WEAVING & OTHER
PLEASANT OCCUPATIONS

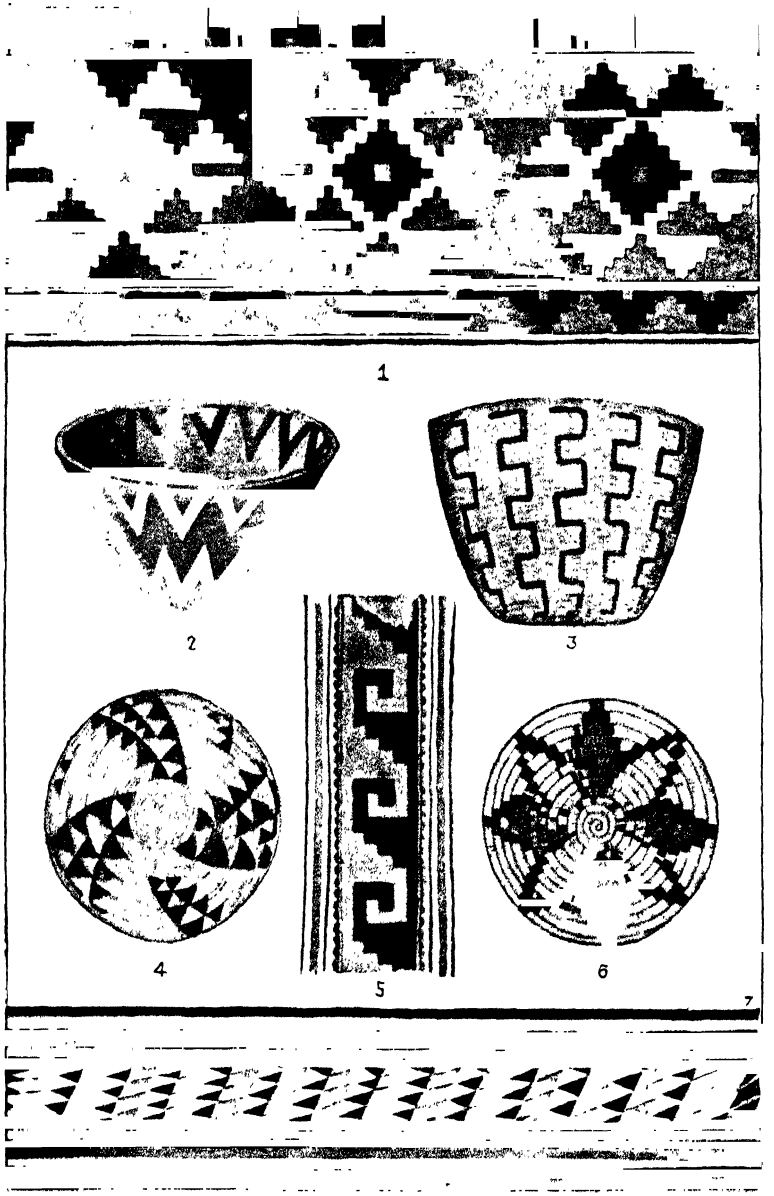
NOTE ON THE ENDPAPERS

SHAPING objects in the mass with the scissors teaches the little child to observe, renders vague impressions more definite, and gives him the delight of playing with colours, which is itself of value if beautiful shades of paper are used. Certain scenes lend themselves to illustration by silhouettes better than others. Chapter II gives a few suggestions, and the endpapers provide two examples. Those at the beginning of the book show a Swiss scene with mountain, hut, and fir-tree. It is good for children to be able to recognize trees by their shape as well as by their leaf. Mountains and fir-trees are easy for little ones to cut out, and beautiful results can be obtained by using pretty shades of grey and green, etc. The endpapers at the close of the book show a Dutch scene which requires more skill in cutting. A beautiful panorama of pictures illustrative of life in different regions can be built up in this way, and the pictures can be contrasted with one another. They will form fine friezes for the form room.

Besides geographical scenes, many other interesting things can be depicted by means of paper-cutting; for example, boats of different kinds—sailing-boats, steamers, etc.—shields, weapons, flags, houses of different kinds, and buildings—*e.g.*, pagoda, church, cottage, etc. Castles look very effective when cut out from paper, and certain historical pictures, such as the Bayeux Tapestry, can be copied with good results.

DETAILS OF FRONTISPIECE

1. Oriental rug for weaving on looms (Chapters VII and X), also for working on canvas (Chapter XXII).
2. Indian basket, California.
3. Indian basket, British Columbia.
4. Mat showing favourite Indian design of feathers.
5. Peruvian pattern for weaving on looms (Chapters VII and X); also for working on canvas (Chapter XXII).
6. Mat similar to those made by the Hopi Indians of Arizona.
7. Pattern of Navaho blanket for weaving and canvas-work.



EXAMPLES OF WEAVING AND BASKET-WORK

[*For details see p.* 2]

WEAVING & OTHER PLEASANT OCCUPATIONS

AS TRAINING FOR HAND AND EYE IN THE SCHOOLROOM

BY

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PREFACE

To do anything ; to dig a hole in the ground, to plant a cabbage, to hit a mark, to move a shuttle, to work a pattern—in a word, to attempt to produce any effect and to succeed, has something in it that gratifies the love of power and carries off the restless activity of the mind of man.

HAZLITT

IN writing this book we have had in mind not only children strong and vigorous in mind and body, but those whose hands are feeble and whose minds work slowly. They will both find work to do in this book. The happiest people are not those who look on. The pleasure of watching a football match or moving pictures is not to be compared with the pleasure of doing something oneself. So we have planned a book of easy occupations to encourage children to give up playing the part of spectators (a part which modern life, with its many inventions for pleasure, tends to force upon them) and become workers, if only in a humble way.

The older one gets the less ready one is to condemn any work as uneducational, because the brains of little children vary so, and what is good for one is bad for another. A teacher needs a catholic mind that will absorb the best of every method, so that she has enough material for all her varied little ones. Two truths stand out above all the rest—children want work to do,

For Satan finds some mischief still for idle hands to do,

and they must be allowed to succeed at something (this applies particularly to backward children), for, as Emerson says,

One thing is forever good,
That one thing is success.

R. K. P.
M. I. R. P.

CONTENTS

WEAVING & OTHER PLEASANT OCCUPATIONS

CHAPTER I

TISSUE-PAPER TOYS

It is his impulse to create
Should gladden thee.
M TODD

THERE is no more pleasant material for little children to work with than tissue-paper. They love crumpling it, and soon find it crumples into surprising shapes. The crumpling operation, moreover, produces a pleasing crinkled effect which improves the paper for the construction of Christmas crackers, doll's dresses, hats, sunshades, curtains for the doll's house, etc.

Paper Doll, Duck, Parrot, Rabbit, etc. A little tissue-paper *baby* is soon made. Let the children have a square of tissue-paper (side about 15 inches), crease it well all over, then fold it so that the four corners come together as in Fig. 1. A piece of newspaper can be crumpled and put in under the tissue-paper to form the head and body. Cotton or silk is tied round to make the head and waist, as in Fig. 2. A red tissue-paper hood and cloak hide the fact that the dolly has no arms. Dolls can be made either of raffia or wood in the same way. We have chosen the doll to begin with because although it is so simple it shows some of the

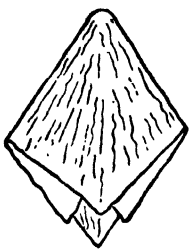


FIG. 1

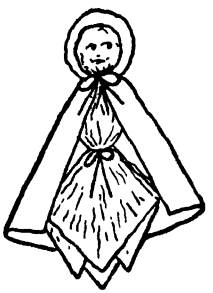


FIG. 2

principles on which tissue-paper or newspaper toys are made. Quite elaborate modelling can be done by clever little fingers. In making all these toys it should be remembered that the folded portion always forms the head, and the corners the lower part of the body—legs, tail, or whatsoever it may be. The tissue-paper must be well pulled out to form the head (especially in the case of a dog or rabbit) when the cotton has been tied round the neck, to prevent the head being too flat, and to shape it.

