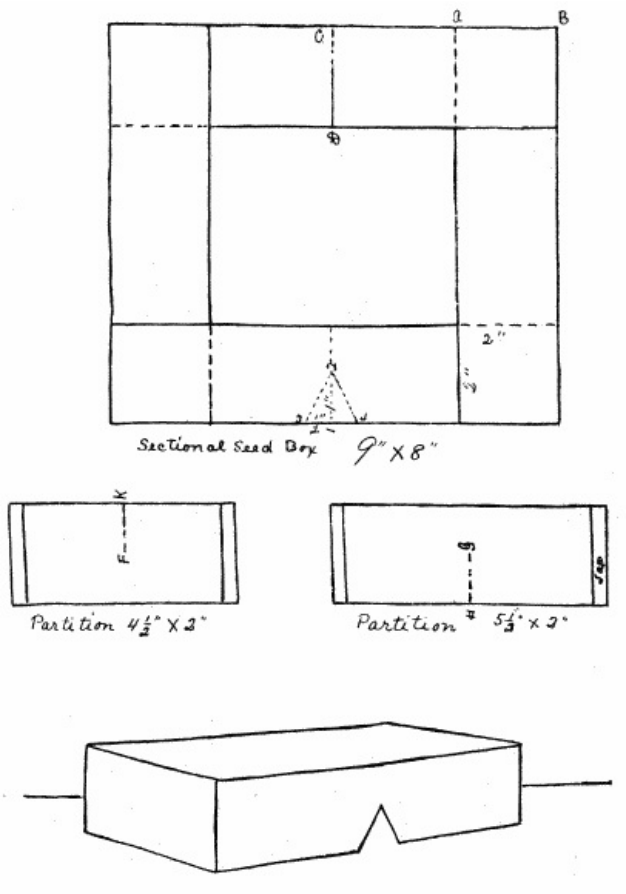
Material—Construction paper, 5×5 inches. (See page 39.)

Fold on the diagonals. Bring each corner over until it touches the center; crease. Fold each corner back again until its point touches the outside edge at the middle section; crease.

9 Picture Frame No. II

Material—Construction paper, 4-1/2×16-1/2 inches. (See page 40.)

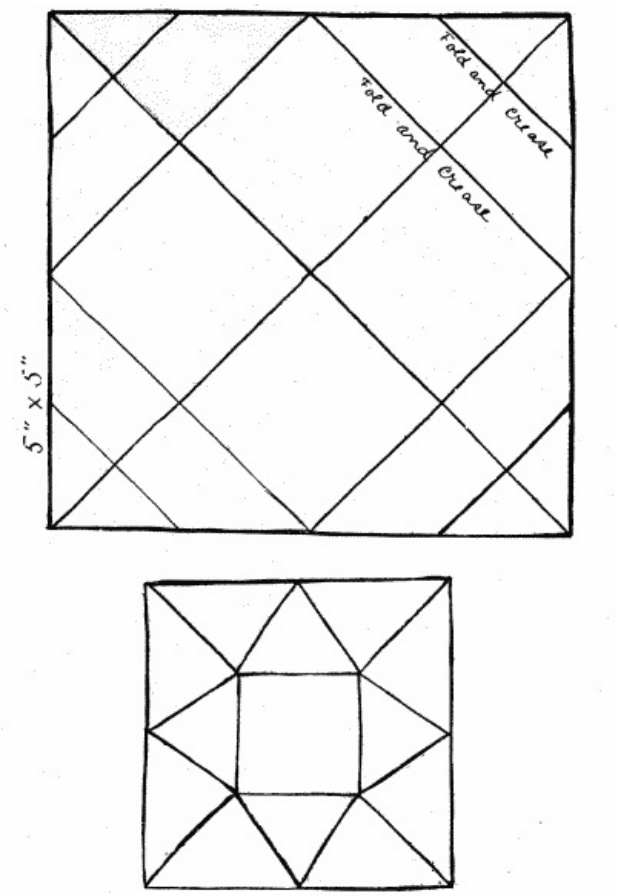
[Pg 38]



SEED BOX WITH SECTIONS—(For description see page 37.)

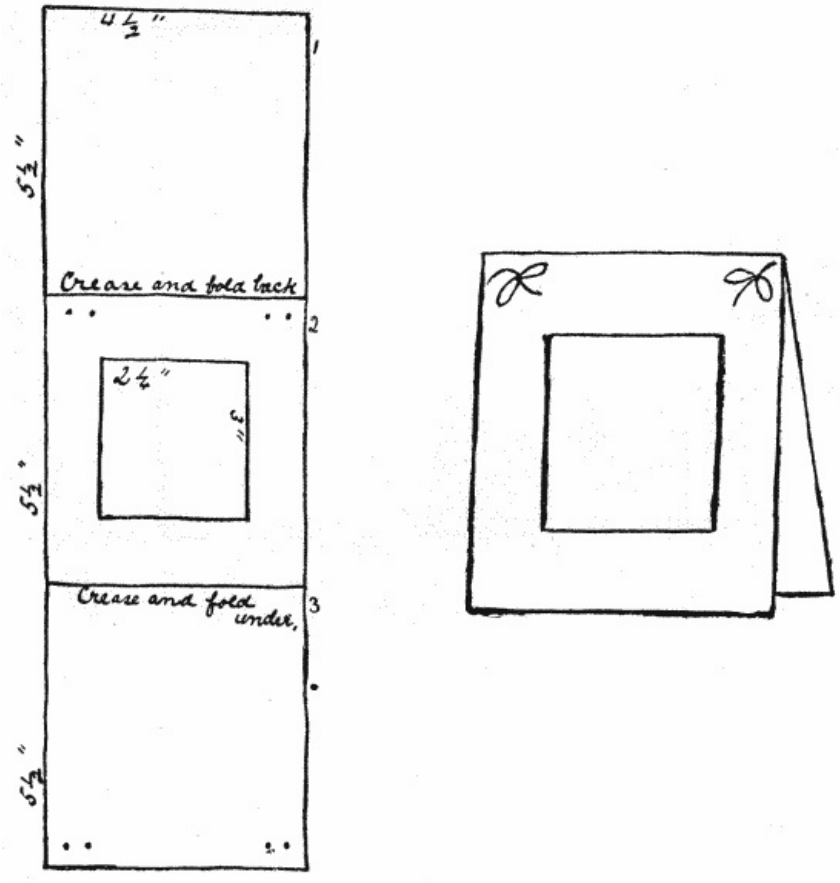
[Pg 39]

Divide the length into three equal parts, making three rectangles 4-1/2×5-1/2 inches in size. In the middle rectangle, measure off and cut out a rectangle 2-1/4×3 inches in size. Fold rectangle No. 3 up and back of rectangle No. 2. Holding the two firmly together, punch two holes, one-fourth inch apart, on each side, and one-fourth inch from the outer edges (see diagram). Draw a piece of raffia or ribbon through these holes and tie in a bow. Fold back rectangle No. 1 for support.



PICTURE FRAME No. I—(For description see page 37.)

[Pg 40]



PICTURE FRAME No. II—(For description see pages 37 and 39.)

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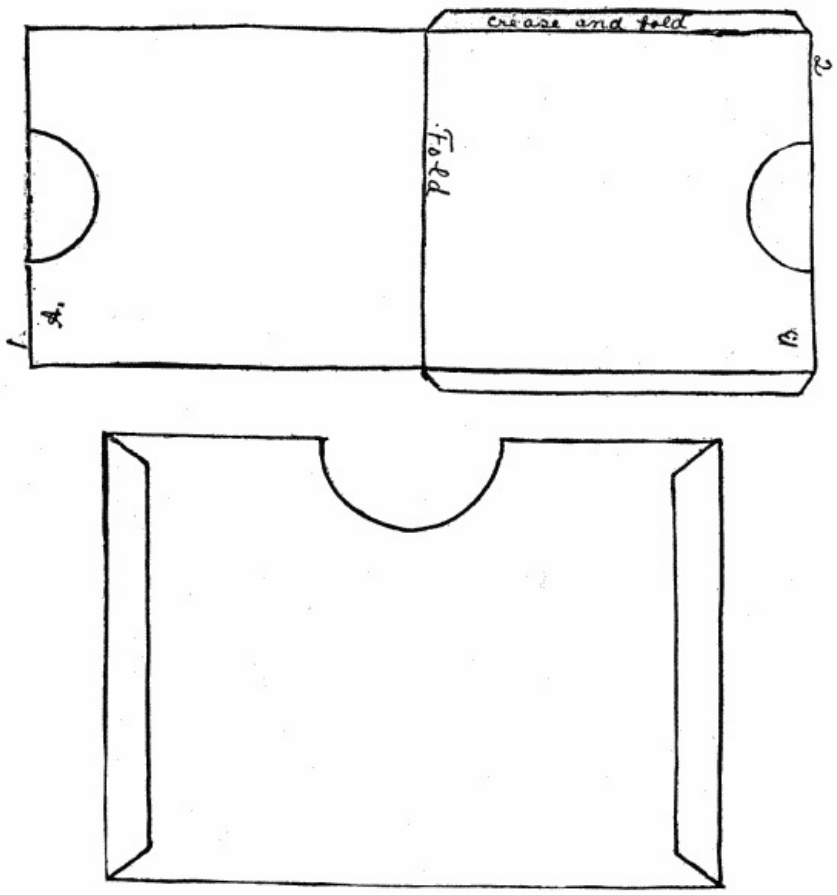
10 Portfolio

Material—Heavy manila paper, 7-1/2×12 inches. (See page 41.)

Fold edge No. 1 over and even with edge No. 2. Crease and fold. On each side of A mark and cut off one-half inch. Clip off the corners of the flaps on B. Fold the flaps of B over on A and paste. Find the middle of edges 1 and 2. With a radius of one inch, describe a semicircle and cut it out. [Pg 41]



PORTFOLIO—(For description see page 40.)

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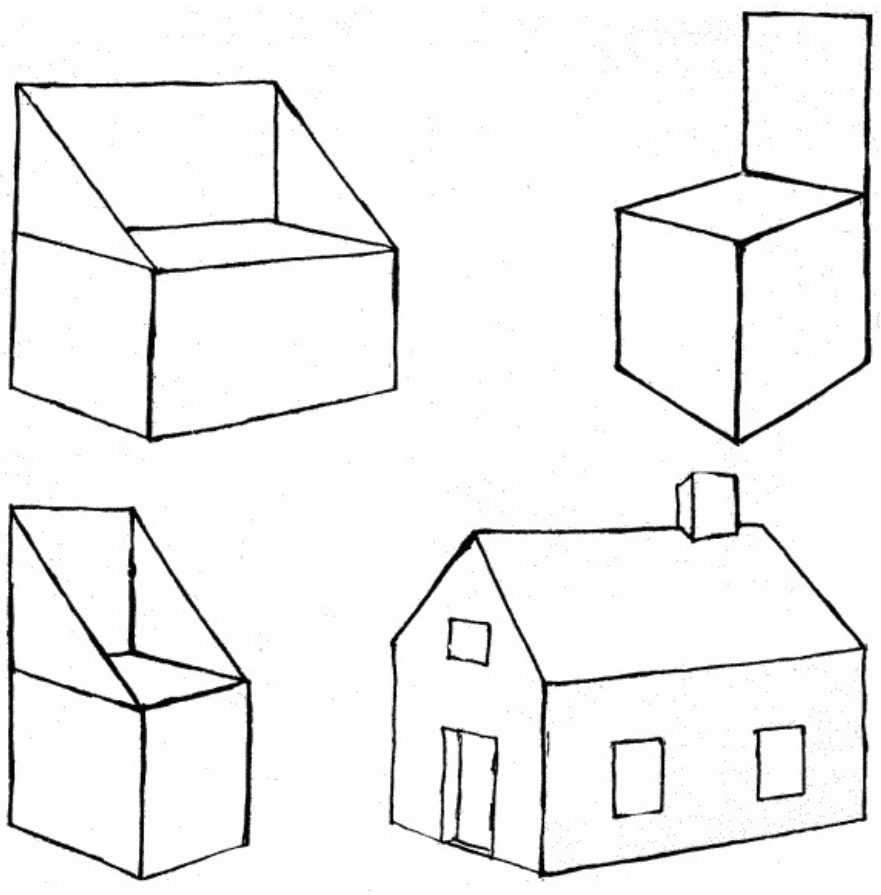
11 Barn—House—Furniture

Material—Construction paper, 8×8 inches or 10×10 inches. (See page 42.)

Fold a square into sixteen small squares of equal size; crease. With this as a basis throw the child on his own resources, allowing him to invent a pattern and make a chair, a sofa, or any piece of furniture that he can devise from such a square. A corner may have to be cut out or a slit made, but impress upon the child that, as far as possible, the model must be gotten by folding, with very little or no cutting.

By using a larger square and folding in the same way, a house or a barn may be made. Add a chimney and steps from an extra piece of paper. [Pg 42]



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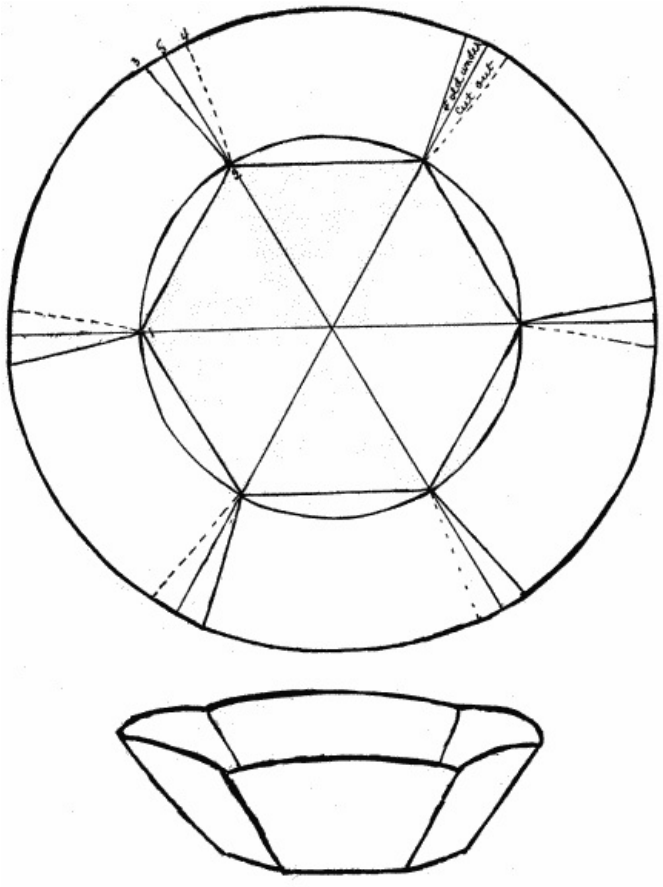
12 Hexagonal Tray

Material—Construction paper, 7×7 inches.



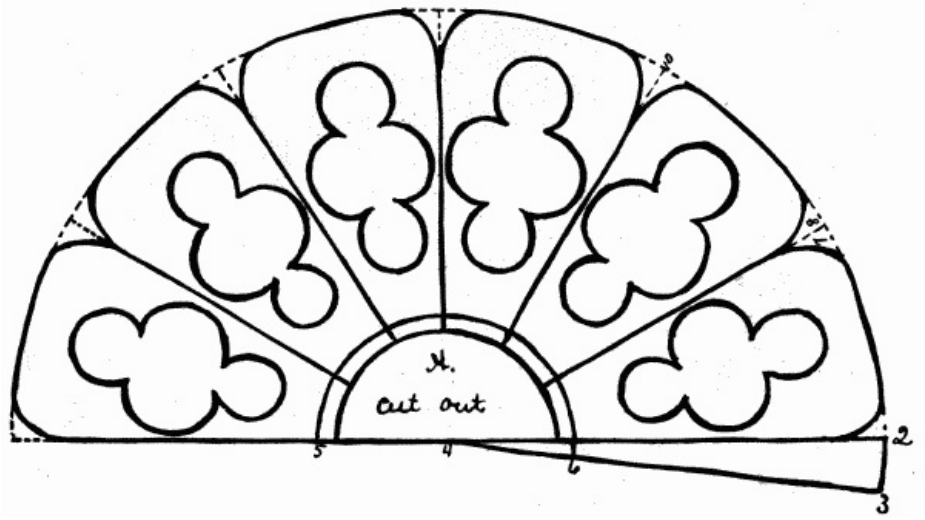
HEXAGONAL TRAY

Draw one diameter; find the center. With a radius of three and one-half inches describe a circle.

(The circumference of a circle is six times the radius). Place a point of the compass at one intersection of the circumference and the diameter, and divide the circle into six equal parts. With a radius of two inches, describe an inner circle parallel to the outer one. Connect opposite [Pg 43] points of the outer circle by drawing two more diameters. This will divide the inner circle into six equal parts. Connect by straight lines the adjacent points of the inner circle, as 1-2; score. At the [Pg 44] intersections of the outer circle, mark off one-half inch on each side and by straight lines connect both these points with the opposite points of intersection of the inner circle, as 2-3, 2-4. This forms two equal triangles, one of which is to be cut out, as 4-2-5, and the other, as 3-2-5, left. Having cut out the six triangles, bend up on lines scored, bring the sides together, and use triangle 3-2-5 as a lap for pasting.

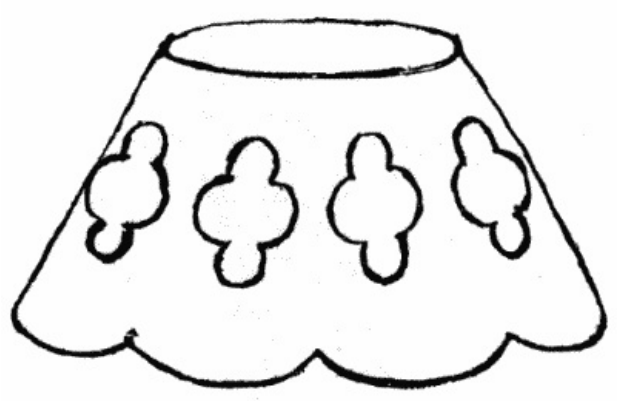
13 Lamp Shade

Material—Construction paper, 7×10 inches. Japanese rice paper, 7×10 inches.