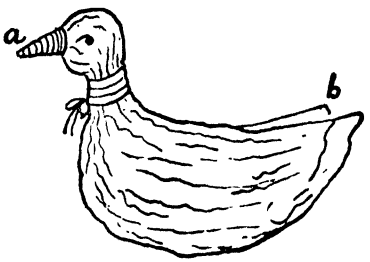


FIG. 3

In the *duck* (Fig. 3) yellow silk is wound round the tissue-paper where it is crushed together to form the beak (*a* in Fig. 3). A little seccotine must be put on the paper if the silk tends to slip off. Three of the corners must be turned in to make the body of the duck larger; the fourth corner makes the tail (*b* in Fig. 3). A swan can be made in the same way, but will require a longer piece of tissue-paper. White cotton is wound gently round its neck to keep it in shape.

With different coloured tissue-paper the children can make different birds—a canary; a *parrot*, as in Fig. 4, which is made of green tissue-paper with a piece of red tissue-paper put in for the breast (*b* in Fig. 4).

FIG. 4

Fig. 5 shows a *rabbit*, or *cat*, or *dog*. What it is depends chiefly on the size of its ears and its tail. The drawing shows where the tissue-paper is tied; the superfluous tissue-paper must be pushed in to form the body If the children tend to squeeze the tissue-paper too tightly together, it will help them if the foundation is


FIG. 5

made of newspaper, well crumpled up (this, however, is not essential). It will also save tissue-paper and in many cases give more substance to the toy. Indeed, all these toys can quite well be made of newspaper alone. Children will readily think of other animals and things to make (*e.g.*, a nest with eggs in it for their birds to sit on) and other devices to employ. The directions given are not meant to be followed implicitly; they are merely suggestions to be improved on by the worker. The eyes of the various animals can be put in with ink.

Paper Sunshade, Hat, and Shuttlecock. Many pretty toys can be made from circular pieces of tissue-paper.

A Sunshade made from Tissue-paper and Thin Cane. Put the cane through the centre of the tissue-paper and bind silk or cotton round at *a* (Fig. 6) to fasten the tissue-paper to the stick. Little twigs and branches from the garden make nice sticks, and silver paper can be pressed round the handle.

FIG. 6

A Broad-brimmed Hat (Fig. 7). Shape a crumpled circle of tissue-paper over the top of a reel with fairly deeply bevelled edges. Take it off the reel and tie a piece of silk round the dent caused by the bevelled edge (Fig. 7). Children may think of other shapes to model their hats on. Simple models of a hall-stand for children to put sunshades in and hats on, a perambulator to carry their paper dolls, and a clothes-horse to hang their paper clothes on will be given at the end of this chapter.

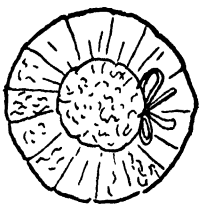


FIG. 7

Shuttlecock. These make delightful playthings and can be made large or small. To make a small one take a tissue-paper circle about 5 inches in diameter. Draw a circle inside this, radius about 1¼ inches as in Fig. 8. Cut down to this circle as in Fig. 8. Now make a little tissue-paper

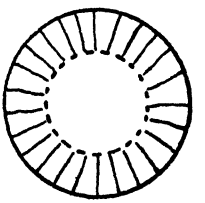


FIG. 8

ball, not too tight, and put it in the centre of the circle, wrap the circle round the ball and tie with silk, not too tightly, as at *a* in Fig. 9. For this toy the paper should not be crumpled. Children love the way the cut strips spread out as the shuttlecock falls. Cardboard bats can be made for use with the shuttlecocks, or bats as described in Chapters XII and XVIII.

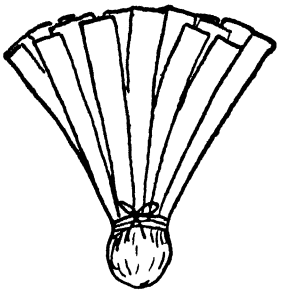


FIG. 9

Tissue-paper Balls. There are various ways of making tissue-paper balls.

(1) The best-known way is to cut a great many strips of tissue-paper about 2½ inches long and ¼ inch broad. Tie them round the middle as in Fig. 10, and spread out the ends evenly all round to make the ball. This is the way that cowslip balls are made.

(2) A more beautiful ball can be made from twenty-one circles of tissue-paper, each about 5 inches in diameter.

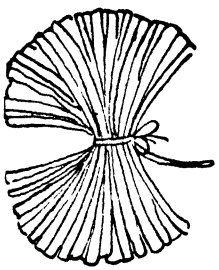


FIG. 10

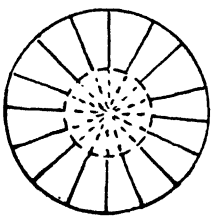


FIG. 11

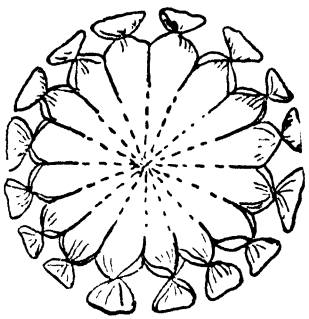


FIG. 12

Fold each circle into sixteen equal parts and cut half-way down each fold, as in Fig. 11. Take a circle in the left hand, hold one division between the thumb and finger about ½ inch from the end, twist the paper over as in Fig. 12. Proceed in this way until all the sixteen divisions have been twisted. Every circle must be treated in the same way, so that there is work for many little fingers. Now thread a needle with two pieces of Shetland wool and make a knot

at one end. Take a piece of tissue-paper 1 inch square, and fold it until it is ¼ inch square, then thread the needle through the centre of the paper and press it down to the knot. Now thread four of the circles on the needle, taking care to put the needle exactly through the centre. Press the circles well down. Take four more and thread in the same way, and so on until twenty circles have been put on. Now take the remaining circle and fold it across the middle, making the fold ¼ inch broad. Fold it the same way in the opposite direction. This makes the circle smaller, and it will fill up the space at the top of the ball better. Thread it through the middle and press it close to the others, and the ball will appear quite round. Any coloured tissue-paper will do. Balls may be made of one colour or two contrasting colours (blue and white, yellow and red, etc.) or three, according to the taste of the worker. One sometimes sees these pretty balls sold at bazaars for a penny each.

Trees. Interesting *poplar-trees* can be made in the following way. Take a strip of tissue-paper 10 to 12 inches long and 3 inches broad. Roll it round a lead pencil and gum the end. Take the tube off the pencil and cut four slits (*a b* in Fig. 13) one-third of the way down. Take hold with fingers or scissors of one of the innermost strips and pull it out, and a beautiful tree appears as in Fig. 14. Children can experiment with eight cuts, with longer cuts, with larger paper, etc. The measurements given above produce a tree that much resembles a poplar. These trees are useful to decorate the doll's house, and for park and country scenes.

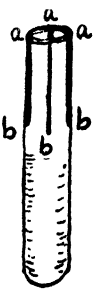


FIG. 13


FIG. 14

Palm-trees can be made by making cuts at regular distances along an oblong strip of tissue-paper, then rolling the strip round the top of a piece of cane, and tying it as in Fig. 15. The cane is stuck into a reel or piece of cork to make it stand. The leaves can

be cut to any desired shape when the tree is finished. pointed as in Fig. 15 or fringed.

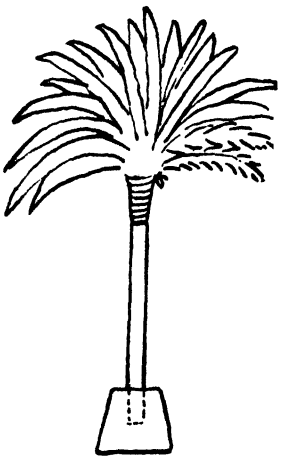


FIG. 15

Brushes, etc. Brushes can be made for the doll's house in a similar manner to the palm-tree, but with narrower strips.

Fig. 16 shows a pretty *hearth-brush*. The handle, *a b*, is made of fairly stiff paper. It is folded along *a c* and the tissue-paper gummed between. The paper is rolled round to form the handle, *c b*.

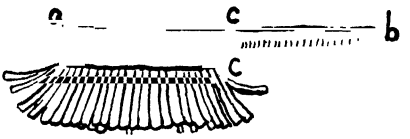


FIG. 16

By folding an oblong piece of tissue-paper carefully, fold on fold, a *fan* can be made, as shown in Fig. 17. Fig. 18 shows a *butterfly*. The head and body can be cut from tissue-paper, or else a separate cardboard body can be pasted on. The *screen* for a doll's fireplace is made like

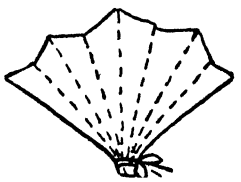


FIG. 17

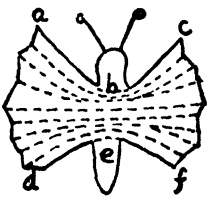


FIG. 18

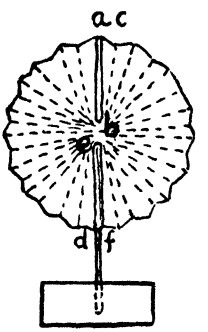


FIG. 19

the butterfly, but end *a b* is pasted to *b c*, and *d e* to *e f*. The screen is gummed to a strip of cardboard, which is fastened into a piece of cork or other suitable material for a stand (Fig. 19).

Paper Flowers. A few paper flowers are given here, because they please the little ones and teach them to observe flowers.

The Chrysanthemum. This, perhaps, is the easiest flower, and is very like the palm-tree. Take two strips of tissue-paper about 30 inches by 2½ inches. Begin with one strip and fold it twice (so that there are four thicknesses) to make it the size of Fig. 20. Then fold it along *a b*. Cut a fringe as in the diagram. (This method can be followed in making the brushes already described.) Now unfold the tissue-paper and curl each petal by drawing the point of a knitting-needle carefully down the middle of it. Treat the second strip of tissue-paper in the same way. Wind both round one of the fingers of the hand, slip off, and squeeze the bottom part together to make it as small as possible. Wind wire round it to keep it secure. A strip of green paper can be wound round the bottom part of the flower and the wire stem.

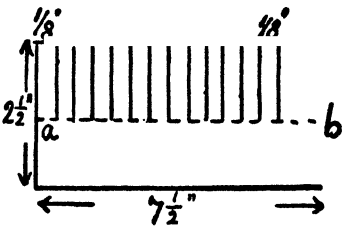


FIG. 20

An Open Rose. Draw and cut out eight circles the size of the rose required. Cut eight or twelve petals as in

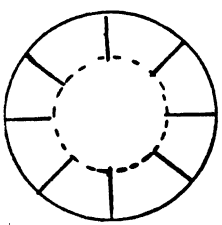


FIG. 21

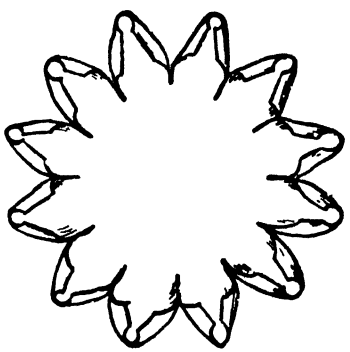


FIG. 22


FIG. 23

Fig. 21. Curl the corners of the petals by scraping each corner with one blade of the scissors, until it curls over the scissors in a little roll, as shown in Fig. 22. When curled the petal almost comes to a point by the joining of the two rolls (Fig. 22) Thread the eight circles on a piece of wire,

which has a piece of paper the colour of the petals wound round the top and bent over as in Fig. 23. A circle of green paper can be put on to form the calyx, a piece of green tissue-paper or rubber tubing covers the wire to form the stem. Take care when arranging the petals that they do not overlap but fit into the spaces of the preceding petals. A wild rose can be made in the same way. For a *half-opened rose* let the children cut two strips of tissue-paper the same size as for the chrysanthemum. Cut and curl the strips as in Fig. 24. Make up the flower in the same way as the chrysanthemum. Take care again that the petals do not exactly overlap each other. A *poppy* can be made from two circles of red paper well crumpled up. Fig. 25 shows how the black stamens are made from a circle with a fringe cut round it. It is a good rule when making paper flowers to let the children begin with a strip broad enough to form petals or calyx. Fold it into as many parts as there are petals required. If an uneven number is wanted the paper can be folded into an even number and some divisions cut off. The shape of the petal required — *e.g.*, the daffodil (Fig. 26), the pink (Fig. 27)—is then drawn on the folded paper. (Flowers with petals like the rose should be made in the way described for the rose.)

FIG. 24

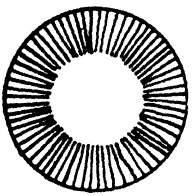


FIG. 25

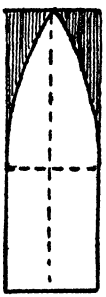


FIG. 26

FIG. 27

Fig. 28 shows how to cut and twist a circle to make a *guelder-rose*. Twelve or eighteen circles should be cut, as in Fig. 28, of white tissue-paper (2 to 3½ inches in diameter). Use a piece of wire of medium size for the stem, bend the tip over a little in crook shape, and bind the crook with white tissue-paper to make a knob (Fig. 23). Then thread on from the stem end the prepared circles, finishing

by threading on a calyx of green tissue-paper (Fig. 29), and binding the stem with a narrow strip of the same.

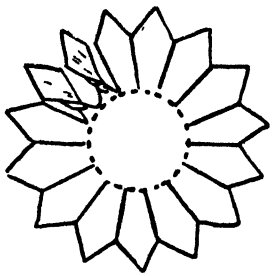


FIG. 28

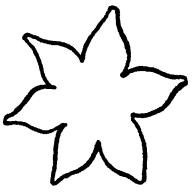


FIG. 29

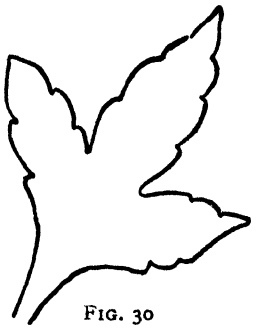


FIG. 30

Fig. 30 shows the leaf of the guelder. Children should, however, be encouraged to copy from the real leaves.