LAMP SHADE, A

Select a pretty shade of brown, green or red construction paper. Measure off two inches and construct a line parallel to the ten-inch length. Bisect this line. Place the compass at this point of bisection and with a radius of four inches describe a semicircle, 1-2; extend this arc to 3, and draw the line 3-4. With a radius of one inch describe an inner semicircle (5-6) parallel to the outer one. Again, with a radius of one inch describe a third semicircle, parallel to the other two. Set the compass at half the radius and divide each semicircle into six equal parts. Connect these points of intersection by straight lines (9-10). Make a stencil that will fit in one of these sections. [Pg 45] Using the stencil, draw the same figure in each section. Carefully cut out the stenciled space. Next lay the construction paper on the Japanese rice paper and trace on it the stencil design. Remove the construction paper and, with two blending colors of crayon, color the figure or design traced on the Japanese paper. Again, lay the construction paper on the rice paper and glue the two together. Cut out the shade as marked off, bring the two edges together, and glue.



LAMP SHADE, B

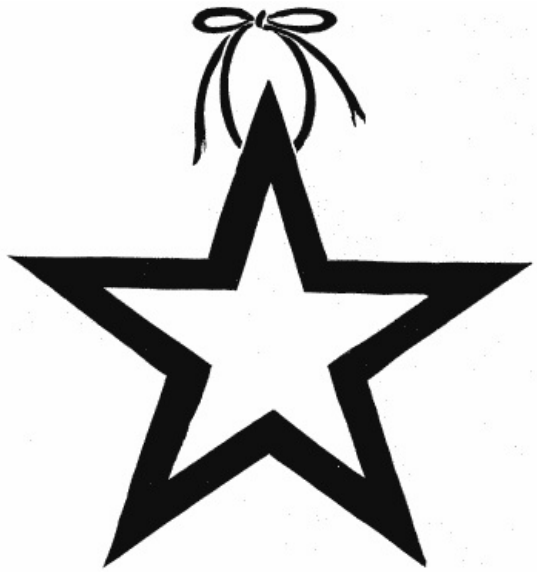
If you wish the lower edge scalloped, cut it as shown in the diagram. By folding and creasing on the lines of intersection the shade may be made hexagonal in shape. All designs for decoration are supposed to be original.

14 Star

Material—Construction paper, two 8-inch squares. Raffia.

Take an eight-inch square. Fold the front edge over to the back edge; crease. On the left edge place a point one and one-half inches from the left-back corner. Carry the right-front corner over to this point; fold and crease. Turn the left triangle under; fold and crease. Next, as the paper stands in your hand with the triangle facing you, fold the right edge over to the left edge; crease. Where the three edges of the paper come together, begin at the highest point and cut across the paper from right to left to within two and one-half inches of the center. Open out the paper and you have the star.

A picture frame made of a five-pointed star is very pretty. Cut two stars of the same size. From the center of one cut a star one inch smaller for a mat. Lay this mat on the solid or foundation [Pg 46] star and glue four of the points together. In the fifth point pierce two holes through both pieces, about an inch from the apex of the point. Slip in the picture. Take a piece of raffia or cord and tie a loop with two ends. Bring these ends through the holes from the back to the front and tie them in a bow. By the loop at the back the frame is hung.



PICTURE FRAME FROM FIVE-POINTED STAR

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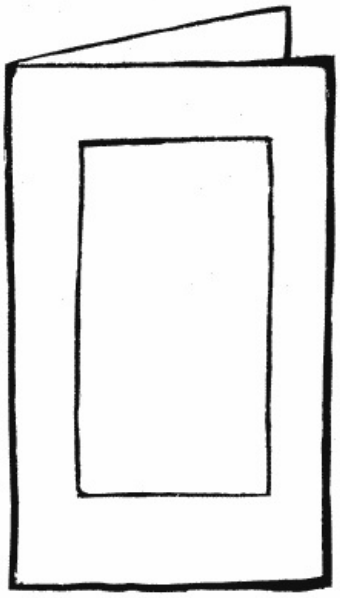
15 Notebook

Material—Construction paper, 6-1/2×7 inches, for cover. Manila paper, four pieces 6×6-1/2 inches, for leaves.

Fold the piece of construction paper down the middle, so as to form the 3-1/2×6-1/2-inch cover. [Pg 47] In the same way crease the manila paper for the leaves. Place the leaves within the cover; with heavy silk or fine twine sew them to the back. Bring the needle through one inch from the upper edge, one inch from the lower edge, and in the middle. The long stitch is on the inside, the two short ones are on the outside, both ends of the thread are brought through the center to the inside and tied over the long stitch to hold it in place. Leave the ends an inch long and fringe them.



NOTEBOOK

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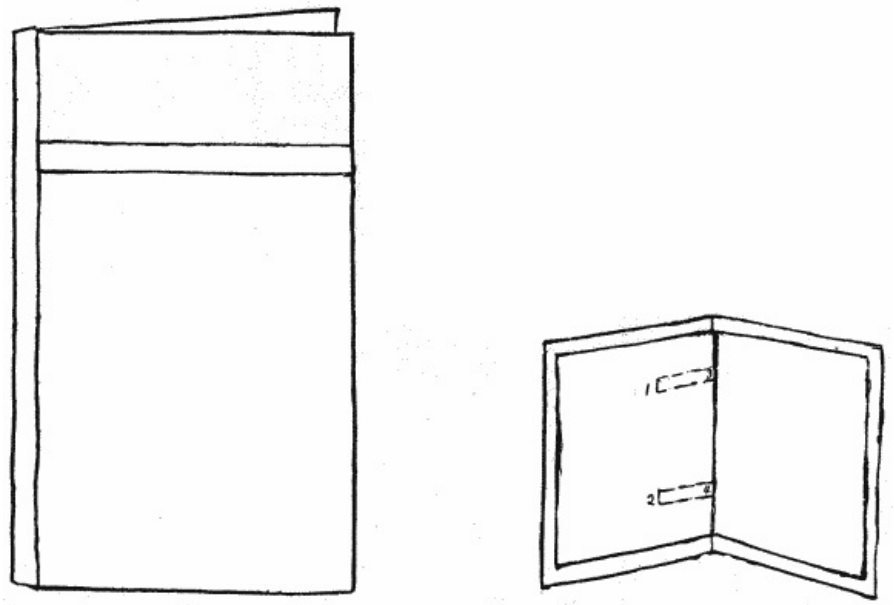
16 Bound Book

Material—Heavy construction paper, colored, 5×6 inches, for cover. Four pieces white paper, 11-1/2×19-1/2 inches, for leaves. Two pieces tape, 1/4×2 inches.

Cover. Mark off and rule two and seven-eighths inches from each edge of the five-inch length; crease. This will leave in the middle a 1/4×5-inch space, in which the back of the leaves will go. Take each sheet of white paper, fold it once lengthwise, and once crosswise; this will make a "folio" four leaves thick, 2-3/4×5-3/4 inches in size. We have four of these folios to be joined together and bound to the back. Take folio No. 1 and with needle and silk sew the leaves together, running the thread one inch from the upper edge and one inch from the lower edge and in the center, seeing that the last stitch brings the thread on the outside of the back of the leaves. Do not break the thread. Take folio No. 2, hold it close to folio No. 1, carry the thread across and take it through the middle of the back, one inch from front or back edge, as in folio No. 1. [Pg 48]



BOUND BOOK

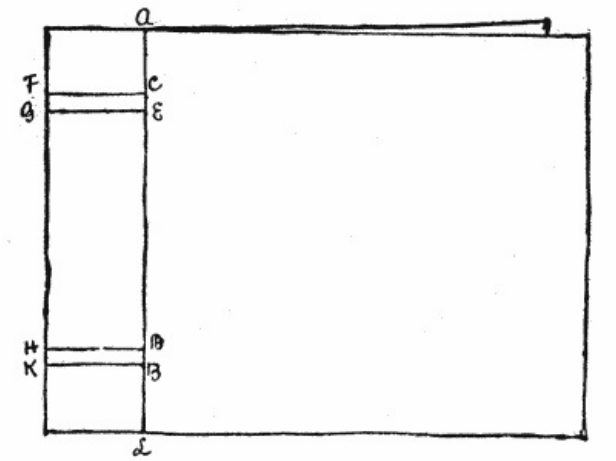
On the back edges of these folios there will be two long stitches. Under these stitches pass the two pieces of tape. Keep one of these tapes as near the upper and the other as near the lower edge as the stitch will allow. As a folio is added and the leaves sewed together, connect the exposed stitch of the one previously added to the one last added, at the three places where the thread holds the leaves, by a buttonhole stitch (in bookbinding known as the "kettle stitch"). When the last folio is added, place the back of the leaves to the back of the cover in the 1/4×5-

inch space. Stretch the tapes down on the cover and paste (1-3). Take the first and the last leaf and paste them over the tapes, to the inside of the cover. The outside of the cover may have some simple decoration if such is desired. [Pg 49]

In Book VII of the *Text Book of Art Education*, published by The Prang Educational Company, is worked out a very interesting problem for the making of a scrap-book, and suggestions given for decorating the cover. The scrap or clipping books shown here were made in a similar way. The decoration and cover are left to the taste and ingenuity of the teacher or the child.

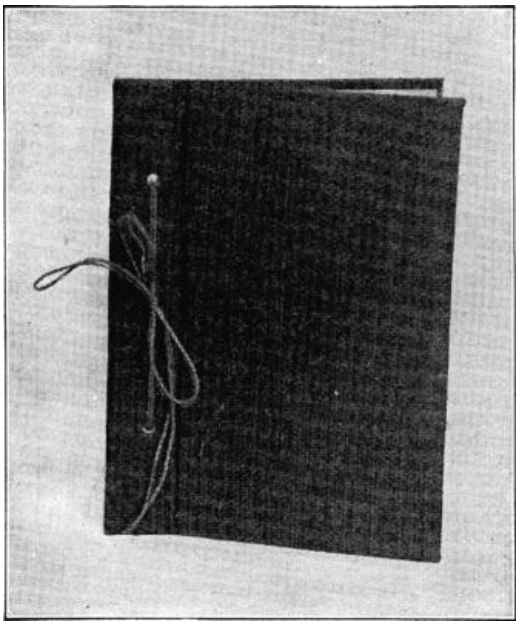
17 Japanese Book

Material—Construction paper, colored, 4-1/4×12-1/4 inches, for cover. Manila paper, six leaves, 4×6 inches, double, with fold on outer edge.



JAPANESE BOOK

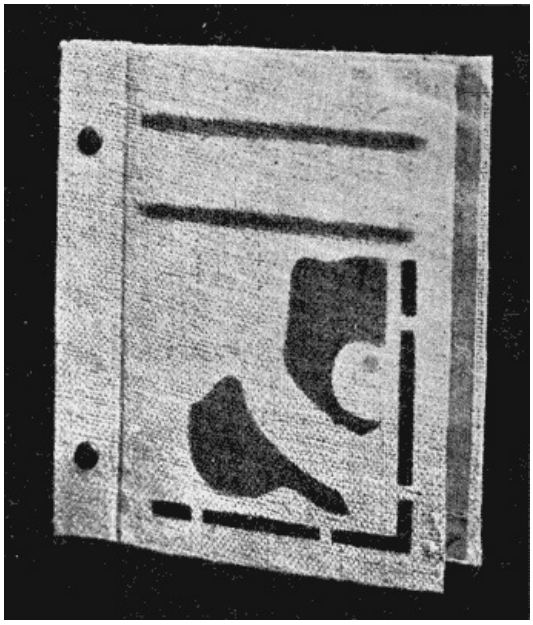
The paper for the cover is 4-1/4×12-1/4 inches in size. Place the paper lengthwise in front of you and bring the left edge over to the right edge; crease, fold. Mark off a space three-fourths of an inch from the edge of the fold, draw a line, A-L. On this line three-quarters of an inch from the upper and the lower edges, place dots, B C, and one-fourth inch from B C place dots D E. Hold the leaves evenly together and press them in between the cover. With a large needle and cord sew through C, under, up, and over A, through C again, under to F, over through C, under and up through E, back to G, under and up through E, down to D, through and over H, back to D, down and up through D, then to B; down under to K, back to B, through and under and around to L, to B, to D, to E, to C. Tie the two ends of the cord, which come together at C, and fringe them out. [Pg 50]



SCRAP OR CLIPPING BOOK
Cover of grass cloth.

Material—Construction paper, colored: 6-1/4×8-1/4 inches, for cover. Manila paper: three leaves 6×8 inches; three strips 1-1/8×6 inches. Two paper clamps.

Double the 6×8-inch leaves into six leaves 4×6 inches in size. Between leaves 1 and 2, 3 and 4, 5 and 6, place the 1-1/8×6-inch guards at the back. Have leaves and guards even and compact; [Pg 51] then set them between the cover. Measure from the back edge of the cover a space three-quarters of an inch wide, and draw a pencil line. Placing the sharp edge of a ruler on this line, bend the back edge toward the front until it is well creased. In the center of this 3/4-inch space, one inch from the upper edge and one inch from the lower edge of the book, pierce a hole and insert the brass clamps.

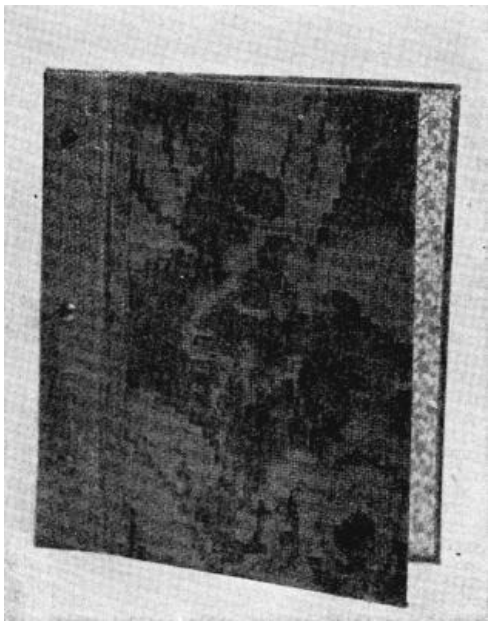


SCRAP OR CLIPPING BOOK
Cover of linen, stenciled.

A PASTE

Mix until perfectly smooth one cup of flour with one cup of cold water.

Put two cups of water in a vessel and set it over the fire until it heats. (Do not let it boil.) Add one teaspoonful of powdered alum, then stir in the mixture of flour and cold water. Continue stirring [Pg 52] until it thickens to a good consistency. Remove it from the fire and add one teaspoonful of oil of cloves or peppermint. Pour it into an air-tight jar and when it is cool screw on the top.



SCRAP OR CLIPPING BOOK
Cover of fancy paper—(For description see pages 51 and 52.)

Use the same cup all through. The oil of cloves or peppermint is simply a flavoring, and does not add to the quality. This quantity will nearly fill a quart jar.

PART III

WOOD CONSTRUCTION

WOOD CONSTRUCTION

[Pg 55]

Introductory Remarks

As the child develops, paper construction loses its charm, and a desire for something utilitarian arises. We suggest that at this stage the much-treasured pocket knife be brought into service, for from small pieces of wood many articles may be made. The construction of these will afford the child, especially the boy, much pleasure, and will at once arouse a new interest.

Only the simplest articles will be given here—articles which may be fashioned from bits of wood commonly found around a house, such as old cigar boxes, small starch boxes, etc. But, should the teacher be able to obtain the proper materials, basswood a quarter or three-eighths of an inch thick, and whittling knives are the requisites.

The reader will notice that the wood mentioned for each model is bass. Why? Because bass is the wood generally used for carving. The tree is the same as the linden and the lime. It is found in northern Asia, Europe, and North America, and grows to an immense height. The wood is soft, light, close-veined, pliable, tough, durable, and free from knots, and does not split easily; all of which qualities favor its suitability for carving.

In whittling, it is always best to lay off the pattern on both sides of the wood. Then one can work from either side without fear of spoiling the material.

In cutting, work with the grain, or the wood will be apt to split. Cut toward you, not from you.

In grooving, use the point of the knife, and work slowly and carefully. If the knife slips the wood is ruined.

Insist that nothing the child does is well done unless well sandpapered, and nothing is properly sandpapered until all roughness is done away with, and the grain appears.

In the making of designs, let the child first have a piece of paper the size of the wood he is to use, and have him work out a design to be applied to his wood. This design may be most crude, but [Pg 56] with a suggestion here, and a correction there, from the teacher, it can be brought into shape. The child will be pleased, and will attack with more assurance of success each succeeding problem that he meets.

For coloring, use water color paints. Red, green, and yellow are most satisfactory, as their identity is retained when staining is applied.

Apply the stain with a brush, and with a soft cloth rub it in until it is dry. This develops or brings out the grain.

When sure that the stain is well rubbed in and dry, apply butcher's wax, and polish with a soft cloth. Some articles need two coats of stain, and an equal amount of polish.

In all work impress upon the child the fact that what is worth doing is worth doing well, or it should not be done at all.

Each model given works out a problem in handling the knife and cutting the wood, and each problem leads up to the one that follows.

We will begin with the simplest thing one can make—a puzzle.

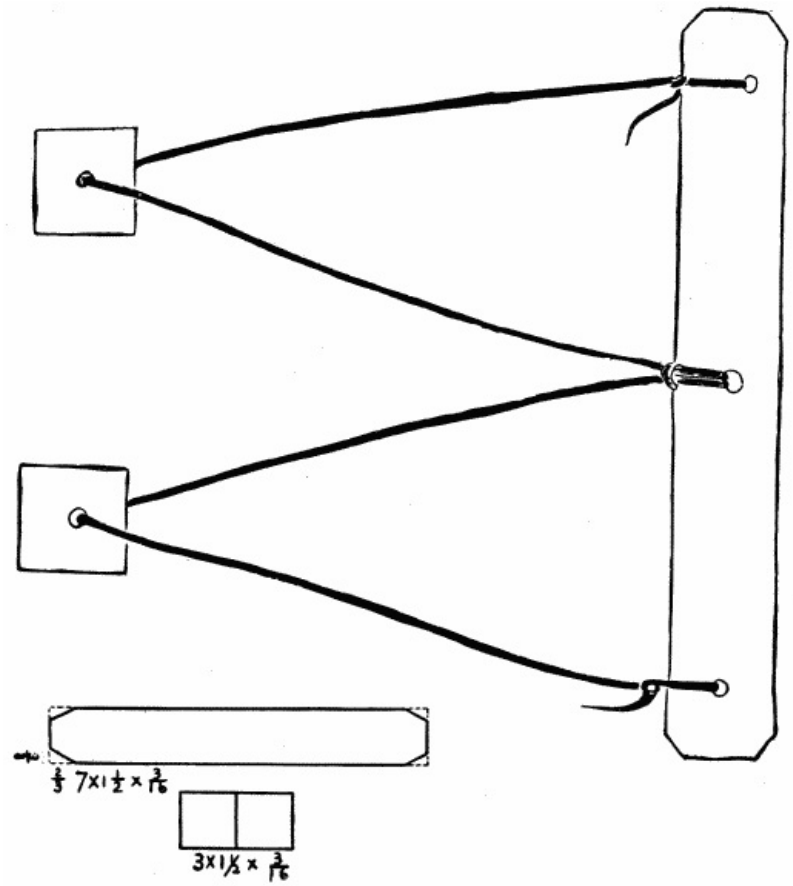
1 Puzzle

Problem—To cut with the grain of the wood, and how to cut corners. (See page 57.)