These are only a few suggestions and we leave the reader to add to them and improve them.

A Blower. This is made from rather soft paper, but it must be a little stiffer than tissue-paper. Take an oblong, 12 or 11 inches by 9 inches, fold it over and over to make a strip 1 inch wide, and leave a channel through which to blow, roll it up tightly, and then blow out. This is similar to the teasers sold at fairs, but these are furnished with a monkey's head or something funny.

Wind Toys. A *kite* can be made from a square of tissue-paper folded as in Fig. 31. Two narrow strips of cardboard are gummed across from corner to corner. A tail, etc., can be made. Coloured triangles or squares, etc., may be pasted on the tissue-paper to make a pattern.

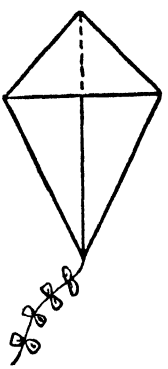


FIG. 31

A Parachute. This is made from a square of tissue-paper. The four corners are tied up each with a separate string. The four strings are joined about 6 inches below and attached to a stone or other weight.

A Wind Ball. Draw and cut out three circles from fairly stiff paper. Cut along the dark lines as in Figs. 32, 33, and 34. Fit circle 33 into 32 by folding it along the dotted

lines and pushing it through the slit in Fig. 32, then unfold. Fit circle (Fig. 34) over the two joined circles by bending

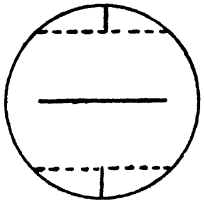


FIG. 32

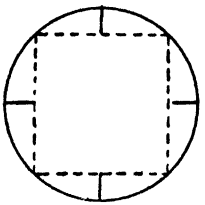


FIG. 33

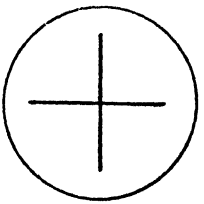


FIG. 34

them both along the dotted lines, and passing Fig. 34 over them, then unfold. More circles may be added. This ball rolls along well in the wind.

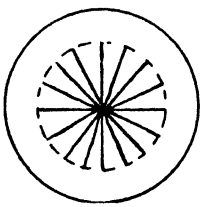


FIG. 35

Another Wind Ball. Figs. 35 and 36 show how this is made. In a good wind it will stand up upon its edge and roll along.

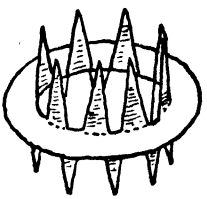


FIG. 36

FOLDING STRIPS OF PAPER

The Accordion Fold. This is used in basketry. Fold a long strip of paper (1 inch broad) as shown in Fig. 37 (*a*). Fold the perpendicular strip up over the horizontal one, then the horizontal over the perpendicular, retaining them at right angles. Back and forth the folds then go in the following order: down, from left to right; up, from right to left; and so on. Take care that each fold is absolutely even. The result is the accordion fold. For little children it is best to have two strips of contrasting colours pasted together at right angles (Fig. 37 (*b*)). The accordion fold is not only useful for decorating baskets, etc., but some amusing toys can be made from it.

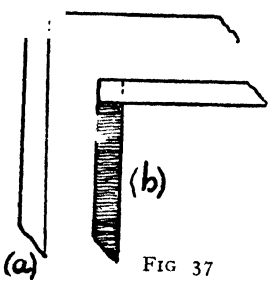


FIG 37

Two strips each about 2 feet in length make a spring for a *Jack-in-the-box*. A little head can be pasted on the top fold. The cardboard boxes containing Le Page's Liquid Glue make good boxes when cut in half.

A Concertina. Two strips of contrasting colours each about 1 foot long. Two round black handles must be gummed at each end.

A Snake. Two strips of paper, yellow and brown, or

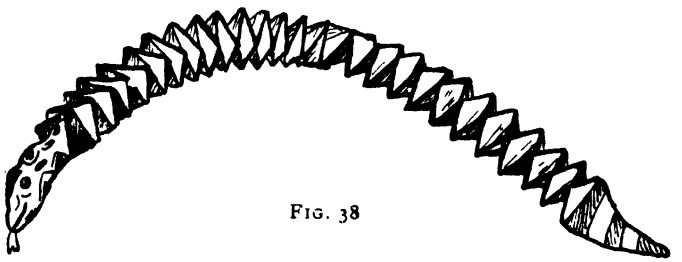


FIG. 38

green and brown, each at least 4 to 5 feet long. A snake's head and tail must be gummed at each end as in Fig. 38.

A snake can also be made by drawing a spiral as in Fig. 39, and cutting it out. Some may be able to cut the

FIG. 39

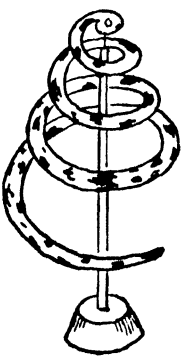


FIG. 40

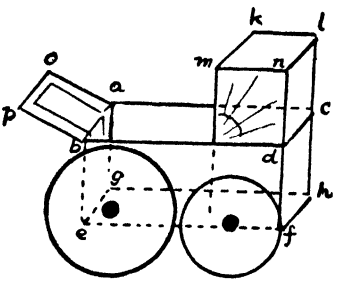


FIG. 41

spiral out without drawing it first. The children will find it useful to be able to draw the spiral when learning basketry.

Fig. 40 shows how the children can balance their snakes.

Toys for the Doll's House. A *perambulator* for carrying the paper dolls can very easily be made. *a b c d e f g h* (Fig. 41), the body of the perambulator, is made from a square folded into sixteen squares and one row cut away. The hood, *k l m n d c*, is part of another square the same size as the first. The handle, *a b p o*, is made from two squares cut from the first square. The wheels are made of cardboard and fastened on with paper-fasteners so that they turn round. The perambulator should be suitably painted.

Fig. 42 shows a *hall-stand* for hats and umbrellas. It can be made from a square folded into sixteen squares or

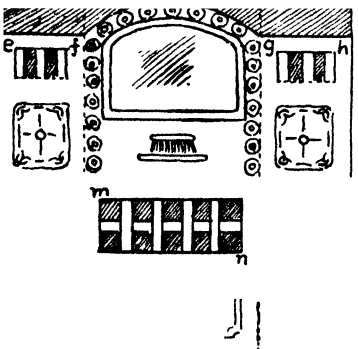


FIG. 42

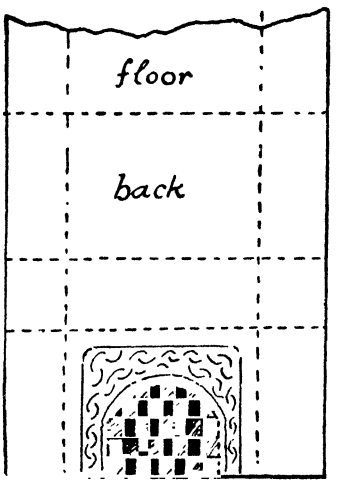


FIG. 43

from measurements. Fold along the dotted lines, cut along the dark lines, and cut away the shaded parts. *e f* and *g h* are folded down for pegs. The holes left when the pegs are folded down may have pieces of paper gummed over them. *m n* show holes for umbrellas. Gum A over B and C over D. The children will probably think of many improvements to add to this toy.

Fig. 43 shows how to plan out a *fireplace* for the hearth-brush. It can be quite easily made from the dia-

gram. All sorts of details can be added—a mirror pasted to the back, a fender, hearthrug, etc.

Fig. 44 shows a *clothes-horse* cut out of cardboard, for hanging paper clothes on. A large one should be cut out for the little ones to decorate with tissue-paper toys. Notice half cuts, *a b* and *c d*. One should be made on one side of the cardboard, and one on the other.

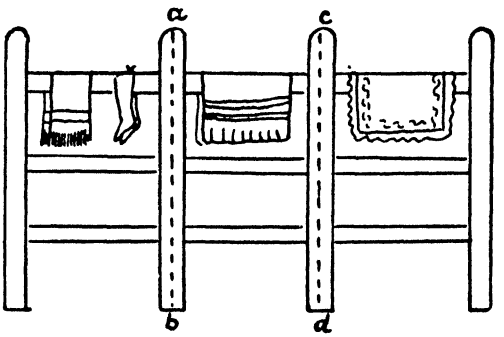


FIG. 44

Fig. 45 shows a *kitchen stove*. It can be made from a square of paper folded into sixteen squares or from measurements. For example, a real kitchen stove can be measured and the model drawn to scale. Notice the pattern the tiles make. For more patterns see Chapter II.

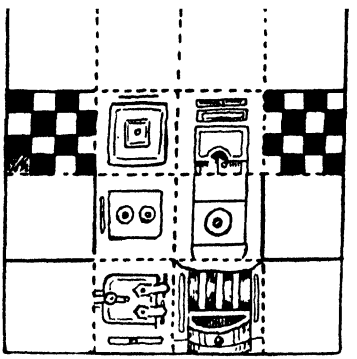


FIG. 45

CHAPTER II

PICTURE- AND PATTERN-MAKING

Invention—something not all ours, which we find, and make our own.
LEWIS F. DAY

Plaiting. Pattern is the natural outgrowth of repetition. To plait, to net, to weave, or in any way mechanically to make, is to produce pattern. There is, perhaps, no mechanism so simple but that it gives rise to pattern ; indeed, geometric pattern grew, as we shall see, out of primitive methods of workmanship. Another definition of ' pattern ' is a simplified or repeated picture, but it is, and was in the beginning, simpler than a repeated picture. Take any form you please—square, rhomboid, triangle, etc.—and repeat it at regular intervals and, whether you want it or not, you have pattern. The children should be allowed to experiment by repeating certain simple forms. The simplest of all patterns is the *stripe*—a series of parallel lines in one direction. Let the children make patterns with stripes (short ones) for a picture frame.

Cross-lines. The primitive basket-weaver was surely the first to arrive at cross-lines, and upon these a vast amount

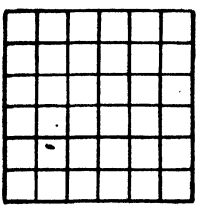


FIG. 46

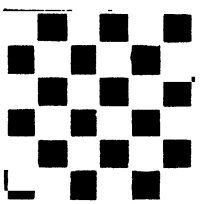


FIG. 47

of varied and beautiful pattern has been built up, the simplest forms of which are the *lattice* and *chequer*. These two patterns also must have been the earliest discovered by the

basket-plaiter. Grasses all of one colour would show the lines of interweaving, the lattice (Fig. 46). Grasses alternately light and dark in colour gave also the chessboard pattern (Fig. 47) or draught-board pattern, as the children call it. Closer or looser plaiting of equal strips gives a variety of patterns as in Fig. 48 and Fig. 49. Plaiting strips of

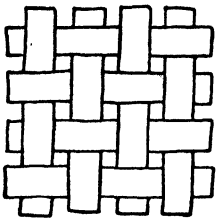


FIG. 48

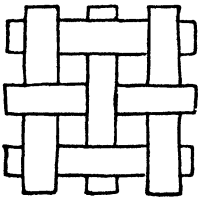


FIG. 49

different width also gives variety. (For more about plaiting see Chapter V.) Children can make experiments in plaiting, and draw their results.

Drawing Patterns. On squared paper (squares with ½ inch side) a vast number of patterns can be built (not necessarily regular), many of them suggestive of plaiting.

Taken singly and filled in alternately with light and dark, the first pattern the children think of is the chessboard pattern already mentioned.

Then let the children take the squares in groups of two,

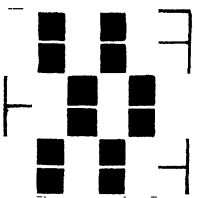


FIG. 50

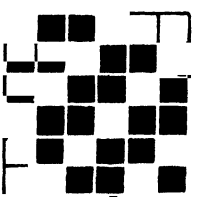


FIG. 51

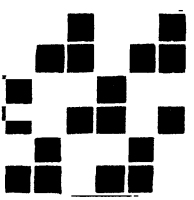


FIG. 52

or alternately of two and one, and they will arrive at Fig. 50 and Fig. 51.

Let them group the squares in threes (Fig. 52) and see what patterns they can make.

Fig. 53 shows squares grouped in fives, a difficult pattern for children (though it may look easy), but interesting.

Fig. 54, an Arab diaper, shows groups of eight squares.

Fig. 55 shows a key, or fret, pattern made on the lines of the square lattice, by intermitting some of the lines.

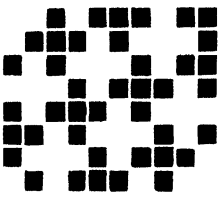


FIG. 53

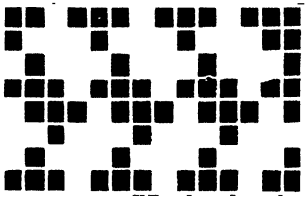


FIG. 54

Elaborate Japanese frets and all manner of interlacing and free diapers may be planned in this way.

The Triangle. Cross a square lattice by diagonals and we have a new form to work with—the triangle.

The Arabs (or the Byzantine Greeks, who were really responsible for their art) made infinite use of the equilateral triangle, building up their intricate patterns upon it as we Western nations built upon the square. For some reason it seems to come more naturally to us to think out designs

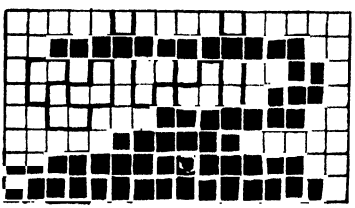


FIG. 55

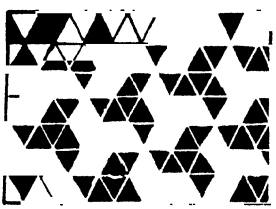


FIG. 56

on square lines. From the triangle the Arabs derived the diamond, which is composed of two triangles.

Fig. 56 shows an ingenious Arab combination where the unit of the diaper is composed of seven triangles, or of a central triangle and three diamonds radiating from it.

Six triangles form a *hexagon*, and six other triangles ranged round it form a star (Fig. 57). The hexagon itself is a unit which forms a perfect repeat. Three hexagons together give Fig. 58, which is very commonly employed in Arab ornament.

The *octagon* is built upon the square lattice. Notice patterns Fig. 59 and Fig. 60, which are different views of the same design, based upon the octagon.