Material—Basswood: one piece 7×1-1/2×3/16 inches; one piece 3×1-1/2×3/16 inches. One yard of macramé cord.

Shave the 7×1-1/2-inch strip of wood down with a knife until it is an inch wide, being careful to keep the edges parallel. Measure off three-eighths of an inch in opposite directions on each corner and on both sides of the wood. Connect these points by a pencil line. Cut off each corner the space indicated by the line. Be careful always to cut with the grain of the wood; cutting against it will split the board. Next, three-fourths of an inch from each end, and equally distant from the sides, and in the center, bore holes. From the 3×1-1/2-inch piece of wood, cut two blocks one and one-half inches square, and bore a hole in the center of each. Double the string to a loop and draw this loop through the center hole of the rectangular strip. Pull the loop to the edge, and draw through it the two ends of the cord. String the 1-1/2-inch blocks, one on each cord, then tie the ends of cord in the two end holes of the rectangular strip. [Pg 57]

The puzzle is finished. What is the aim, and how can it be solved?



PUZZLE

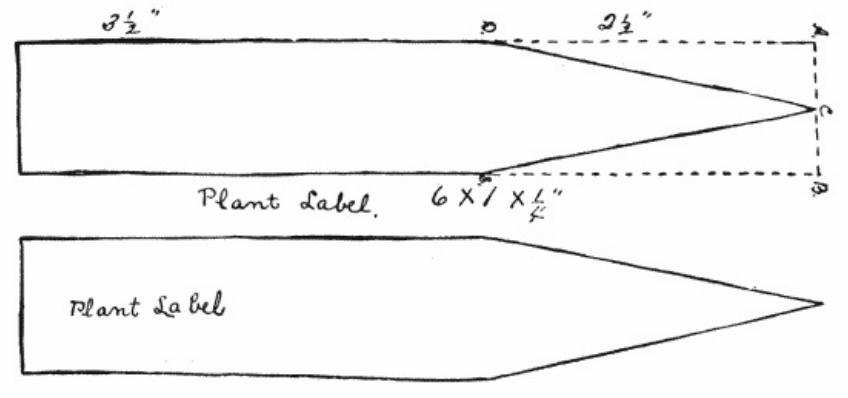
Solution. Mark one block. Hold one in the hand and move the other along until it passes through the loop at the center.

Pull the cord through the middle hole until it draws with it four thicknesses of cord. Now slide the block along until it passes through a double loop. Next, draw this double loop back through the hole; the string will be in position, and the block is now passed along through a single loop and onto the string containing the other one. To replace the block, turn the puzzle around and repeat the process. [Pg 58]

2 Plant Label

Problem—To cut across the grain, and, by removing two equal triangles, to form a well-tapered point.

Material—One piece of basswood, 6×1×1/4 inches.



PLANT LABEL

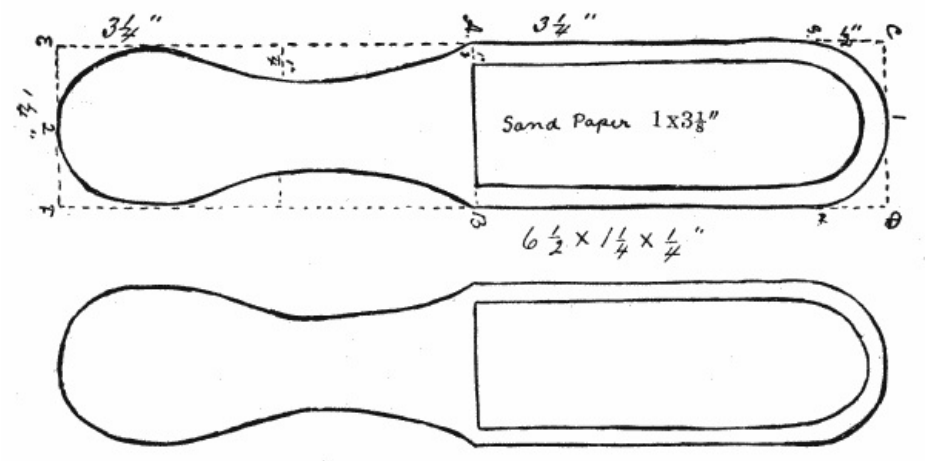
Take the end A B and find the center, C. From A measure off two and a half inches, and place point D. From B measure off two and a half inches, and place point E. Connect points CD and CE. Place the same measurements on the reverse side. With the knife cut off triangles A-C-D and B-C-E. Sandpaper the wood until it is smooth and the label is finished.

3 Pencil Sharpener

Problem—Curve-cutting.

Material—One piece of basswood, 6-1/2×1-1/4×1/4 inches. One piece of sandpaper, 1×3-1/8 inches. Glue. Stain.

On the wood place points three and a quarter inches from each end, at A and B, and connect them by line A-B. Place points G and H half an inch from C and D. Start your curve at G, pass through I, and end at H. In the rectangle A-B-F-E draw a handle as indicated in the diagram. Shape the other end by removing spaces G-C-I and H-D-I. Sandpaper thoroughly. Shape one end of the 1×3-1/8-inch piece of sandpaper as curve G-I-H, and glue it to the wood. Stain the wood and polish it by rubbing it with a soft cloth. [Pg 59]



PENCIL SHARPENER

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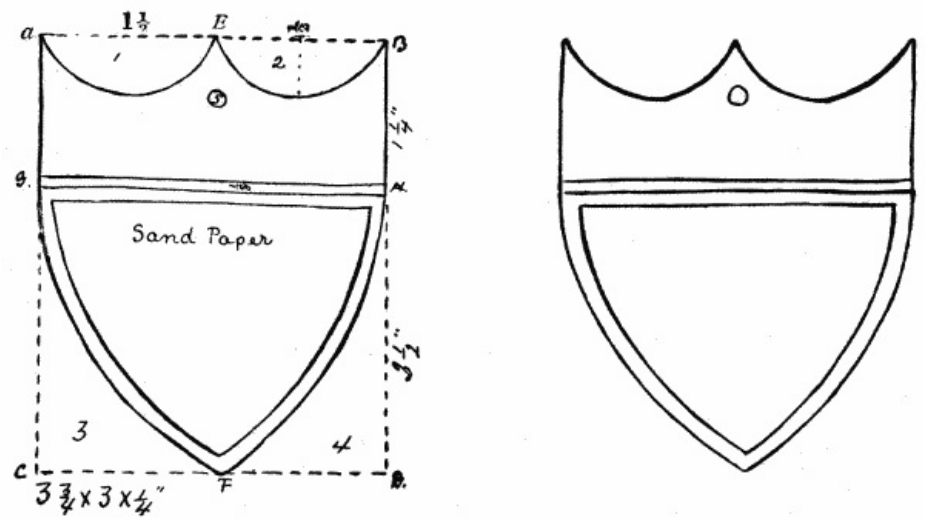
4 Match Scratch

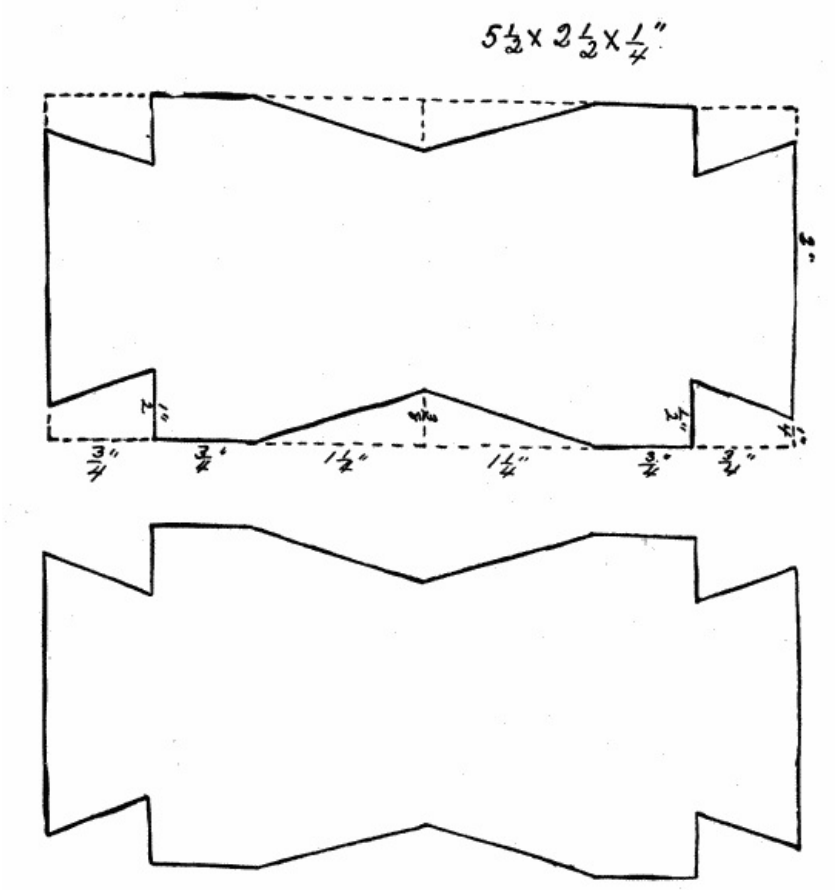
Problem—Curve and cross-grain cutting.

Material—One piece of basswood, 3-3/4×3×1/4 inches. One piece of sandpaper, 2-1/2×3 inches. Glue.



MATCH SCRATCH

Place a point at the center of line A-B and of line C-D. Place a point on line A-C and line B-D, one and one-quarter inches from A and B. Connect these points by a pencil line, and draw another line one-eighth of an inch below. Score these two lines with the point of the knife, making a tiny groove. Draw curves A-E and B-E, the highest point of the curve being half an inch from the edge [Pg 60] A-E-B. Draw curves G-F and H-F. Remove spaces 1, 2, 3, and 4. Sandpaper thoroughly the edges and sides. Shape the piece of sandpaper, two and a half by three inches, to fit the space G-F-H, allowing a quarter-inch margin, and glue it on. Bore a hole at 5. Do not stain.



KITE STRING WINDER

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5 Kite-String Winder

Problem—Cross-grain cutting.

Material—One piece of basswood, 5-1/2×2-1/2×1/4 inches.

Measure and lay off as shown in the diagram, and cut out all spaces indicated by dotted lines. [Pg 61]

Sandpaper the wood until it is smooth. Stain the winder or not, as is preferred.

6 Thermometer Back

Problem—Beveling and grooving. (See page 62.)

Material—One piece of basswood 6×3×1/4 inches. Stain.

For the thermometer back the measurements need be placed on but one side of the wood.

Mark off a quarter-inch from the edge all around and draw a line. Place a second line a quarter-inch within this. Using the line nearest the edge as a guide, cut off the sharp edges on the face of the strip of wood until the slant surface is reached between the line and the back edge. This makes the bevel. The inner line is a guide for spacing the design. Originate a simple design, and lay it off on the board in pencil. Then, using the point of the knife, with the greatest care groove out the design. Place a hole near the top of the strip by means of which to hang it. Notice that the design fits around the hole. Sandpaper, stain, and polish the wood.

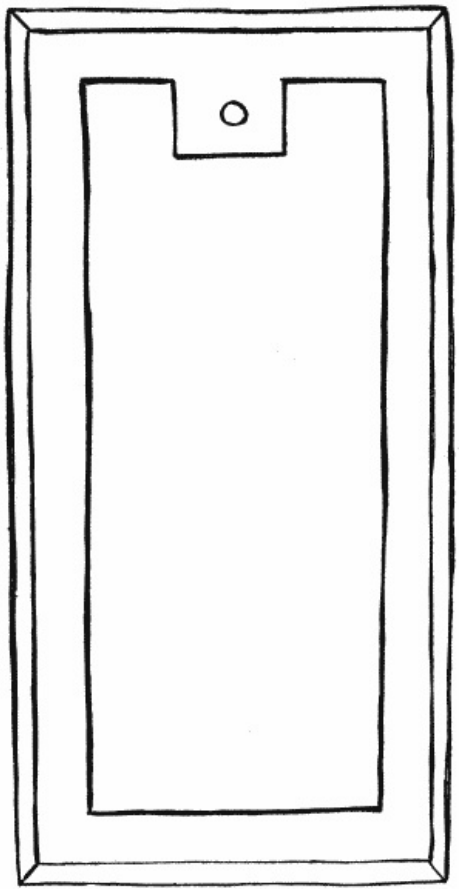
The design given here is the simplest that can be made. It is suggested that until the child becomes accustomed to working with the knife, all designs for grooving had better be confined to straight lines. Combine in a design a vertical, a horizontal, and an oblique line, and some beautiful patterns may be originated.

7 Pocket Pin-Cushion

Problem—Circular cutting, grooving, stenciling, and coloring. (See page 63.)

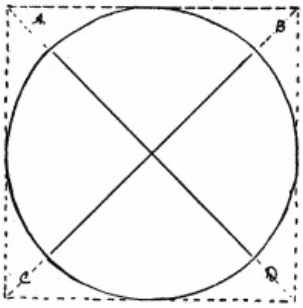
Material—Basswood: two pieces, 3×3×1/4 inches. One piece of heavy felt 3×3×1/4 inches. Glue. Water-color paints. Stain.

Find the center of each square of wood by drawing the diagonals. With the compass at the radius of one and one-half inches, describe a circle on each piece of wood (on one side only). Remove spaces A, B, C, and D with the knife, and you have a circular block. Remember to cut with the grain. Bevel the edges. Make an original design and apply it to your wood. With the knife groove the outline of this design. There should be a space three-eighths of an inch wide between the edge of the wood and the outer edge of the design. When the design is grooved in, color it. Red, [Pg 63] green and yellow are the best colors. Their identity is not lost in staining. Lastly, stain and polish the face of the blocks. Cut the felt the size of the blocks, cover the back of each block with glue, place the felt between the two, and keep the whole in press for several hours. The model here suggests two designs. These are given simply as illustrations. Use the same design for both backs of the cushion.

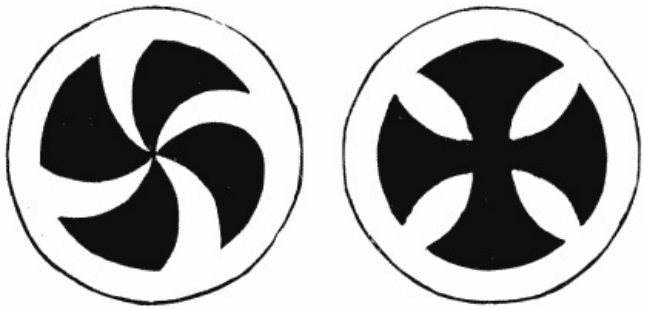


THERMOMETER BACK—(For

description see page 61.)



PIN CUSHION



DESIGNS FOR PIN CUSHION

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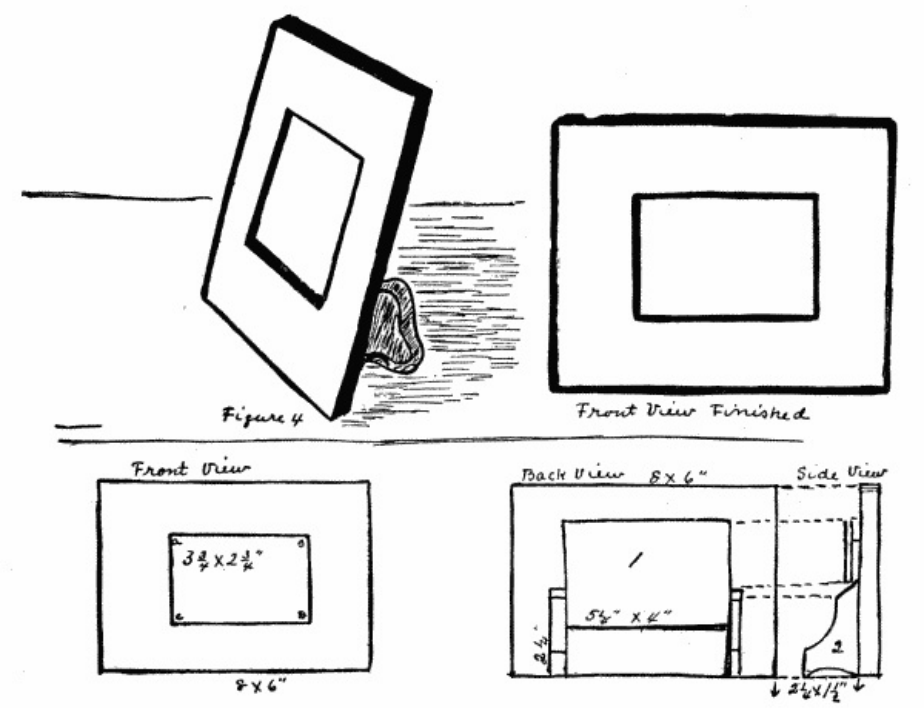
8 Picture Frame

Material—Basswood, sweet gum, walnut or oak. One piece, 8×6×1/4 inches, for frame; one piece, 5-1/4×4×1/4 inches, for back; one piece, 4-1/2×3×1/4 inches, for supports; two pieces, 3-1/4×3/8×1/4 inches, and one piece, 5-1/4×3/8×1/4 inches for cleats. Glue. Half-inch brads.

Should basswood be used it must be stained. Sweet gum, walnut, or oak may be left in its natural state, and oiled to bring out the grain and finish. [Pg 64]



PICTURE FRAME

On the 8×6×1/4-inch board mark off with a pencil a center space 2-3/4×3-3/4 inches in size. With

a gimlet bore holes at points A, B, C, and D. Connect these holes with a pencil line as a guide for cutting. Along the line make a groove which may be broadened and deepened until the board is cut through. By working around the square in this way, the center will soon be opened. Trim the wood as smoothly as possible with a knife; then use sandpaper to level and finish off. Bevel the edge of the opening if you wish.