The wonderful ways in which triangles, hexagons, and stars combine together and produce bewildering patterns

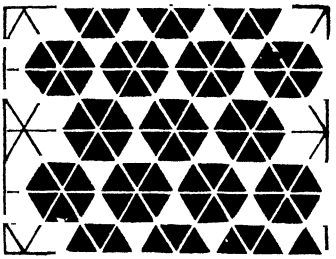


FIG. 57

FIG. 59

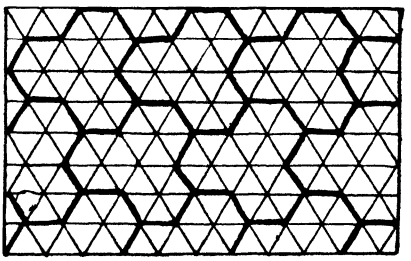


FIG. 58

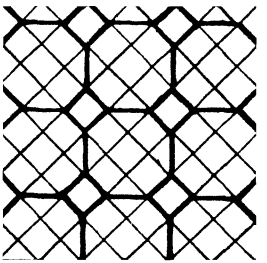


FIG. 60

will amuse and give much enjoyment to the enterprising child. In making patterns from triangles and hexagons etc., the younger children should cut the shape in cardboard first and draw round them to get the repeats. Older children can use compasses. Children will be interested in looking for patterns in the everyday things round them—the interlacing of a cane-bottomed chair will give them a pretty design to copy. They should see also pictures of the Alhambra—the tile-work there, and the ornamental diapering on the lower walls; pictures of mosques (see *The World Outside*, Egyptian section); Moorish tile-work; Indian lattices; Japanese, etc. They will find it inter-

esting, but difficult, to collect a series of pictures (postcards, etc.) illustrating various kinds of patterns.

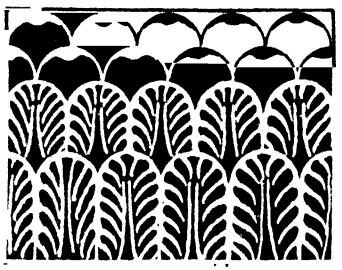


FIG. 61

The *pentagon* is a difficult form to make designs with, but the children should be allowed to try.

The Circle. The circle gives us no really new plan, but curved versions of the foregoing. With compasses or with cardboard circles and segments of circles children will delight in making patterns. From segments of circles we get the scale pattern (Fig. 61) derived, perhaps, from the scales of a fish or from the plumage of a bird's neck.

Borders. It is pleasant work planning borders for pictures (which have no frames), and for the various notices so numerous in schools, or to decorate the room. The simpler these borders are the better, but the simplest are often the most difficult to design. The three conditions necessary for a good border are (1) simplicity—for it is not the picture, (2) the pattern should repeat at no very long interval, (3) the pattern should lend itself to the turning of corners.

The simplest of all borders is a line, or a series of lines —and here begins design. We have given no illustrations

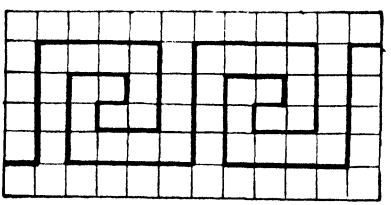


FIG. 62

showing these, because they are so simple, and because children will have made borders like it in their early needlework lessons.

The Fret. This is a very interesting and important form of border. Its origin we unfortunately know little about. It is curious that we find this same pattern among the

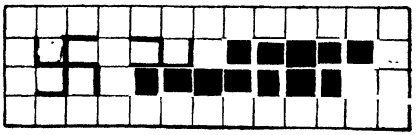


FIG. 63

Chinese, Mexicans, Greeks, and Fiji islanders. Fig. 62 shows the Greek fret. Notice that it is built on the lines of the square lattice. The fret can face one way only—and this is the most effective (Fig. 62)—or both ways.

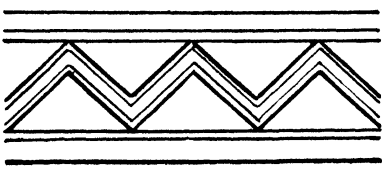


FIG. 64

The Chinese fret is generally broken and disjointed as in Fig. 63, which shows a broken Chinese fret derived from the mystic swastika.

Borders with wave lines, zigzag, and double zigzag lines

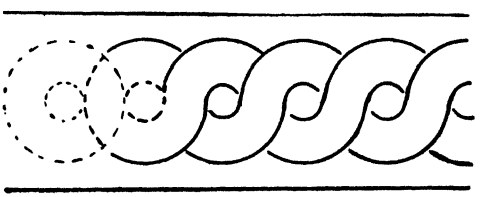


FIG. 65

can easily be designed by the children. They can copy plaits of three or four strands and see what sort of border it will give.

Chevron is a variety of fret ornament common in Norman architecture. It is also called the *zigzag* (Fig. 64).

Guilloches make interesting borders. The dotted circles show how they are constructed. They may be made to

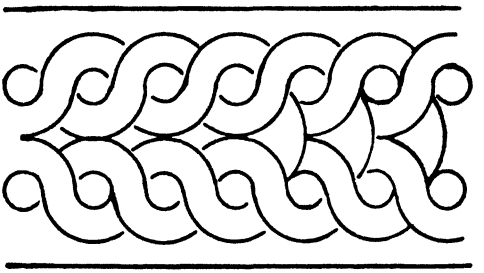


FIG. 66

look very intricate and difficult to construct, but they are

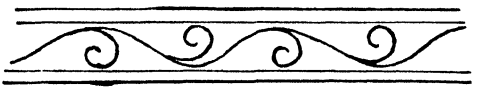


FIG. 67

not really so. Figs. 65 and 66 show examples of guilloches; the children can think of others.

Spirals can be added to wave lines (Fig. 67). Simple

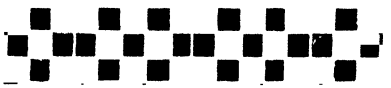


FIG. 68

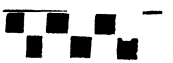


FIG.

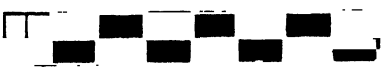


FIG. 70

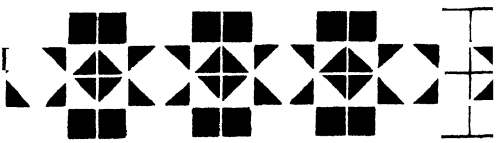


FIG. 71

chain patterns can be made by copying any chain, but these are not very effective.

Figs. 68, 69, 70, and 71 show examples of geometric

borders that are modest and steady. They are good examples of *counterchange*—that is, the colours are alternate.

A sudden splendour from behind
Flush'd all the leaves with rich gold-green,
And, flowing rapidly between
Their interspaces, *counterchanged*
The level lake with diamond-plots
Of dark and bright. TENNYSON

Interchange. Children delight in thinking out interchange patterns on the principle of those shown in Figs.

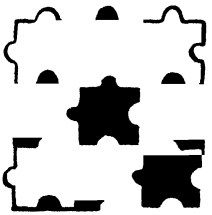


FIG. 72

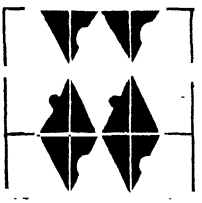


FIG. 73

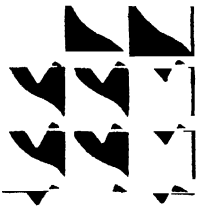


FIG. 74

72, 73, 74, 75, 76, and 77. They begin with squares, and realizing that interchange means the process of giving and

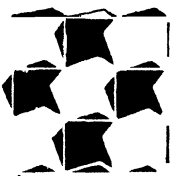


FIG. 75

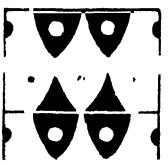


FIG. 76

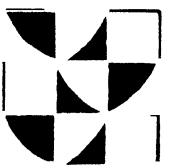


FIG. 77

receiving, take from and add to each square equal portions, as shown in the examples.