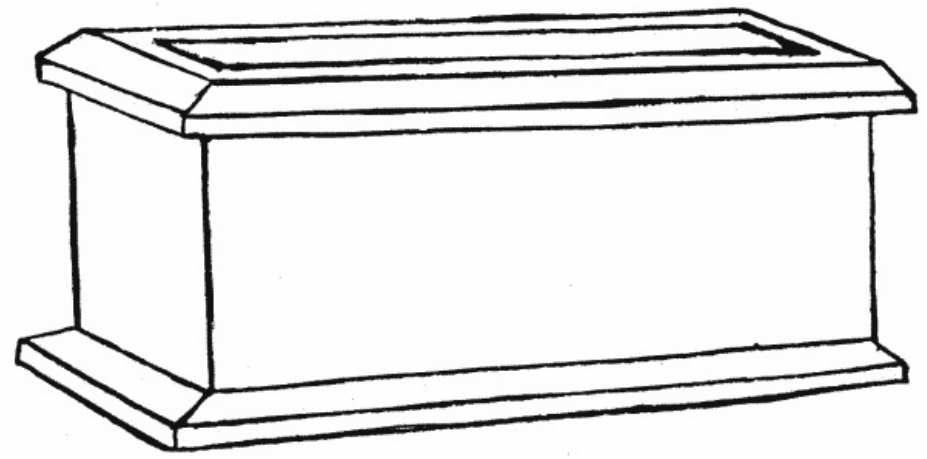
Cut in half the 4-1/2×3×1/4-inch piece of wood, and make two supports, as in Figure 2. With a pencil draw the shape of these supports on the wood; in whittling work very carefully, as they are small and will easily split. As far as possible, hold the pieces so that the knife will shave with the grain of the wood. In crosscut work from the opposite side. In straight cut, keep notches at [Pg 65] opposite ends, so that if the knife should slip and the wood split no serious damage will be done.

Place the cleats on the back half an inch from the opening, the longer fitting in between the two shorter ones. Glue them on, then nail them. Against these cleats glue the back (1) before nailing it. Next glue and nail on the two supports against the back and on a level with the lower edge (Figure 4). On the fourth side, where there is no cleat, is the opening through which the picture is slipped. When the frame is satisfactorily sandpapered, oil and polish it.

9 Japanese Box

Problem—To construct a box having lid and bottom extend beyond sides.

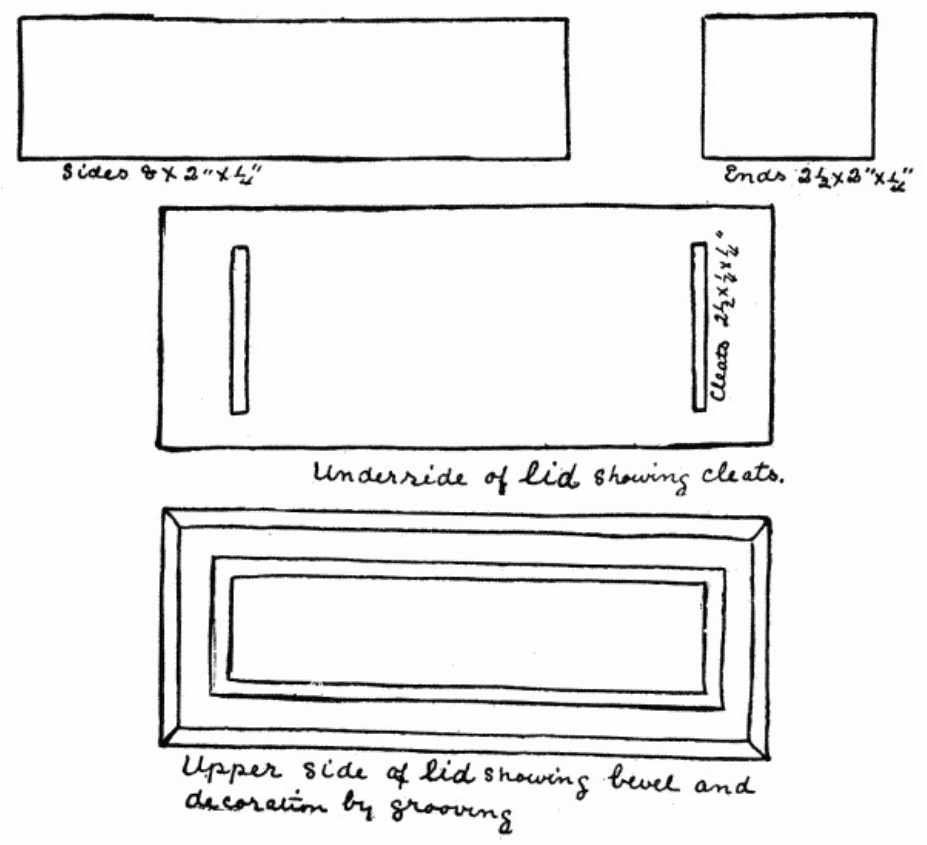
Stock—Basswood: two pieces, each 8-1/2×3-1/2×1/4 inches, for lid and bottom; two pieces, each 8×2×1/4 inches, for sides; two pieces, each 2-1/2×2×1/4 inches, for ends; two pieces, each 2-1/2×1/4×1/4 inches, for cleats. Glue. Half-inch brads. Stain. Wax.



JAPANESE BOX

On the 8-1/2×3-1/2×1/4-inch pieces of wood, cut a bevel a quarter of an inch wide.

Place the two ends between the two sides; glue and nail. Set this rectangular frame on the under side of the bottom, equally distant from each edge, and trace the shape with a pencil. Remove the frame; the pencil line indicates where the nails are to be driven to secure the frame to the base. [Pg 66] Now set the frame on the upper side of the bottom; aim for the same spacing as on the under side, and mark off. Carefully cover the lower edge of this frame with glue, place it on the base and press the two until the glue is dry. Drive the brads through from the under side of the base an eighth of an inch within the guiding line. Having beveled and sandpapered the lid, trace a design on it, and outline this design by grooving.



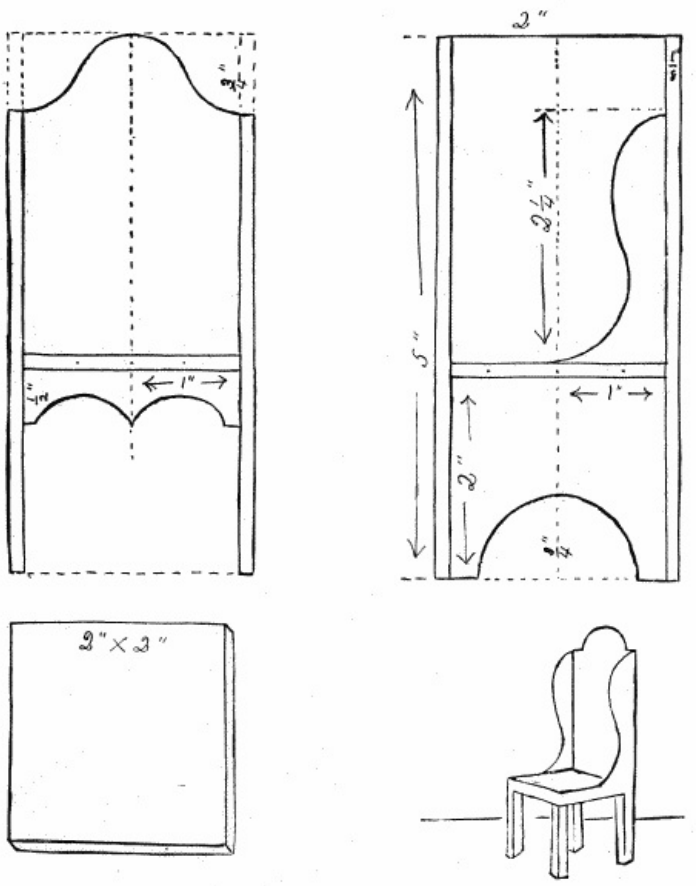
Nail the 2-1/2×1/4×1/4-inch cleats to the under side of the lid, five-eighths or an inch from each end and half an inch from each side. These cleats fit into the box and hold the lid on.

Stain, wax, and polish the box.

10 Grandfather's Chair

Material—Basswood: three pieces 5×2×1/8 inches; one piece 2×2×1/8 inches. Brads. Sandpaper. Glue. Stain or oil.

[Pg 67]



GRANDFATHER'S CHAIR

Measure and lay off as you have done in making the other small pieces of wood work. Handle the knife most cautiously, as the wood is so thin that it is easily split. When all parts are cut out and well sandpapered glue them together and secure them by driving in the brads about an inch apart along the line of the seat and where the arms join the back. Stain or oil as most convenient, or as taste dictates.

PART IV

BASKETRY

BASKETRY [Pg 71]

Introductory Remarks

The art of basket-making is a primitive one, and so simple that it appears to have been known among the rudest people and in very early ages.

When Moses was found by Pharaoh's daughter, he was lying in a basket which had been woven by his mother.

Later, when the Israelites were returning to the Promised Land, they were commanded to offer unto the Lord "the first of all the fruits of the earth" in a basket, as soon as Canaan became their possession. The baskets of the rich, of these ancient Israelites were made of gold and silver, and so valuable were they that when a gift was sent in one of them the basket was always returned.

The ancient Britons were remarkably expert in the manufacture of baskets, which were so beautifully made that they were highly prized by the Romans.

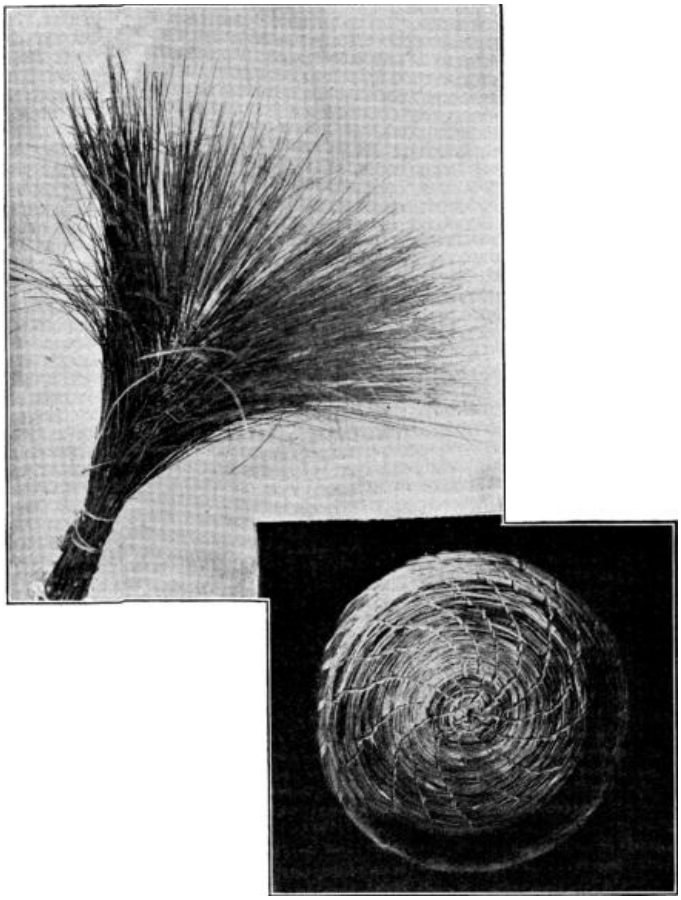
Our own American Indians were, and still are, such adepts in the art of basket-making that, for beauty and artistic effect, their baskets are excelled by none.

The perfection attained in this art by the uncivilized is marvelous. Adapting the materials about them to their use, they produce masterpieces which the civilized man beholds in wonder and amazement.

Though handed down to us through many ages, this ancient occupation has never lost its fascination. The adult and the child of to-day are as eager to learn its secrets as were those dwellers on the banks of the Nile, hundreds of years ago.

As a plastic art it lies between paper construction and clay modeling on one side, and wood and iron work on the other.

A keen interest in the art may be awakened by arousing in the child a desire for a basket for some practical purpose. In the autumn, the collecting of seeds for next spring's planting, the [Pg 72] gathering of nuts, the need for something in which to take the lunch to school, or, perhaps, a wish to make a pleasing gift for the coming Christmas, will immediately suggest its utility.



NORTH CAROLINA PINE

Of what shall the basket be made? Children enjoy those things most which they feel that they have exerted themselves to obtain; and the greater the effort involved, the greater the educational value. Every child should be trained to keep his eyes open and to adapt to his use the [Pg 73] things he sees about him. Materials for baskets may be obtained in just this way. City children may take a trip to the country and gather the long grasses found in swamps and low places. Perhaps in the garden at home there is a clump of yucca; when the fall comes and the bloom is gone the leaves or blades may be cut, dried and stripped, and transformed into an attractive basket or tray. Again, the husks which are stripped from the corn cooked for dinner may be torn into narrow ribbons and dried for use. Corn husks make a beautiful basket, for the different shades of green change, after the husks have dried, to as many shades of brown, which blend most artistically when worked up. The little children of the South may gather the long needles that fall from the southern pine, and combine them with raffia or twine to construct a basket. Country children have a most adaptable and convenient commodity in the tough, flexible willows found on the banks of almost every stream.

The material most commonly used and easiest to begin with, however, is reed, which is pliable, and readily handled and moulded into simple forms by even small children. It is available when other materials are not to be had, for it may be purchased with the school supplies.

Reed is the core or central part of the climbing calamus, a species of palm found in the jungles of Borneo and adjacent South Sea islands. The outside of the raw calamus is smooth and is made into commercial cane used for chairs. The shavings, made by the machine which separates the cane from the core or inner reed, are utilized for mats, polishing material, and stuffing for mattresses and furniture. Thus every part of the raw material is brought into use.

Originally the calamus grew in a limited area and was difficult to obtain. Only the natives could gather it, as the white man contracted the jungle fever as soon as he subjected himself to the climate in which it grew. But within the last fifty or seventy-five years enterprising men have begun the cultivation of the rattan palm, and have met with so much success that now there are a number of factories in the United States making the reed and rattan of commerce, while Germany and Belgium export to us the best reed that is used. [Pg 74]

REED BASKETS

The teacher should never begin the use of any new material for construction without having made the child familiar with its history; nor should a finished article be laid aside until the pupil has given the teacher a description of how it is made, and of what it is made. If this method is carried out the child will show a greater appreciation of what he is doing, will value the finished article more highly, and will place a premium on the raw material.

Overlook the pupils in their work, but grant them the privilege of adjusting size and shape, and of selecting material for the requirements of the design they have in mind. By achieving what he can for himself, the pupil attains a realization of his own power, and the logic of size, shape, material, etc., is awakened. [Pg 75]

REED CONSTRUCTION

In construction, the first thing to teach a child is how to handle the material. To do this, use small quantities and attempt only simple articles. Reed is the simplest thing to begin with, and the easiest of all basket-work models is the napkin ring. Soak all the reed and dry it with a cloth before using.

1 Napkin Ring No. I

Problem—To construct a napkin ring of reed.

Material—No. 2 reed, 7 feet.

Take one end of the reed and form a loop two inches in diameter, and wind the reed three times to form the ring. Hold it in the left hand. Pass the loose end over the curve and through the circle. Pull it taut enough to make it lie in a natural curve. Repeat this movement—over and over, round and round—allowing the strands always to follow the valley between the two former laps. When the foundation is covered, clip the end where it finishes up, press it into place in the groove, drop a little glue over the point at which it is pressed in, and bind the ring with a string to hold the end in position. When the glue has dried, remove the string.

No. I **No. II**

REED NAPKIN RINGS

When the napkin ring has been made, the child has learned the principle involved in constructing a basket handle. [Pg 76]

2 Napkin Ring No. II

Problem—To construct a napkin ring of No. 5 reed. (See page 75.)

Material—No. 5 reed, 2-1/2 feet.

In using No. 5 reed, form the loop two inches in diameter, but have the ring of only one thickness, and proceed as in ring No. 1. This will make a napkin ring of different appearance because the windings are fewer and the reed thicker.

3 Mat

Problem—To construct a simple mat of reed.

Material—No. 4 reed: eight spokes, 9 inches long; one spoke, 6 inches long. Weavers of No. 2 reed.

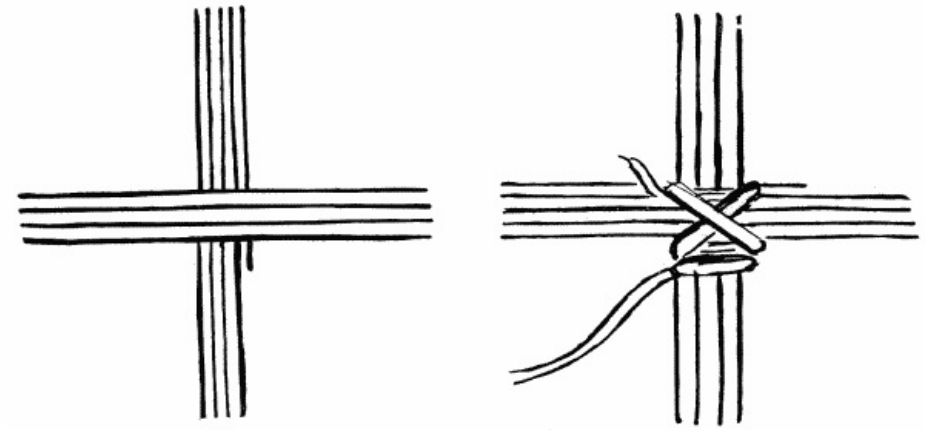
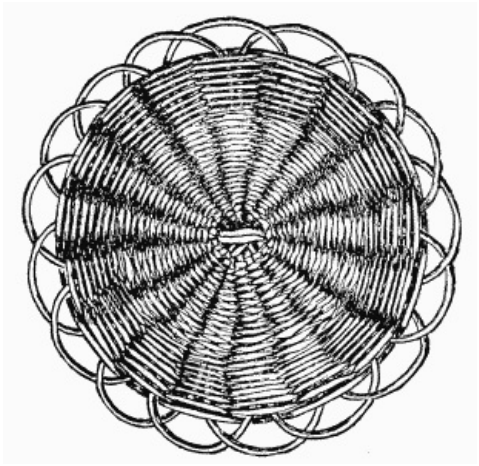


Figure 1 **Figure 2**

TO START A REED MAT OR SIMPLE BASKET

Place together, at right angles, two groups of four spokes of No. 4 reed. To the under group add the six-inch spoke of No. 4 reed (Figure 1). Hold the spokes firmly in the left hand. Take the No. 2 weaver and insert it under the thumb. Wind the weaver diagonally over the crossing point in both directions (Figure 2). Then wind the weaver over and under alternate groups of spokes, three times around. Hold both spokes and weaver firmly in place with the left hand. Separate into single spokes now and continue weaving until your mat is four inches in diameter. Fasten the end of the weaver by tucking it down beside a rib. The projecting ribs are trimmed to an even length and pointed. Take any given spoke, as No. 1, bend it to the left in front of No. 2 and insert it on the right side of No. 3. No. 2 is now taken and carried to the left over No. 3 and inserted to the right of No. 4. Proceed thus until all the spokes are inserted, when the mat is finished. The scallops should form a semicircle. [Pg 77]



REED MAT

For a larger mat, take ten spokes, sixteen inches long, of No. 4 reed, and one spoke nine inches long of the same. Use No. 1 reed for the weaver and proceed as in making the smaller mat.

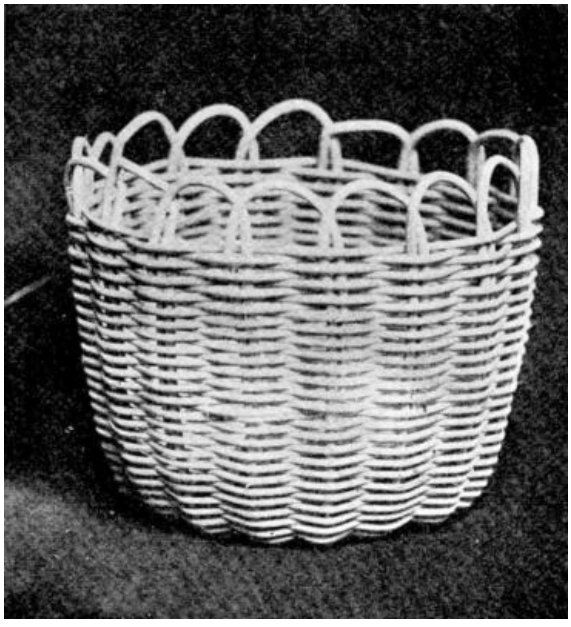
To add a new weaver, place the end about two spokes back of where the former weaver ended and parallel with it.

4 Hamper Basket

Problem—To construct a simple reed basket.

Material—No. 4 reed: eight spokes 16 inches long; one spoke 9 inches long. Weavers of No. 1 reed.

Begin the basket exactly as the mat was begun. Weave until the bottom is three inches, or three and a half inches in diameter. Then bend the spokes at right angles with the base, drawing the weaver tight so as to hold the spokes in position and keep them separated at an equal distance. Continue weaving until the basket is three inches high, or until about one and a half inches of [Pg 78] spokes is left for the border. Finish the edge by turning down the spokes as in the edge of the mat, or bend them down flat with the edge of the basket. Take any spoke, as No. 1, bring from right to left over No. 2, then No. 2 over No. 3, and so on until the ends of all the spokes are turned to the inside of the basket. Keep both basket and weaver well dampened while weaving. After the basket is finished press it into shape while still damp. When it is thoroughly dry trim off the ends of the spokes which appear too long on the inside of the basket, leaving them just long enough to be held in place by the curved spoke under which each passes. This makes a beautiful hamper basket.



HAMPER BASKET

A handle may be added to this little basket, but it is not advisable to encourage a child to add a

handle until he has made his third basket or has shown in some way proficiency in what has been taught so far.

To add a handle. Take a length of reed, of the same number as the spokes, for the handle bow. For a small-sized basket take ten inches. Insert one end down through the weaving beside one of [Pg 79] the spokes. Bend the bow into the shape you wish for the handle and insert the other end of the bow beside a spoke on the opposite side of the basket, being careful that the two spaces between the two ends of the handle are equal. The handle should be about as high above the border as the border is above the bottom of the basket. The width of the handle should be a little less than the width of the basket at the top.

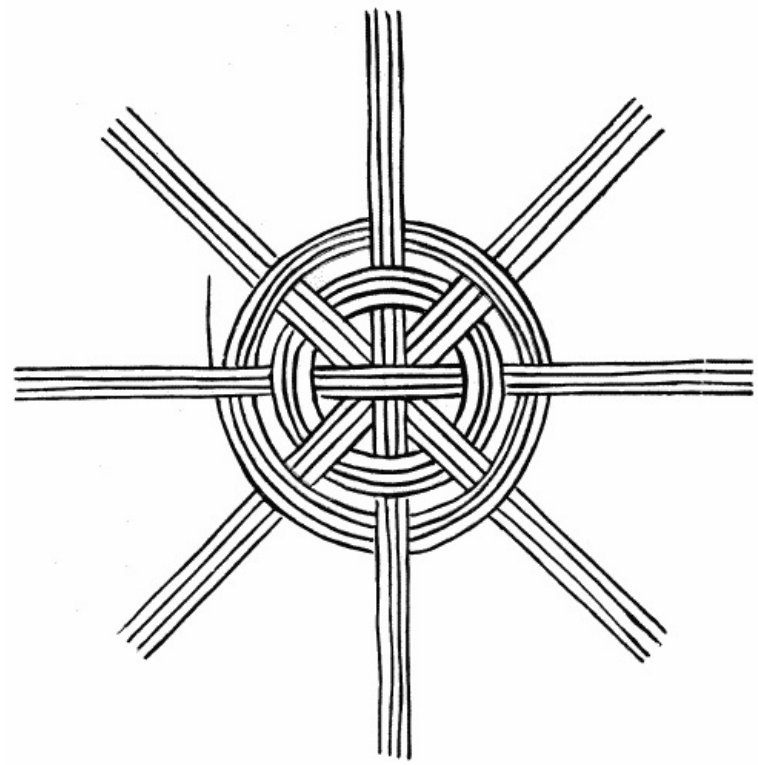
You are now ready to cover the handle. Take a long weaver; push one end of it through the wale under the second row. Hold the end in place and wrap the weaver about the handle bow, keeping the spaces about equal, and drawing taut enough to be graceful, until it reaches the opposite side. Then draw the weaver through the wale and under the second row and up on that side; next wind about the handle bow again, back to the starting-point. Push the weaver through the wale, under the second row and out again, and once more wind across the handle bow. Repeat this operation from side to side until the handle bow is covered. Keep each row of winder close to the preceding one and parallel to it. When the bow is covered, tuck the end of the weaver through the wale and under the second row and clip the end, leaving it just long enough to stay in place. The handle bow needs to be damp enough to be flexible, but unless the winding weaver is well soaked it will crack and make trouble.

5 Basket Tray

Problem—To construct a reed basket or tray, having an even number of spokes, and using same number reed for both spokes and weaver.

Material—Sixteen spokes, each 11 inches long, of No. 3 or No. 4 reed. Weaver of reed of same number as spokes.

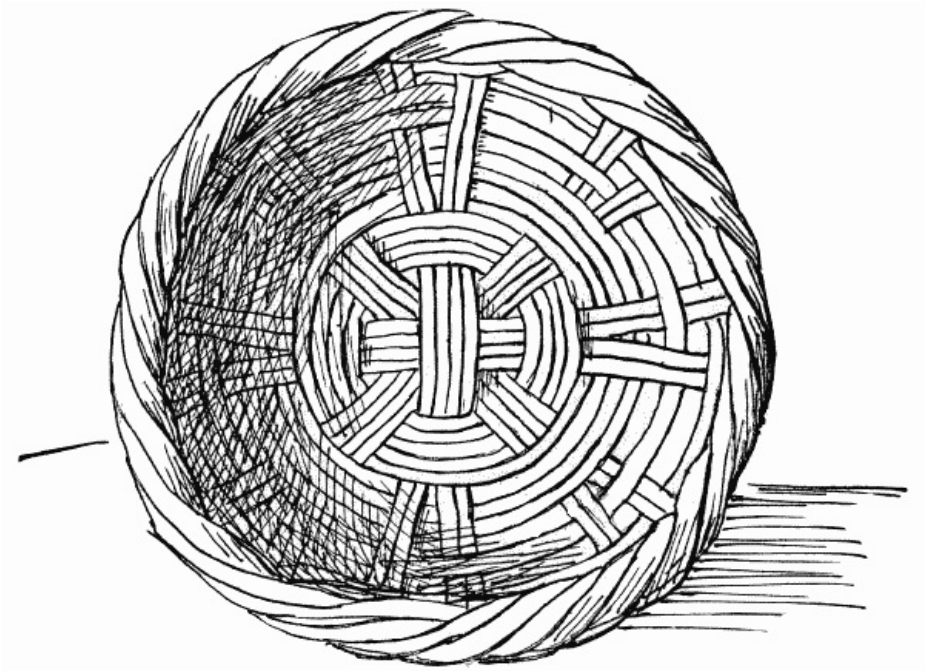
Separate the spokes into groups of four. Place set No. 1 on and at right angles to set No. 2. Sets 3 and 4 are laid diagonally across sets 1 and 2.



HOW TO BEGIN THE BASKET TRAY

Hold the spokes firmly, attach the weaver and go in and out four times round, over and under the same set of spokes each time. At the end of the fourth round, pass the weaver over two sets of spokes and weave four rows. Next separate the spokes into sets of two and weave one row; now each time that the weaver comes to starting-point in the circle, pass it over two sets of spokes [Pg 80] instead of one, and then weave the next round. When you have been around seven times using double spokes, bend the spokes up for sides and weave two more rows over double spokes. Then separate into single spokes and weave six rows, remembering each time to pass the weaver at the end of a new round over two spokes instead of one, so as to have them properly alternated.

Trim the ends of the spokes to an equal length and start the border by bending any given spoke to the right and inside the tray, holding it in place. Continue with each succeeding one until all [Pg 81] the spokes have been bent into position. These spokes being bent so closely and consecutively over each other, form a coil resembling the handle of a basket. The points of the spokes are pushed under the coil, through from the inside to the outside of the basket. Keep a vessel of water at hand and wet the material constantly as you weave. When the tray is finished, press it into shape and set aside to dry. When it is well dried, clip off the projecting ends.



REED BASKET TRAY

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6 Basket with Handle

Problem—To construct a basket using an uneven number of spokes, spokes and weaver the same number reed; and to add a handle.

Material—No. 3 reed: eight stakes, each 20 inches long; one stake 11 inches long. Weavers of No. 3 reed.

Make two groups of four each of the twenty-inch stakes. Place one set at right angles across the other, and beside the under set insert the eleven-inch spoke. Hold the spokes firmly between the thumb and the forefinger of the left hand, and with the weaver in the right hand place the starting end under the edge of the upper set; bring it around and over set No. 1, under No. 2, [Pg 82] over No. 3, under No. 4, and repeat this operation four times. Now separate the spokes into groups of eight twos and one single, and weave four rounds. Next cut seventeen eleven-inch stakes and push one in beside each stake already used. Divide them into seventeen pairs. Weave round and round until you have a base three and one-half inches in diameter. Being sure that the weaver is damp and pliable, with fingers, or "pliers," bend up the stakes close to the weaving, at right angles with the base, and continue weaving until the basket is four inches deep. Then trim the stakes, if necessary, to uniform length and bend them over to form the border. Take any stake, as No. 1, and work from right to left. Bend down No. 1, pass under No. 2 and over No. 3. Then take No. 2, pass under No. 3 and over No. 4. Continue until every pair of stakes has been [Pg 83] turned down and worked into the border. All ends must come inside the basket; after it is dry, trim them off. You will find that in working with the wet reed your basket may seem not to have the proper shape. Soak it well and you will be able to mould as you wish it. Add a handle.

REED BASKET WITH HANDLE

This basket is made almost exactly like the little hamper basket previously described, except that in this one, we use double stakes, while in that one, single stakes were used; the sides of this one are vertical, those of that one slightly curved.

In passing from the reed basket, the next step would be the raffia and then the combination of reed and raffia, which is worked out in all forms of Indian basketry. The most common stitch is known as the "lazy squaw," and is made by winding the raffia round the reed one, two, or three times, as space is desired; and then the needle is taken through the row below to make the stitch. Each stitch is a repetition of the one before and the mat, tray or basket grows with the effort. There are innumerable opportunities for design in Indian basketry, and it is here that the work of an artist may be realized and recognized.

RAFFIA CONSTRUCTION

We may correlate and combine raffia with reed in construction. The two materials may be worked together to great advantage and interest to the child. For instance, when a napkin ring has been made of reed let the child next construct one of raffia, and then compare the finished article as to the material vised, the beauty, the flexibility, the durability, and the nativity of each.

As in the case of reed, so with raffia before constructing with it, pass a piece to each child and give the life history of the plant. Madagascar may be a name only to the small child, but the very vagueness of his knowledge concerning it may cause him to realize the distance of the island from us and appreciate that this simple material with which he is working has traveled thousands of miles to bring him a story and an occupation.

Raffia, a native of the South Sea Islands and of Madagascar, is the inner bark of the raphia palm, pulled off, torn into narrow strips, dried in the sun, and bound into bunches, which are plaited together and stored ready for use or shipping.

We receive the raffia in its natural state, but many colors may easily be had by dyeing. In [Pg 84] *Practical Basket Making*, by George Wharton James, some valuable suggestions on dyeing are given; but the small quantity of raffia a teacher will need may be dyed with very little trouble with the "Easy Dyes" manufactured by the American Color Company. Follow directions and the results will be most satisfactory. Be very careful to have the dyes strong enough, as raffia absorbs an enormous amount of coloring. All raffia should be washed before dyeing; it should be well dried before being put into the dye pot, since it takes the color better when dry.

If you have pupils old enough, or a class on which you can rely, nothing will delight them more than to do their own dyeing. A fourth-grade class in one of the Baltimore schools has successfully dyed all the raffia, cord, cotton, and textiles used in their classroom. The child dearly loves color; the possibility of having different shades to work with will arouse an intense interest in procuring these colors. It will be unusual if the pupils do not handle with care the materials and the dye pot.

In adapting a commodity to circumstances in this way, the broader knowledge of how the colors in clothing are obtained will develop and there will be created in the child a new idea of life and of man's work.

The natural color of the raffia is much improved by washing; therefore, before using it loosen it and soak it in clean water so that all dust and dirt may be removed and the strips or strings straightened out; then hang it in the air until thoroughly dry.

Before offering any models of the combined reed and raffia, we shall give a few of raffia alone, as we did of the reed.

7 Plaited Rope

Problem—To teach different ways in which the plaited rope of raffia may be applied.

Material—Raffia.

Begin the use of raffia by teaching the child the three-strand plait, adding a new thread from time to time, until a long rope is made. Next teach how to coil this rope into a mat, a purse, a basket, or a hat.

In plaiting, keep the raffia damp and use strands of equal size. Dampness adds gloss and smoothness to the finished article. [Pg 85]

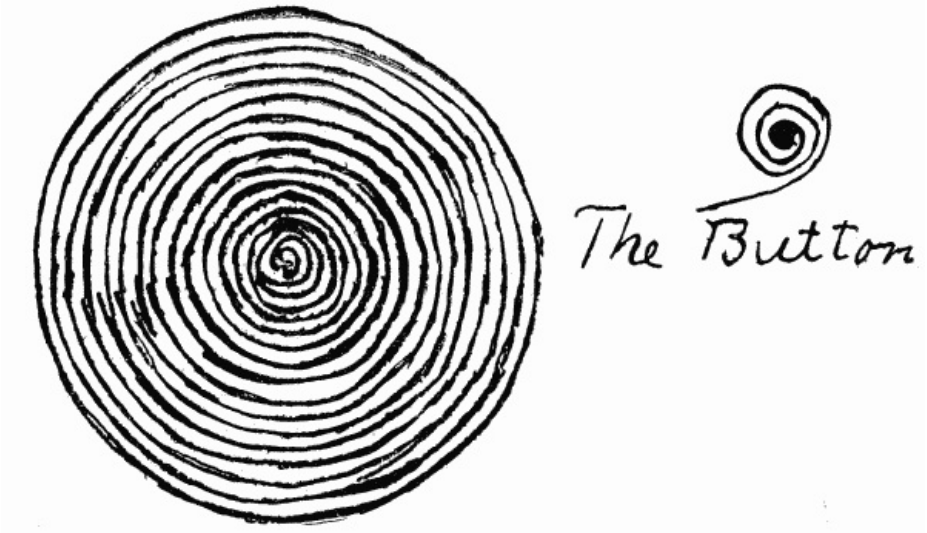
THREE-STRAND PLAIT

In the construction of articles of plaited raffia an opportunity opens up to bring the child's inventive ingenuity into play. Get him to think of something he might make, and to construct it roughly of paper. With his model as a guide for shape and size, he can easily reproduce it in raffia. The first pattern may be crude, but each repetition will produce a better one, and interest will lend enchantment, until both pattern and reproduction will be most creditable.

8 Plaited Mat

Problem—To construct a mat of plaited raffia rope.

Material—Raffia.



MAT OF PLAITED BRAID

The starting-point in all these designs is the little round coil, called the button.

To make a mat, first plait a rope several feet long. To form the button hold the end of the rope between thumb and forefinger, and begin to roll the rope just as a watch spring is coiled. With a

needle and fine thread of raffia, make the button firm; then keep on coiling around the button and, as each row is added, tack it to the preceding row by pushing the needle in and out at right angles with the braid, so that the stitch may be invisible. When finished the mat should be about four inches in diameter. The object of winding the plait sideways is to give the mat firmness and thickness. [Pg 86]

9 Purse

Problem—To construct a purse or bag of plaited raffia rope. (See page 87.)

Material—Raffia.

To make a purse, plait enough rope to make two mats three and a half inches in diameter. To construct these mats first make the button. Work this time with the braid flat. Sew by holding the inner edge of the plait just under the outer edge of the preceding row. When both mats are finished, place them flat against each other, and overseam or buttonhole the edges together for about two-thirds of the circumference. Plait a rope, seven inches long, for a handle. Tie a knot in each end, and ravel the ends of raffia to form a tassel. Attach this handle to the purse at each side, where the opening begins. Girls especially delight in this little purse or bag.