FIG. 78

We must not forget the second definition of a pattern, a simplified or repeated picture. Fig. 78 shows an Egyptian

border based upon the lotus. Fig. 79 shows a typical Greek pattern used for borders, and Fig. 80 a Chinese border.

FIG. 79

Fig. 81, an Egyptian pattern (taken from a prehistoric pot), is a good example of a simplified picture. The ornament consists of flamingos between two rows of mountains. It will interest children to invent simple pictures that can be repeated to form patterns—*e.g.*, simplified Dutch windmill, two little Dutch girls, Dutch windmill, and so on; an iceberg, polar bear, iceberg again, etc. These patterns

FIG. 80

can be cut out of coloured paper and pasted on suitably coloured paper—for example, the icebergs and polar bears should be cut out of white paper and pasted on strips of blue paper. By cutting cardboard templates of the bear and iceberg we get the repeats exact. Fig. 82 shows a child's attempt.

Fig. 83 shows another attempt. The background is yellow paper, the palm-trees green and brown, the pyramids light brown paper, the camels a light buff. For the final effect much depends on choosing the right shades of paper. Children will enjoy designing friezes in this way for their form-rooms.

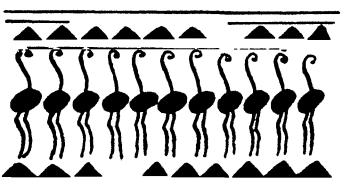


FIG. 81

Very little children can be given squares of different

colours, cut diagonally, from which they can build up patterns as in Fig. 84. With coloured squares entire and

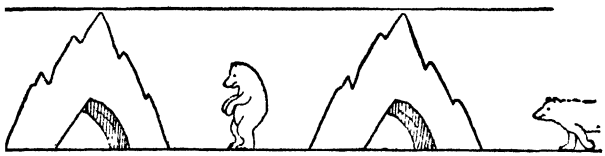


FIG. 82

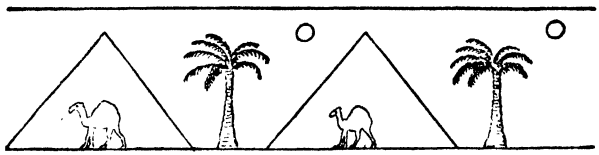


FIG. 83

coloured squares cut diagonally they can try the geometric borders in Fig. 68, etc.

Circles may be cut into quadrants, and as shown in Fig 85, for making patterns. Older children will be happily

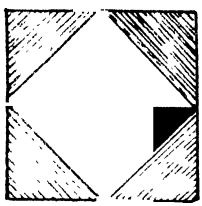


FIG. 84

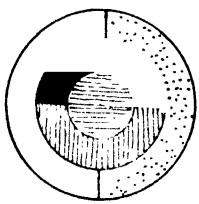


FIG. 85

employed making geometric shapes for little ones to design with.

Tops, Book-markers, etc. Pattern-designing leads to the making of delightful *tops* that show the strange effects of colour-blending. These tops are made of circular pieces of cardboard (about 2 inches in diameter). A pattern is painted on the cardboard, as in Fig. 86, or coloured paper is pasted on as in Fig. 87, where the cardboard is covered with red paper and coloured disks of blue (outside row) and yellow (inner row) are pasted on. When the cardboard

has been suitably coloured, a hole is made in the centre, and a sharpened matchstick is fitted tightly in for it to

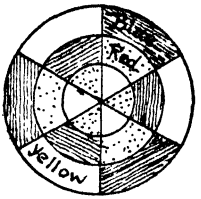


FIG. 86

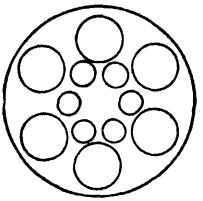


FIG. 87

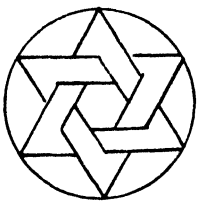


FIG. 88

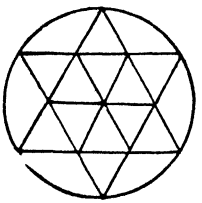


FIG. 89

spin on. If two small pieces of cork are cut, a small hole bored in each, and if these are pushed over the match above

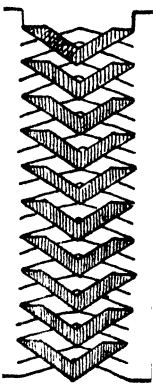


FIG. 90

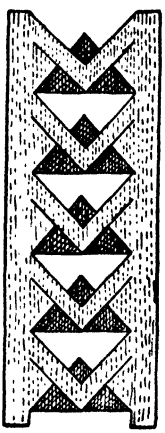


FIG. 91

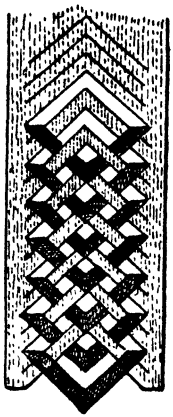


FIG. 92

and below the cardboard they will help to keep it steady. Figs. 88 and 89 show two other patterns that produce strange effects when the top is spun. Children will delight

in making experiments with colours, and trying to produce, while the top is spinning, white or some colour different from those they have painted on their tops. Pretty *book-markers* can be made of strips of wallpaper (if it is coloured differently on each side it is all the better) cut as shown in Figs. 90, 91, and 92, and interlaced. The strips are folded lengthways for the diagonal cuts; the paper may be measured out first for the cutting, or the pattern may be made by free cutting.

Fig. 93 shows how the *letters of the alphabet* can be mapped out on squared paper. If large letters are used

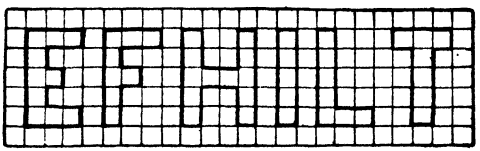


FIG. 93

they can be cut out and pasted on brown paper to make posters. (A poster is generally made of large letters, beautiful forms, and bright colours.) An alphabet book can be made by cutting out letters and the shapes of the things

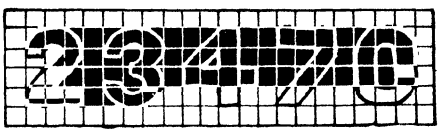


FIG. 94

they stand for. Letters of a good size can be mapped out on 4-inch squares of paper divided into sixteen squares.

Numerals can be drawn in the same way on paper (Fig. 94).

Conventional Designs. Patterns may be made by pasting small squares of coloured paper on brown, white, or other coloured paper. The little squares can also be arranged to form conventional trees (Fig. 95), where the squares are green and brown or all green; houses (Fig. 96); birds (Fig. 97); butterflies (Fig. 98), for which the squares

may be brown for the body and blue for the wings; vases, etc. Careful arrangement of colours and careful spacing

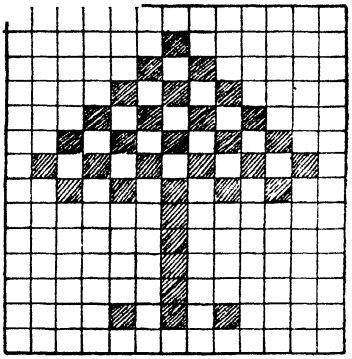


FIG. 95

of the squares will give the desired impression. Conventional shapes worked out in this way will be found very

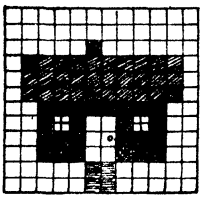


FIG. 96

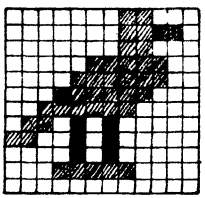


FIG. 97

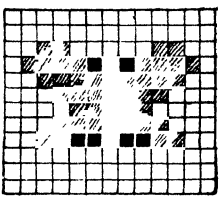


FIG. 98

useful when making baskets (see Chapter XIV), as they can easily be copied in the stitches described in Chapter XIII.