10 Plaited Basket

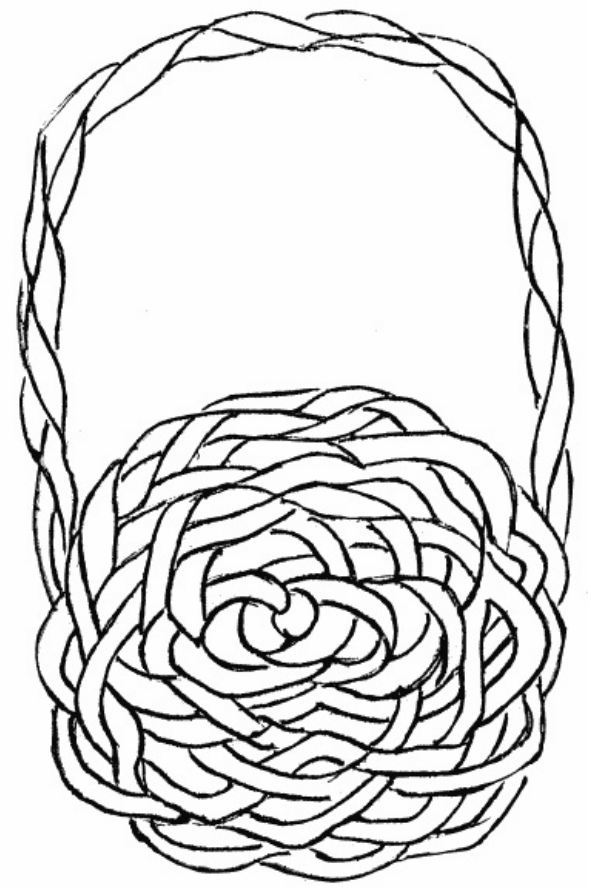
Problem—To sew braid together to form ONE angle. (See page 88.)

Material—Raffia.

Dimensions—Bottom three inches in diameter; sides two inches high; handle six inches long and two braids wide.

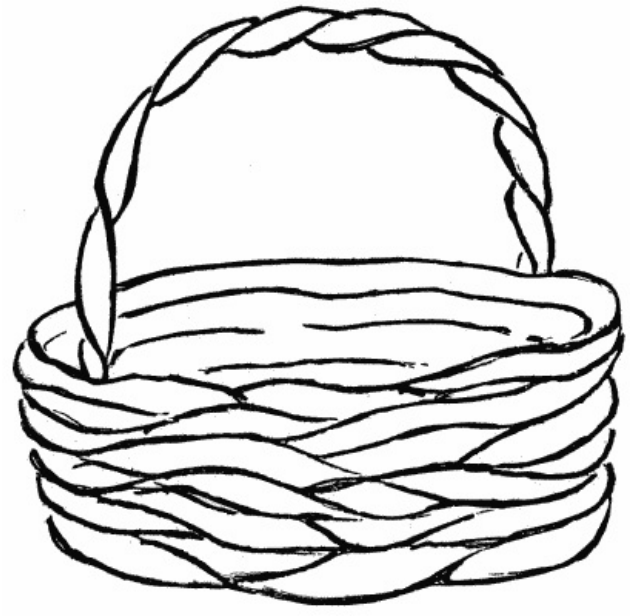
Using three threads of raffia, plait a rope several feet long. Proceed just as with purse, and sew until you have a mat three inches in diameter. Now place the braid at right angles with the base, and sew round and round to form the sides. When these are two inches high fasten the braid; and, without cutting it, carry it to the opposite side to form the handle. Fasten it there and bring it back again, to make the handle two braids wide. Either overseam these together to make a broad handle, or leave them separated to form a double handle.

An easy way to obtain a more uniform shape in constructing this basket is to have a smooth tumbler or a tin box, and, as you work, fit the material to the form. When it is finished, dampen it and let it remain on the form until it dries. [Pg 87]



PURSE OR BAG OF PLAITED RAFFIA—
(For description see page 86.)

[Pg 88]

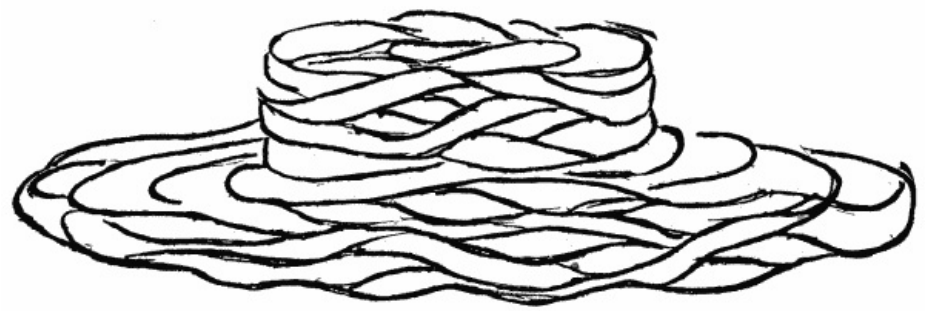


BASKET OF PLAITED RAFFIA—(For description see page 86.)

11 Hat of Plaited Rope

Problem—To sew the braid together to form two angles.

Material—Raffia.



HAT OF PLAITED RAFFIA

First plait the raffia together until you have a very long braid. Take the starting end, make the button, and sew round and round, as in making the purse. When the top of the crown is as large as you wish it, turn the braid at right angles and form the sides. When, in your judgment, the [Pg 89] crown is high enough, make a second right angle to form the brim, which may be wide or narrow as taste dictates. Use a blunt needle (Smith's tapestry, No. 18).

12 Napkin Ring

Problem—To construct a raffia napkin ring.

Material—Raffia. A piece of tag-board 1-1/2 or 2 inches wide and 6 inches long. Quarter-inch ribbon or strip of paper, or raffia of a contrasting color.

There is mentioned a raffia napkin ring in comparison with the one of reed.

Take the strip of tag-board, fasten the ends together and wrap with raffia until the board is covered.

It may be ornamented with a narrow strip of ribbon, paper or colored raffia woven around the center. If ribbon or raffia is used tie the ends in a bow. If paper is used the ends must be glued.

13 Indian Basket

Problem—To teach construction with twisted raffia rope. (See page 91.)

Material—Two contrasting colors of raffia.

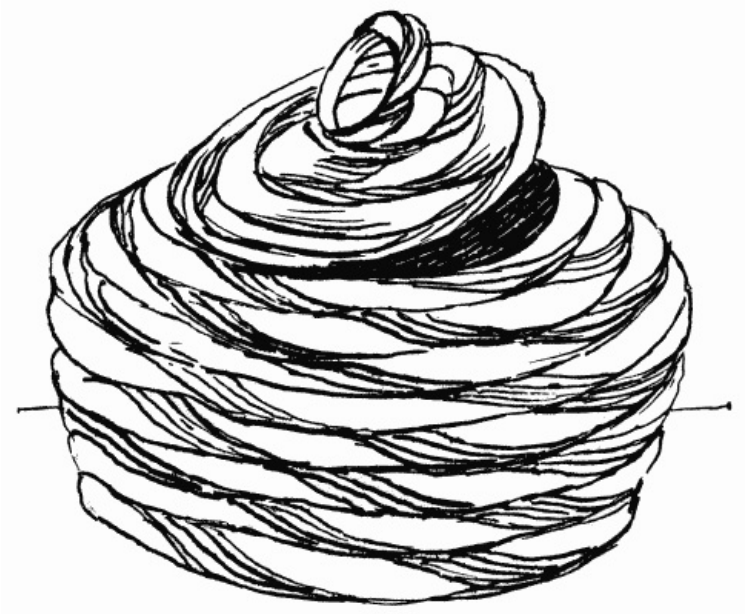
First think of what shape and size you would like a basket; then roughly sketch a design, in order that an idea of shape, size, and proportion may be had. Keep the design before you and work as closely from it as possible.

Take three thick strands of raffia and twist them into a rope. In starting have the threads unequal in length, as it is much neater to add one new thread at a time than two or three. Keep the rope of the same thickness throughout, and as each thread is used up, insert another overlapping the old one two or three inches. Around this rope, and twisted in the same way, wrap a contrasting color of raffia, aiming to have the spaces equal and using threads of the same size. Having twisted and wound four or five inches start the basket by forming a button, then, holding the button firmly with the left hand, coil the rope round and round and sew it. Use the sharp-pointed needle and join the coils in such a way that the threads will coincide with the twist. [Pg 90]

When the basket is finished, the opening at the top should be either greater or less in diameter than the base. Make a lid exactly as the base is made, and have it just a shade wider than the opening so that it will be supported. The ring with which to lift the lid is made by wrapping raffia three or four times over the finger, and then buttonholing it over. Sew the ring to the middle of the lid and attach the lid to the basket.

INDIAN BASKETS

The model here given is made of white raffia twisted with red. Diameter of base, 4 inches; height, 2-1/2 inches; opening at top, 3-1/2 inches; diameter of lid, 3-3/4 inches. [Pg 91]



INDIAN BASKET—(For description see pages 89 and 90.)

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14 Grass Basket or Tray

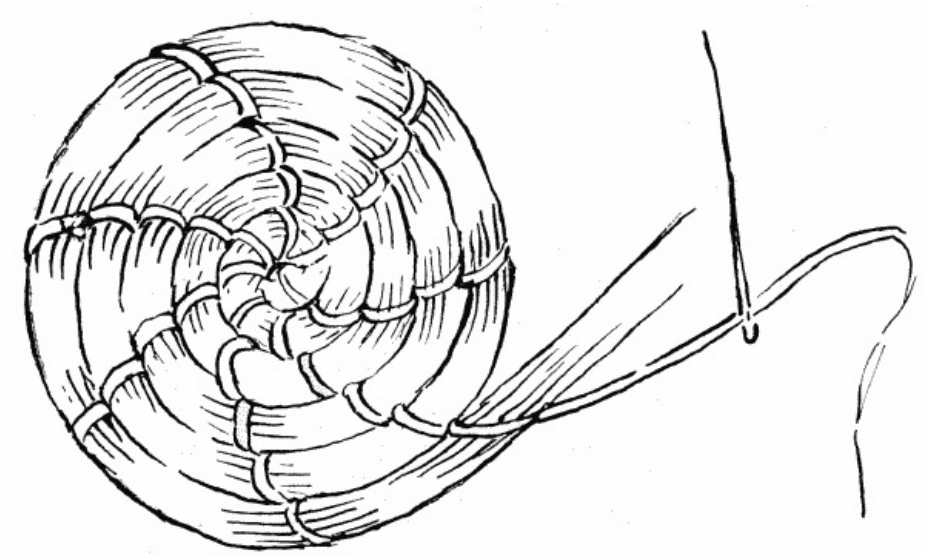
Problem—To teach how to construct a basket of grass, pine needles, or corn husks.

Material—Narrow-blade marsh or sweet grass. Raffia for sewing.

Make a design in pencil, ink, or colored crayon.

Here the adaptability of material gathered about the home is illustrated. The tall, fine marsh grasses may be collected, spread out for three or four days where they will dry, and then utilized. You will find that almost every blade of this grass varies in color. The root end may be brown, while toward the tip the leaf shades into a light green, or white, or vice versa; this blending, when the grass is bunched, is most artistic.

Bunch a sufficient number of blades to make a coil a half or three-quarters of an inch in diameter. Do not twist. Never allow the coil to lessen in size. Keep adding fresh strands by slipping the root ends of the new blades up between those already in the coil. When we begin to sew we do not [Pg 92] wrap the grasses as we wrapped the strands of raffia, but simply use as a sewing thread raffia of a contrasting or blending color. To form the button, wrap the threads three or four times around the root ends of the bunch, fasten tightly, then coil to form the center. Take the needle through the center and over the coil as many times as you think necessary to make the button firm. These stitches are the beginning of the spiral rays which radiate to the edge of the basket. Take the stitches at equal distances from each other. Handle the needle so as to pass from back to front, and always have the new stitch pass through the stitch of the coil just below it from right to left. When the coil has been wound around four or five times, the stitches will be seen to interlock and form a spiral. Soon the spaces will become too wide; then take an extra stitch in the center of each space, thus adding another set of rays. Continue adding new sets of rays as the spaces widen, until the basket is finished.



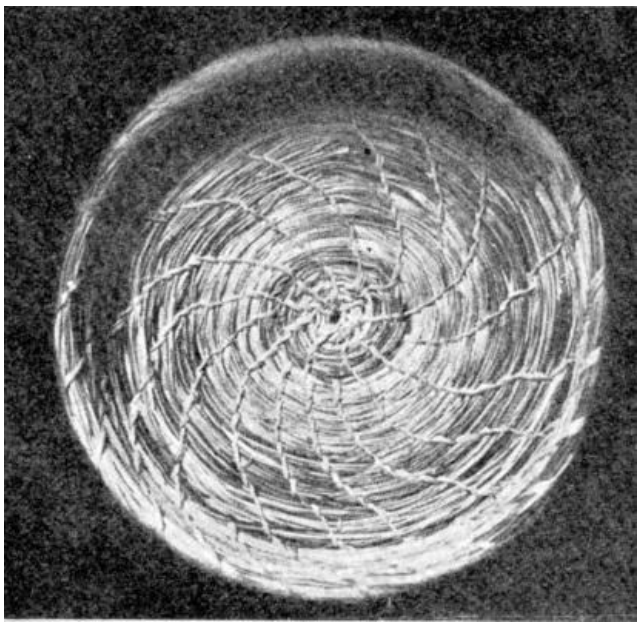
BEGINNING OF BASKET TRAY

When the base has grown to the required size, turn up for sides and continue sewing in the same way until the necessary depth is obtained. To give a finish add enough grass to make a thick coil around the edge.

Colored hemp may be woven in with the grass either as a lining or so inserted as to make a beautiful pattern. The value of the basket will be enhanced by the use of sweetgrass, if this material is obtainable. [Pg 93]

The model given is made of marsh grass, sewed with raffia of natural color, and the design is made in pink hemp. Its base is five inches in diameter; its depth one and one-fourth inches.

Corn husks may be used instead of grasses, and are unexcelled for beauty and artistic effect. Use the inner husk from the ear when green; though the husks will dry, the varied color will not be lost. When made up with a contrasting color of green or golden brown raffia they are most attractive. Grasses may be kept a long time; but before using them soak them thoroughly, and let them dry out. This treatment will make them so pliable that they may be handled as easily as though freshly gathered. The long needles of the southern pine also are thus worked up.



BASKET TRAY

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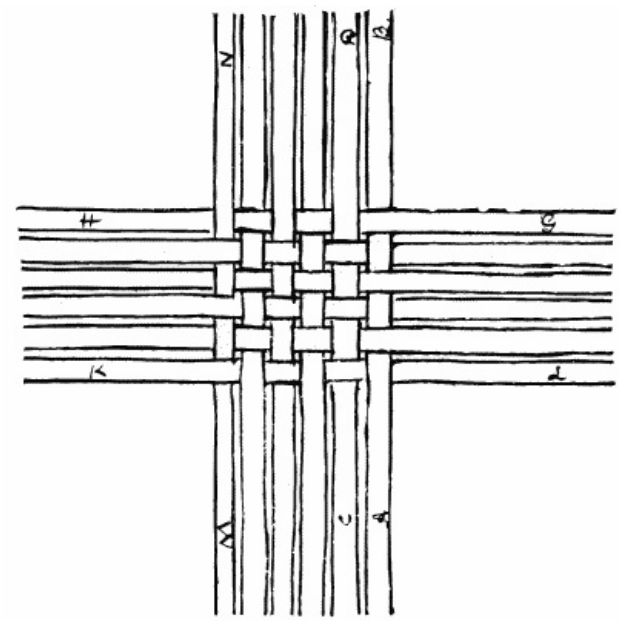
15 Basket of Splints and Raffia

Problem—To teach construction, using splints and raffia.

Material—Splints of ash or flat reed: eighteen splints, each 1/4×12 inches; 3 splints, each 1/4×18 inches, for binding of edge. Raffia of two or three colors. [Pg 94]

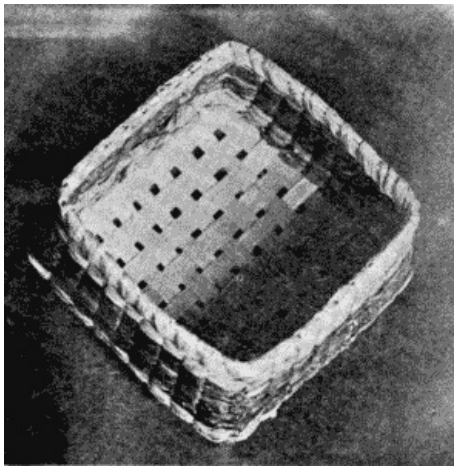
Dimensions—Base, 4×4 inches. Depth, 2 inches. Sides, 2×4 inches.

Lay a set of nine splints flat on a surface. Take one of the remaining nine and weave across for the first row. Add a second splint, weaving in and out through alternate ones. Continue until all the nine splits are woven in and the square base of the basket is formed. Have splints sufficiently damp to be flexible; otherwise they may break. Bend up the splints at right angles to the base for sides, thus making corners. Now with the raffia weave in and out, interlace the thread at the corners, and draw it tight enough to hold the splints in place. Introduce color to suit taste.



BOTTOM OF SPLINT AND RAFFIA BASKET

When the sides are finished, take an eighteen-inch splint and lay it around on the inside of the basket close to the last row of raffia. Hold it in place and turn the ends of the basket splints over it inward. These end splints must be trimmed evenly and left just long enough to bend over the splint running round on the inner side. Take two more eighteen-inch splints; having placed one inside the edge and the other outside the edge of the basket, with a needle and a long thread of raffia whip over and over. Bring the needle through each opening between the splints until you have gone around the four sides. This makes a suitable border and completes the basket. [Pg 95]



BASKET OF SPLINTS AND RAFFIA

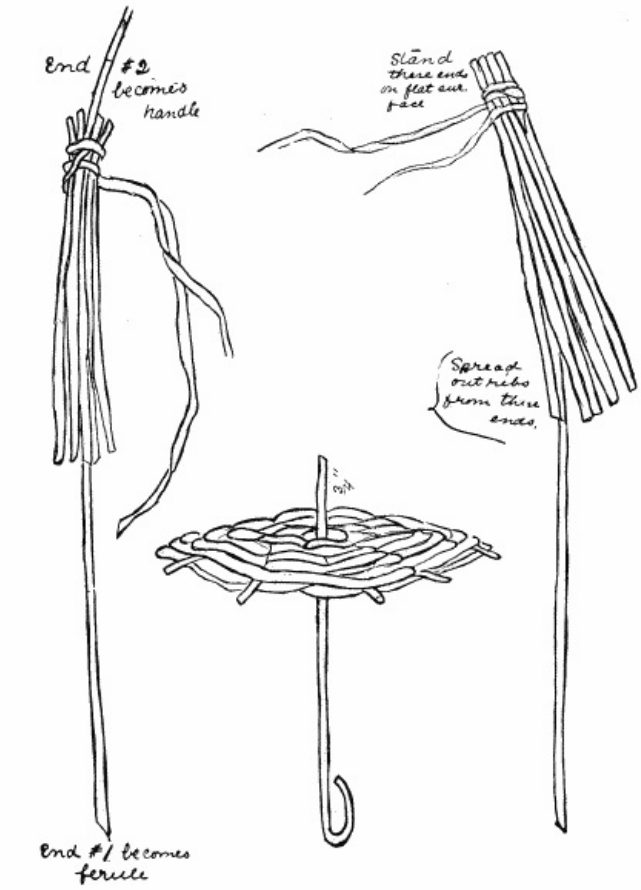
The model given here has ten rows of natural color, ten rows of green, six rows of brown, ten of green and ten of natural color, which combination makes it two inches deep.

COMBINED REED AND RAFFIA

Problem—To teach how reed and raffia may be combined in construction.

The models suggested here are very simple and can be made by the younger children of the lower grades. These have been held to purposely, for the child needs first to learn how both to use his fingers and to handle a needle; and afterward he must have much practice before he can take up the more difficult stitch in the Indian basketry.

In beginning the combined reed and raffia work, the first thing I should make is a miniature umbrella. [Pg 96]



UMBRELLA
(For description see opposite page.)

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16 Umbrella

[Pg 97]

Material—One 9-inch spoke of No. 4 reed for handle. Nine 4-inch spokes of No. 1 reed for ribs. Raffia for weaver.

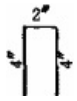
Have the spokes thoroughly soaked and keep them wet. Also, have the raffia damp. Place the four-inch spokes around the nine-inch spoke, hold them firmly, and wrap tightly with the damp weaver four or five times; then tie, but do not cut the weaver. Now stand this bunch of spokes on end on a board or desk top, press the nine spokes out so as to form a circle parallel with the surface of the desk, and with the weaver work in and out among the spokes. The convex top of the umbrella will soon form. To lengthen the weaver, tie on a new piece of raffia. Continue weaving until within an inch of the ends of the ribs, or until the umbrella is four or four and one-half inches across; then fasten by tying the weaver to one of the ribs.

To form a ferrule, slide end No. 1 of the handle reed down until it stands three-quarters of an inch above the outside of the umbrella. Drop a little glue into the cavity to hold the reed in place. Now take end No. 2 of the handle reed and curve it to form a ring or to appear like the handle of a real umbrella. Tie it with raffia to keep it in place and lay the umbrella aside to dry. When it is thoroughly dry, clip the points of the ribs to equal lengths.

This little toy suggests the invention of primitive life or of an uncivilized nation of which the pupil has some previous knowledge. It is most attractive, and to have made it greatly pleases the child.

17 Miniature Chair No. I

Material—No. 4 reed: one piece 15 inches long; one piece 6 inches long; four pieces 10 inches long. Several lengths of raffia.

Take three ten-inch lengths of reed and bend them so: 

Fasten them together at the joints and wrap with the raffia for about two inches to form the front legs. Next attach the fifteen-inch length of reed, placing the ends together to form the back legs and allowing the extra amount to extend above in a bow to form the back.

You now have the framework of back, seat, and legs. At the back, where the bow extends above the line of the seat, place a five-inch piece of very wet reed to the front of the bow and at the edge of the seat; carry it around and lap it at the back and fasten to hold the back legs together and shape the seat. [Pg 98]

CHAIR No. I
Made of reed and raffia.

This chair has a woven seat of raffia. Use a very long needle and carry the raffia from one side of the seat to the other in close lines until the space is covered one way. Then reverse the action and work from front to back, weaving in and out among the cross threads exactly as you do in darning. Be careful to keep the thread even, to prevent sagging. When the seat is woven whip the edge all around with raffia for a finish. [Pg 99]

Next take the remaining ten-inch piece of reed, bend it to a four-inch square and insert it between the legs one inch below the seat. Tie it to each leg and wrap the intervening space with the raffia as you go from leg to leg. This forms the brace which holds the legs in position.

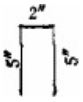
For the back take a very long thread of raffia in your needle, make seven cross threads and weave a spider's web, having the center fill about one-fourth the space. When the web is finished, buttonhole around the reed to fasten the spirals in position and to give a finish to the frame of the back.

Lastly measure and trim off the legs to equal length. The back should extend two and one-half inches above the seat, and the legs should be two and one-fourth inches long.

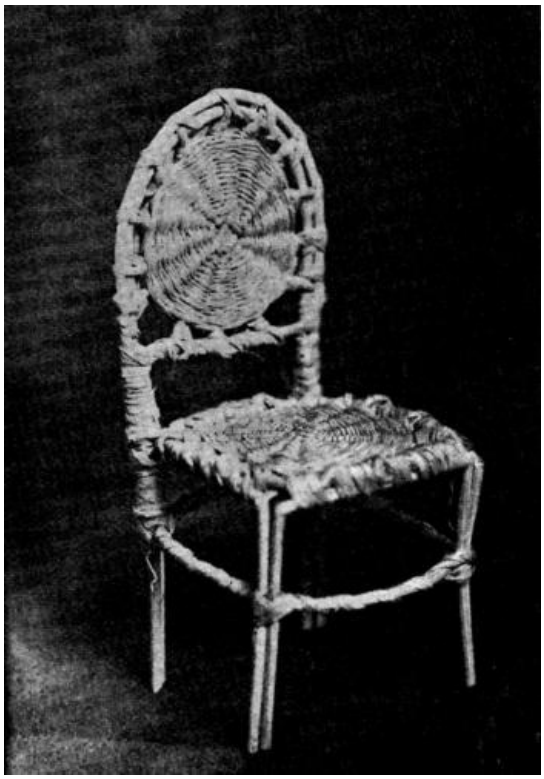
18 Miniature Chair No. II

> *Material*—No. 1 reed: six spokes, 10 inches long; one spoke, 6 inches long. No. 4 reed: two 15-inch lengths; six 10-inch lengths and one 12-inch length. Several lengths of raffia.

Weave two mats two inches in diameter in the following manner: Lay three ten-inch spokes across three ten-inch spokes at right angles. Place beside the under set the six-inch spoke. Take a piece of raffia, not too thick, for a weaver, and beginning as you would begin a basket or mat with a reed weaver, weave until the mat is two inches in diameter. Do not cut either spokes or weaver. Have the reed well soaked, that it may be very pliable and in no danger of breaking.

To construct the back, take a mat and a fifteen-inch length of reed, bend the latter to a bow and place it back of the spokes at the edge of the last row of weaving. Bend each spoke consecutively over this reed and bring the end of the spoke through between the last row of weaving and the reed. This forms a loop over the No. 4 reed. Thread the weaver into a needle, and take it in and out where the No. 1 reed, or spoke, crosses between the mat edge and the No. 4 reed in the form of a back stitch. The first one fastened, continue in the same way until ten spokes are bent over [Pg 100] and tied down. Next take the twelve-inch length of No. 4 reed, bend it to this shape: 

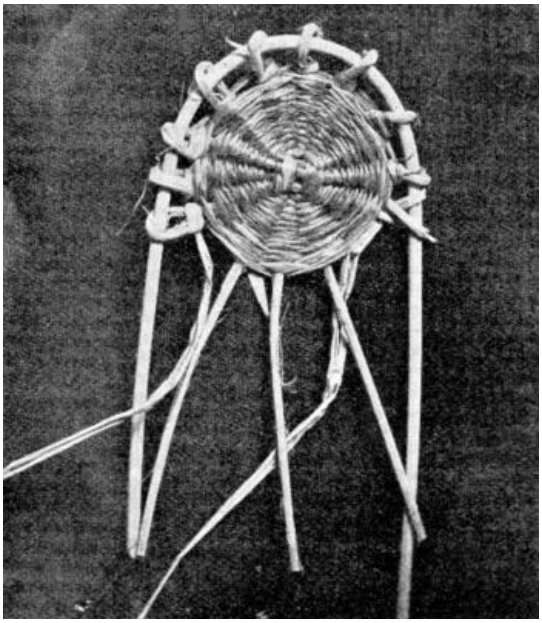
then fasten the three remaining spokes to the two-inch space as you have done with the other ten. Take the second fifteen-inch length of No. 4 reed, bend around again and fasten by running a piece of raffia in and out and over through each space between the loops. Lay it aside until the seat is prepared.



CHAIR No. II
Made of reed and raffia.

Seat. The mat is ready. Bend a ten-inch length of No. 4 reed into a 2-1/4-inch square. Set this around the mat, bend the spokes over it and fasten as you did those of the back. Again take three [Pg 101] ten-inch lengths of No. 4 reed and bend so: 

Place these around three sides of the prepared seat and fasten them by wrapping them over and over with raffia, and the front and two sides of the chair are formed. Adjust the back to the fourth side of the seat; fasten it by wrapping it closely with raffia. Next bend to a form near the size of the seat a piece of No. 4 reed. Place this around the legs, to form a brace, about one inch below the seat in front and about three-fourths of an inch below in the back. Let the joining point of the reed come at the back. With a piece of raffia fasten this to one leg, then wrap the raffia over and over along the brace until the next leg is reached, secure it and pass on to the third, then to the fourth, when the entire brace will be wrapped with raffia and the four legs held in place.



BACK OF CHAIR No. II

Where the back is attached to the seat, you will have four No. 4 reeds coming together to form the back legs. This would make them too thick and clumsy and they would not be symmetrical with the front ones. To prevent this, clip two of the reeds between the seat and the brace on the legs. Cut out the ends of the one of the back first worked in, and the ends of the one forming the back brace. There is left the outer fifteen-inch spoke you put on and the one which came around from the side of the seat. These two form the back leg on each side. Wrap closely with raffia the intervening spaces between the seat and the brace so as to leave no unsightly ends. [Pg 102]

In bending the reed to fashion the legs it is impossible to have it all the same length; adjust this by letting the unevenness come out at the foot of the leg and when the chair is finished measure and cut off the legs to the same length.

Rules for Caning Chairs

First: Verticals.

Setting up: Begin at the center hole of the front, pass the cane up through the hole from the underside and down through the corresponding hole at the back, leaving about four inches to tie off; then up through the next hole to the right, pass to the corresponding hole to the front, continue to the right and then to the left, until all the holes are filled except the corner ones.

Second: Horizontals.

Begin at the center hole at the left, pass the cane up through the hole and over all the verticals and down through the corresponding hole on the right, filling all the holes toward the front and then toward the back until all the holes are filled except the corner ones.

Third: Verticals.

Begin at the center hole at the back, pass the cane up through the hole at the front, then fill all the holes to the right and the left, except the corner ones.

Fourth: Weaving Horizontally.

Begin at the right-hand side, pass the cane over the upper vertical and under the lower vertical, pulling the upper one to the right and keeping the weaver to the back of the first horizontal: continue this until you have two horizontals in each hole.

Fifth: Diagonals Running from Left to Right.

Pass the cane up through the front left-hand corner, under the verticals and over the horizontals, working toward the upper right-hand corner; first the right, and then the left-hand side of the frame is filled in this manner. [Pg 103]

Sixth: Diagonals Running from Right to Left.

Pass the cane up through the front right-hand corner and work toward the back left-hand corner, passing the cane over the vertical and under the horizontal pairs; continue in this way until the entire frame is filled with these diagonals.

Tie all the ends securely on the under side of the frame.

Bind Off.

Lay a piece of cane over the holes on the upper side of the frame. Take a second long piece of cane as a weaver, pass it from the under side of the frame up through a hole, over the cane, and down through the same hole to the under side again. Carry it along to the next or second next hole, pass up, over cane, and down in the same way. Continue this until the entire frame is bound around.

PART V

THE SCHOOL GARDEN

[Pg 107]

THE SCHOOL GARDEN

Introductory Remarks

In the spring of 1906, at the request of President R. W. Silvester of the Maryland Agricultural College, I wrote, for publication as a *College Bulletin*, my experience of one year's work in a city school garden. The introduction of school gardens as a factor in the school curriculums was then in its infancy. Three years have shown great advancement along this line, though the main issue is the same to-day as it was then. This paper is a revised edition of the *M. A. C. Bulletin*. That President Silvester was a pioneer in the thought that "agriculture should enter into education" is shown by the following quotation from his introduction to my article of 1906:—

> "The time must come when the child of rural environment must find in the only school which ninety per cent will ever attend, a training which will give it an intelligent adjustment to its environment. With this adjustment, the future work of the child cannot reasonably expect to escape the state of drudgery. When a life's work degenerates into this condition, then contentment with it, or happiness as a result of it, becomes an idle dream. Can the accuracy of this statement be questioned? If so, it would be a great privilege for the writer to receive from some teacher a letter setting forth the particulars in which he is wrong.
>
> "Let all who are interested in the child from the country, and every one should be, take this as a motto in this great work before us: 'The country is entitled from its state and from its county, to that consideration which will give him every opportunity to secure an education as well suited to his conditions, as is enjoyed by his city brothers and sisters.'"

[Pg 108]

A CITY SCHOOL GARDEN

If a country boy were to hear his little city brother say, "Our class has a garden and I have a share in the working of it," the country chap would "non plus" him by quickly exclaiming, "What's that! I work in my father's garden every year and know all about raising and gathering vegetables."

But to the city child, who sees only cobblestones beneath his feet, whose view is contracted by rows of dingy houses, or who plays on a lot used both as a dump-pile and as a baseball ground, the privilege of working in a garden plat is a great one and the products of its soil a revelation.

WEEDING THE BEDS

The aim here is to give an account of one season's work in such a garden—a garden treasured by children whose only knowledge of vegetable foods was that mother got them in the market.

Through the courtesy of the City Park Superintendent of Baltimore, sections of ground in some of the parks are placed at the disposal of the Board of Education for school gardens, and the privilege of cultivating these gardens is granted to teachers in an adjacent building. [Pg 109]

It is of the section in Riverside Park that I am writing, and the accompanying illustrations are pictures of this garden, taken at various times through the season.

These sections are not in prominent places, but for the most part in undesirable corners that the park gardener is willing to relinquish for the good of the cause. In Riverside Park the plat is adjacent to the summer playground, and the second year that I had the garden, at the end of June when school closed, a few of the children volunteered to attend to it during vacation.

GIRL INTEREST

The interest of these children attracted the attention of the director of the playground and she offered to oversee the work while the playground was in session if some of her children might have the privilege of working in the garden.

This proved to be an amicable arrangement, as by it the garden was kept in good condition all summer. When school opened in September I took charge again, that the children might have the full experience. In my memory lingers a most vivid picture of a cold November afternoon when

we gathered what remained of the crops, cleaned off the beds, heaped the refuse in the center of the garden, and had a most glorious bonfire, though it was not election day. We watched the last spark die out, closed the gate, and with regretful steps wended our way back to the schoolroom, to await the coming of another spring. [Pg 110]

Our plat measures fifty by twenty-five feet and is enclosed by a fence. The park gardener became interested in the children's effort and added to the success of the work by giving the necessary top soil, lending wheelbarrows, and offering occasional suggestions.

MAY I COME IN?

As a preparation for the outside work we made a thorough study of soil composition and seed germination early in the winter. The children brought pieces of rock, pebbles, shells, wood, and leaves as concrete illustrations and with these before us the following lessons were developed:—

I. That soil is made from the wasting away of all kinds of rock.

II. That soil is made by decaying wood.

III. That soil is made by decaying leaves.

IV. That the above composites combine to form productive soil.

The object of the first lesson was to teach that soil is made from rock.

The pupils examined stones, pebbles, and shells. They found some rough, some smooth. Through the teacher's questions—"Why are some rough?" "Why are some smooth?" "If those having a smooth surface now were once rough, what has become of the particles which must have broken away?"—the class was led to express opinions until the final generalization was made: Soil may be formed from the breaking up of rocks and shells. [Pg 111]

Each topic was treated in a similar manner, the specific qualities of the specimen being brought out, until we were able to make the summary:—

"Soil is made from decayed rocks and shells; soil is made from decayed leaves; the rocks make a coarse soil called sand; the wood and leaves make finer soil called loam; the mixture of these soils makes productive soil."

WHOSE BED LOOKS THE BEST?

This summary led to the next lesson, "The Productive Qualities of Soil." The question was asked, "How can we determine the productive quality of soil?"

"We can plant some seeds in each kind of soil," said a child. Several pupils volunteered to bring pots of earth.

Ready for the experiment, we proceeded to analyze as follows the soil brought by the children:— [Pg 112]

"Take some of the soil in your hands, powder it as finely as possible.—John, what do you find in yours?"

"I can feel grains of sand," said John.

"Do you think there is more sand or more loam?"

"I think there is more loam," said another child.

"Why do you think there is more loam?"

"Because, when I rub it between my fingers there seems to be more soft material than grains," came the answer.

"Can any one suggest a means of proving that there is some of each kind of soil in what we have here?"

Various suggestions were made, but none directly to the point.

LAST DAY OF SCHOOL

"Mary, fill that glass jar three parts full of water. We will now drop into the water some of this soil and mix it well. What do you think will happen when we stop stirring?"

"The sand will settle at the bottom of the jar," was the ready reply from a bright child.

"The coarse loam will settle next," was a second answer; and then came the statement that the finest loam would remain on top.

We waited a few days and were rewarded by seeing the soil in distinct layers in the jar. [Pg 113]

"Now we will try to discover which kind will produce the best plant. How shall we determine this?"

"Plant some seeds," was the immediate suggestion.

One pot was filled with the original soil, and one each with the kinds of soil that we had gotten from our experiment. A seed bean was placed in each pot, and all pots subjected to the same conditions and watched by anxious eyes.

STUDYING NATURE

"I see a bean pushing up," came the statement one morning and every child wished for a peep at the tiny plant.

"In which soil did the plant appear?"

Another look was taken and answer given that the plant came from the mixed soil.

The second plant to appear came from the bed of coarse loam; the one in the pot of fine loam came third; and last the one in the sand struggled to a small shoot, then died of starvation. [Pg 114]

After this the life of one plant was studied. Thus slowly and cautiously the study of seed germination was made, the teacher getting all from the child possible, and aiming to have him cull his information from the plant before his eyes.

Now that we were familiar with the facts concerning soil composition and seed germination, we felt prepared to take up the outside work.

Between the first and the fifteenth of April our first visit to the garden was made. The ground was so saturated with water that it was impossible to think of working it in that condition. After taking a view of the surroundings we discovered that the plat was on low ground and that the water from the rising slopes at the back ran down and settled upon it.

The question which naturally arose was, "How may this water be gotten rid of?" A short talk on drainage solved this problem. The children decided that ditches, ten feet apart, should be dug crosswise in the garden. They were dug, and, as the weather was favorable, in a week's time the soil was in condition to be worked.

Meanwhile interest did not flag, though it was impossible to accomplish any outside work. Writing letters to an imaginary hardware dealer, stating what tools we needed and inquiring the price, became an all-absorbing exercise. Next, we turned dealers ourselves and rendered itemized bills and receipts to purchasers of garden materials. In this way two forms of letter-writing were taught and the children derived both pleasure and profit from the work.

In the construction period were made the labels they would need when the planting-time came. These were cut from small pieces of wood with penknives and marked ready for use.

A plan by which to landscape this same plat had been drawn the year before by the supervisor of our city school gardens. This plan suggested a talk on landscape gardening and intense interest was at once aroused. The talk developed such questions as these:—

"Is the plan before us a good one?"

"Can we improve on it?"

"Is there any waste space which we should utilize?" [Pg 115]

"Is the plan artistic in its arrangement?"

"Suppose we work out some plans to see what is possible."

A lesson such as this followed:—

A rectangle was drawn on the board to represent the plat. Beside it was a statement of the number of beds to be laid off and the width of the paths between. In the arrangement of these beds and paths there must be artistic effect.

A FLOWER FROM THE COUNTRY

Each child then drew a rectangle on paper and made an original plan for landscaping. Those showing most thought were placed before the class and their good points commended. The children decided that not one met every requirement. The supervisor's plan was again shown, discussed, and adopted.

This plan called for twenty rectangular beds 3×11 feet in area, four shorter rectangular beds with a triangular section marked off from the end of each toward the center of the garden; and a circular bed, four feet in diameter, in the middle of the plat. It also allowed for one three-foot path running through the center the entire length of the garden, and a one-foot path separating the beds. There was to be a 1-1/2-foot path around the middle circle. [Pg 116]

In a further study of this plan the following arithmetic problems were developed:—

"What is the area of a garden plat fifty feet long and twenty-five feet wide?"

"What would be the cost of this plat at one dollar and twenty-five cents a square foot?"

"How many feet of fence will be required to enclose this plat?"

"If the posts are set five feet apart, how many posts will be required?"

"There are two rows of cross beams, and each beam is ten feet long; how many will be needed for the fence?"

"How much will it cost to fence this garden at twelve cents a foot?"

"What is the area of a garden bed three feet by eleven feet? the perimeter?"

"What is the circumference of a circular flower bed four feet in diameter?"

By this time the ground was in condition to be worked. Which should we do first, spade it up, or lay it off? We decided that we would first dig up the entire plat and level it. Now, in spacing off, should we begin at the center or from opposite ends? The advantages of each method were strongly advocated, and finally, the children themselves concluded that it would be easier to measure for the center and space off from that point.

Stakes and cord had been brought. Children stood at the sides and ends of the garden. The middle points of the sides were determined and connected with a cord, and likewise the two ends. The intersection of the cords was the center of the plat and here a stake was driven. Attaching a cord to this stake two feet along the cord was measured and a small stick tied there. Using the cord as a radius, a circle was made and the middle bed staked off. Next the three-foot path to opposite ends was marked off, then the center one-foot path to opposite sides. This much accomplished, spacing the rest of the plat was easy. Two small boys, with lines and stakes, marked off the remaining portion and when the ends were reached the measurements were found to be accurate. The paths between the beds were next made and the ground prepared for planting. [Pg 117]

A SUGGESTION FOR RECESS HOUR

After spading, leveling, and thoroughly pulverizing the native soil, we added a top layer of foreign soil as a fertilizer. The latter came from a compost heap of street sweepings which had been standing two years and was supposed to be nutritious. As it turned out, however, this soil contained little nutriment and was productive of more fine weeds than fine vegetables, and it required much labor to fight these enemies. [Pg 118]

Now came the seed-planting, which was intensely interesting to the children. Rows twelve inches apart were marked off across the beds and the seeds planted according to the relative height of the plants which they would produce, those that would grow tallest being placed next to the fence, and the rest graduating to the center; thus:—

Fence
Corn
Pole Beans
Peas
String Beans
Lettuce
Radishes
Lettuce
Parsley
Flowers

First came corn, three grains to a hill, the hills twelve inches apart. Then pole beans, three beans to a hill and these hills separated twelve inches. Next we planted two peas in a hill and made the hills six inches apart. The string beans were planted just as the peas had been. Then came a row of lettuce, next radishes, a second row of lettuce, and last parsley. The end of the bed was left for flowers. On Arbor Day, in the classroom, we had sown tomato and lettuce seeds in boxes, that we might have the plants ready for transplanting when our outside soil was in condition. The lettuce plants turned out satisfactorily, but, for some unaccountable reason, the tomatoes were a failure. To replace the latter, we took a corner bed in the garden, divided it into three sections and planted tomato, onion, and cabbage seeds. In five weeks the tomato and cabbage plants were large enough to transplant, and, as the radishes and lettuce matured and were used, tomato and cabbage plants were put in the vacant places.

Two pumpkin seeds were planted in each bed, but if they both came up, after the plants had reached a good size, the weaker one of the two was weeded out (as the bed was too small to support both) and the stronger one left to bear fruit.

Why had we planted onion seed? One of the boys had brought an onion and asked if he might plant it in his bed, and if it would produce other onions. I explained to him and then allowed him to plant the seeds in the supply bed at the same time that he planted the onion in his own bed. The onion planted produced seed, while the seeds sown yielded the small sets for the next year's planting. Thus by the act of one child the fact was clearly demonstrated to the class that fruit [Pg 119]

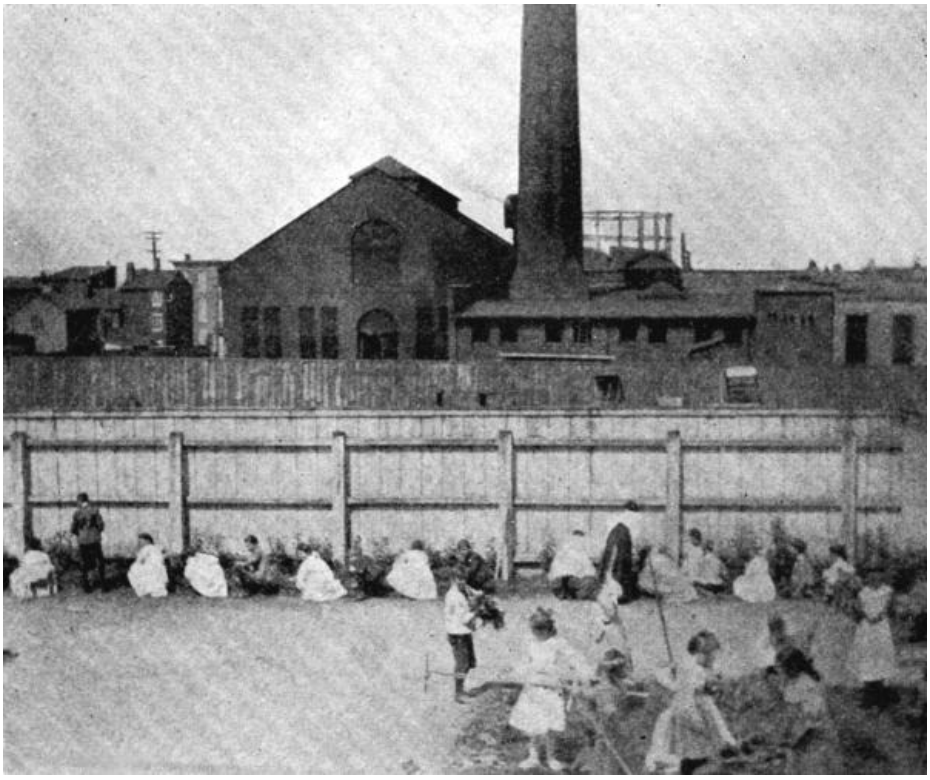
produces seed, and seed produces fruit.

The supervisor had given us a wren-box, made by a child in a more advanced class as manual work. The children were delighted with the gift; they built a framework around a stout pole in the center bed and set the wren-box on the pole. They then suggested that a vine should cover this framework. Consequently, Japanese morning glories were chosen as the vine and the remaining space in the bed was filled with marigolds, nasturtiums and coleus.

A GARDEN IN THE YARD OF A CITY SCHOOL

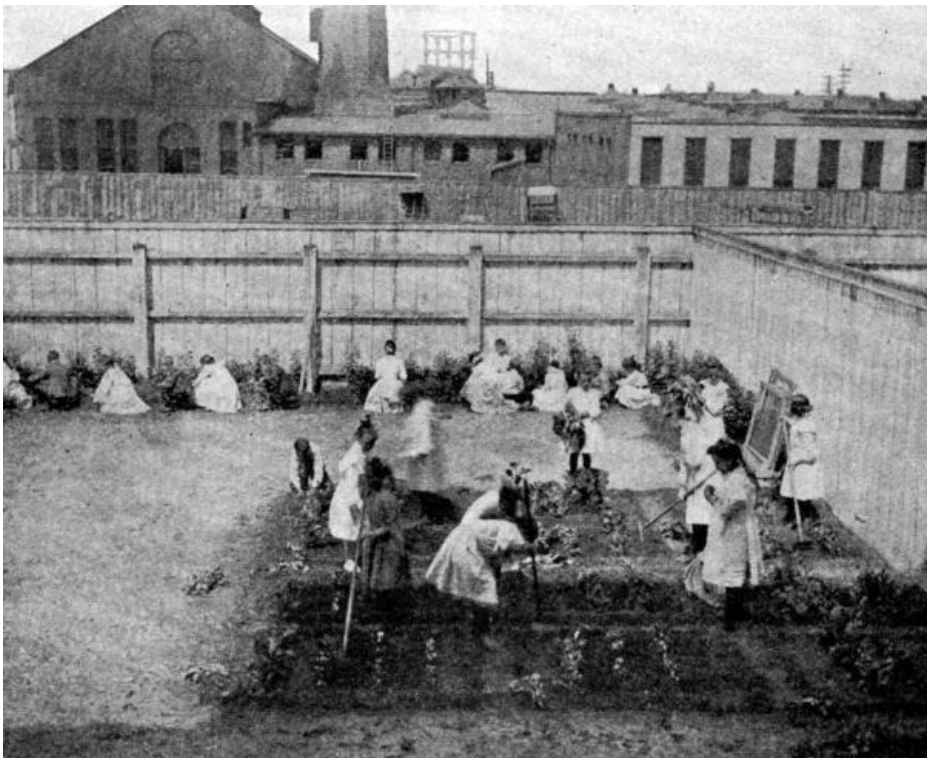
The seeds being planted, the work in the garden was at a standstill until the plants appeared, then systematic visits began. The class was divided into three groups and two children were assigned to a plat. We worked in the garden on Mondays, Wednesdays, and Fridays for half an hour each day. Thus, each group had its day once a week regularly. Finding that it was impossible to direct satisfactorily more than twelve children at a time, I devised the above plan, which worked admirably. To go to and come from the garden took a half-hour, and with half an hour's work there the child was away from the classroom one hour a week. This allowed ample time to keep the beds in order, for two children were apportioned to a bed, and these two went on separate days, so that each plat was worked twice a week.

[Pg 120]



GARDEN BEDS AROUND THREE SIDES OF THE PLAYGROUND

The first crop of peas and of beans were gathered as vegetables. When the plants ceased to bear a second planting was made and the yield from this was left to mature as seedlings. When ripe, the seeds were gathered and carefully put away in the sectional seed-boxes which the children had constructed for the purpose. [Pg 121]



ANOTHER SECTION OF THE SAME GARDEN

The children took care of the garden during vacation, gathered the vegetables as they ripened, and with pardonable pride carried them home to their parents. The parents, in turn, were gratified and as much interested as the children. Several of the boys had individual appliances made by their fathers for use in the garden. Often on Monday mornings would come the account of the Sunday walk with mother and father, the visit to the garden and how much the parents admired it. [Pg 122]

One instance occurred which proved the value of this garden work and showed how devoid of a knowledge of vegetable growth many city children are. I noticed a boy digging around the root of his tomato vine as though he were searching for something. I asked what he was doing.

"I want to see if there are any small tomatoes there," he replied. As the fruit of the radish had come from under the ground he expected to find the tomato there, too.

The value of educating the child through his self-activity was proved in several instances, one of which I will mention. A large boy of the fourth grade, though a poor student, was placed on the list of garden children and proved to be the most industrious and active child of the group. Why? His father was a baker; the boy worked in the bakery until eleven every night; slept until four, then arose and delivered goods until eight, and was in the classroom at nine. Is there any wonder that this child lacked energy as a student? When he was removed from the confinement of the classroom the pure outside air acted as a tonic, his interest was awakened and his work well done.

This same child, whenever relieved of home duties out of school hours, spent the time in the garden instead of devoting it to play. He hauled a quantity of shells with which to pave the paths, and brought all the sod we needed to form a firm edge around the center bed. Can there be any doubt that this boy was benefited?

There is a social side to this industrial outside work which is superior to that of the classroom.

First: The teacher has but a small number of children under her care at one time; consequently, she is enabled to learn more of each individual nature.

Secondly: The child is under no apparent restraint, so expresses himself freely and shows his natural self.

Thirdly: The boys and girls mingle with one another with the same freedom that they have on their own playground.

In the two months spent in the garden not a single child took undue advantage of the privileges allowed, and the opportunity afforded the teacher for the study of child-nature was of great value.

Some one might ask, "While garden work is being done, does not the work of the classroom suffer?" No, it does not. When classes are taught in sections, this outside work may be fitted in as a sectional part and the routine be kept intact. [Pg 123]

In summarizing, the lessons developed from garden work were these: Science (soil physics and seed germination); geography; arithmetic; spelling; English; drawing, and construction. The greatest benefit to the teacher was the chance to study the child under natural conditions. The greatest benefit to the child was his awakening to a knowledge of things by personal contact. I sincerely believe that the after-life of each one of these children will be the richer for this experience of outdoor study.

GATHERING THE VEGETABLES

In some of the school yards the pavement near the fence has been removed, and the space divided into small beds for gardening. Many of these gardens make a fine showing and you will [Pg 124] find here three pictures of such a yard, illustrating what may be done within the limits of the playground of a city school. When you consider that between six and eight hundred children play in this yard at the same recess time every day, you can appreciate what it means to yield a portion of the limited space to vegetables and flowers; and, since these plants are never molested, how much the children are pleased to have their playground so decorated.

Nearly all the garden products may be correlated with the classroom work. The kindergarten children use peas in construction. The peas raised in the garden may be applied here. The first-grade children use lentils in construction. Why not as well use pumpkin seed and grains of corn—the product of the garden? Every class enjoys having a Jack-o'-lantern at Hallowe'en, so here again the pumpkin from the garden comes into play. In the construction of miniature wagons and wheelbarrows of paper, peas may be soaked and used as axles for the wheels. Both peas and beans may be soaked and given to the small children to string for chains, thus teaching number and spacing. Every layer of husk (beneath the outside one) from the ear of corn may be dried and made into a basket by the more advanced pupil.

If a city teacher, with opportunities so limited and numberless disadvantages, can accomplish even a little in this line for the children in her charge, how much more should the teacher of the rural school accomplish when she has space at her command, children in the environment of country life, and seemingly all things that tend to work together to produce good results!

So much interest is shown in this phase of industrial work all over the country that I doubt that there is anywhere a teacher who does not wish to add the study of it to the curriculum, unless she is already working along these lines. Feeling sure of the sympathy aroused in every teacher's heart, I have included among the illustrations of this article three scenes from rural school life. (See pages 113, 115, and 117.)

In connection with these pictures let me say a few more words to the rural teacher. You may think yourself much poorer than your city co-worker, but the fact is that you are the one of affluence, she is the struggler. You have all about you the materials that a city teacher can secure only at second hand. All the riches of nature are at your command—the birds that nest at your [Pg 125] door, the fishes that swim in the brook, the grasses that grow by the roadside, the trees of the forest, and the flowers that spring up everywhere; the ground space for your garden; the intelligent child of country environment who does not need to work the garden to learn how vegetables grow, but who does need to work it for the education, the aim and object of school gardens. If you are not interested in such work, try doing it once because you should. Next year there will be no should; love will lead you on.

I have the same feeling in my heart about the school garden that the poet who wrote "The Little Fir Trees" must have had about them. Each stanza winds up with

> And so,
> Little evergreens, grow!
> Grow, grow!
> Grow, little evergreens, grow!

I would say:

> And so,
> Grow, school gardens, grow!
> Grow, grow!
> Grow, school gardens, grow!

The three pictures, "Studying Nature," "A Flower from the Country" and "A Suggestion for Recess Hour," came to me from a country school. They speak so vividly for themselves that I feel that each one carries with it its own message and appeals so strongly in behalf of the deepest love of nature in even the youngest child as to point to the possibilities of what might be when this love is fed and made to grow with the physical nature of the child.

Transcriber's Notes

Corrected minor punctuation typos. Moved some of the illustrations to avoid breaking up paragraphs of text. Page references pertain to the original book but link to the correct image/topic in the HTML version.

Page 17: Changed Portiere to Portière for consistency.
(9 Miniature Portiere—Knotted)

Page 55: Changed sand-papered to sandpapered for consistency:
(and nothing is properly sand-papered until all roughness)

Page 56: Changed the page reference from 59 to 57:
(with the grain of the wood, and how to cut corners. (See page 59.))

Page 65: Changed exend to extend:
(To construct a box having lid and bottom exend beyond sides.)

Page 107: Original text might be missing "child" after country:
('The country is entitled from its state and from its county,)

Page 109: Changed attenion to attention:
(The interest of these children attracted the attenion of the)

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