CHAPTER III

MATERIALS USED FOR BASKETRY—DYEING RAFFIA, ETC.

Or simplest growth of meadow-sweet or sorrel, such as summer-sleepy Dryads weave. SWINBURNE

Materials used for Basketry. In the following chapters so many toys, baskets, etc., are made of raffia and cane that some information about these materials is necessary, especially as to methods of dyeing them, for colour is of great importance when really beautiful work is desired.

Raffia is ideal weaving material for untrained fingers, or for the weak fingers of little children. It is soft, flexible, and easily handled.

Raffia, or raphia, is the native name given to a group of palms that flourish in Madagascar, Mauritius, and the neighbouring islands. It has a long leaf, over 50 feet in length, and thus the tree, from the base to the tips of the leaves, is often from 60 to 70 feet high. The raffia is the epidermis of the leaf stripped on both sides. There are many qualities of raffia, and the cheaper ones usually supplied to schools are very wasteful. It probably pays best to give a little more and have the better quality.

Substitutes for Raffia. When raffia is not obtainable for the work described in the following chapters on weaving, basket-making, etc., the following substitutes can generally be employed: string, macramé cord, knitting-cotton, jute, wool, narrow tape, mercerized cotton, etc. Thrums (or short lengths of wool left over from weaving) can be bought cheaply; these form delightful material for training children to arrange colours.

Bast. This material closely resembles raffia. It is the name given to the fibrous inner layers of the bark of all exogenous plants. The lime-tree, which is largely grown in

Russia, is especially rich in these fibres. Owing to its rather coarse texture it is unsuitable for fine work.

Rushes. The growth of rushes is common to all marshy districts. They make excellent basket-making material.

Many kinds of *grasses*, including ordinary hay, and also common straw, can be used in basket-making. Since the materials used in different countries and localities are so varied we ought not to restrict children to the use of one or two media. How the children will enjoy a country walk if we say to them, "Let us imagine that we are Indian squaws and children looking for materials for making baskets!" Some grasses they will find they can use green, but others must be dried, and sometimes these prove too brittle.

Willow. There are two or three species of willow that are largely cultivated for basket-making. In Europe the almond-leafed willow, and especially the golden willow or osier, is used for this purpose. Most of the coarse basketry of England is made from this latter species, and the finer work is made by splitting the willow into splints and using them for wrapping, as do the Californian and other Indians.

The palm family affords much suitable material for basketry, besides the raffia already mentioned. The leaves of the *palmetto* (a tree growing from 20 to 30 feet high) and of the dwarf palmetto are peeled and make excellent material for wrapping splints, and also provide splints for the mat weave work (see Chapter XVI). The wood splints of commerce are purchased in long, wide strips. To prepare these for basket-work two cutting implements are used. Where no cutter is to be had the strips may be cut the right width with scissors, but this is a slow and laborious task.

Cane or *rattan* is one of the most popular of basket-making materials, because it is long, light, tough, and flexible. It is obtained from a creeper palm that grows in the forests of India, the East Indies, and China. These palms with their slender, reed-like stems (seldom exceeding an inch in thickness), grow to a great length (sometimes

500 feet), the hooked prickles on their leaf-stalks enabling them to climb up among the branches of the tallest trees. When cut the canes are known as 'rattans.' The glazed, shiny surface of the rattan is used for chair-caning, while the inner portion is cut up into lengths and placed upon the market as 'centre' or 'pulp' cane. The cost of the cane varies according to its thickness, the diameter being indicated by numbers ranging from 1 to 12, the finest being the most expensive. Nos. 2, 3, and 4 are common sizes, and most useful in school. Nos. 5 and 6 can be used for stronger, coarser work.

How to Dye Raffia or Cane

As a rule all materials and dyes need a mordant. This is to 'fix' the dye. Alum is a good ordinary mordant, and can be obtained cheaply anywhere. About three ounces of alum should be dissolved in a quart of water. Some prefer a weaker solution — about four ounces of alum to two gallons of water. Experiments should be made; raffia and cane do not respond to the mordants which might be successfully used with ordinary materials, and even professional dyers do not always succeed in producing fast colours.

When the alum is well dissolved place the liquid in a small tub and soak the material to be dyed for fully two hours. This allows the fibre of the raffia, or rattan, to take up the mordant, and thus prepares for the permanent fixing of the dye—a thing much to be desired but not always attained. The ordinary bought dyes will now give fairly good results if the fabric is placed in them. But the children will like best to make their own dyes, or watch them being made. More beautiful colours can be obtained by preparing the dyes oneself, and only vegetable dyes, which are softer in tone and more harmonious than any others, need be used.

Before using most of the vegetable dyes the material should be steeped in the mordant described above. It should be soaked for at least twelve hours, and it must be put in the dye while still damp.

The following colours can be made from vegetable substances :

Yellow. From St John's wort. Gather the stems, leaves, and flowers. This gives a pleasing light yellow. Saffron can be obtained from a chemist ; this gives a bright yellow. Onion skins give a dull yellow that is very useful. A good shade of yellow may be made from fustic chips, but these must be soaked for at least twelve hours in enough cold water to cover them, and then boiled in the same water for about twenty minutes. Dip a piece of rag in the dye now and then until it is a bright yellow, when the vessel should be taken off the fire and the raffia (damp from the mordant) put in to soak, and left till it is of the desired shade. If duller shades of yellow are required the fustic chips will need longer boiling.

Brown and Purple. Logwood extract gives a fine brown, and mixed with ammonia a good purple. Logwood is a foreign dye, and consists of chips of wood. To obtain a yellowish brown from logwood the alum mordant is not needed. The logwood chips should be covered with cold water and allowed to boil for twenty minutes. In the extract thus produced the raffia must soak for at least twelve hours. Stewed walnut shells (treated as fustic chips) give a fairly good brown, and if gathered early in the season a soft green will be the result. Hickory-nut shells also produce a fairly good brown, and the bark of the maple and pine can also be used to obtain this colour. Children will find great pleasure in experimenting with bark from different trees.

Logwood and fustic chips are among the most useful dyes. They can be bought at nearly all chemists'.

From crotal (a kind of lichen) various shades of yellow, brown, and purple can be obtained. Crotal is easy to use and to find. (See Chapter VIII for method of using it.)

Blue or Green. All shades of blue, from sky-blue to blue-black, can be dyed in the indigo tub. It is a cheap and almost perfectly fast dye, but unfortunately indigo will only dissolve in sulphuric acid and is therefore a some-

what dangerous dye for children to make. Indigo extract can be bought, however.

Red. Cochineal, though animal, may be mentioned here. It gives a dark, deep red. Madder, the root of the madder plant, gives a dull red which is very satisfactory. It can be bought from the chemist in powdered form. Cranberries give a dull red, and beets provide a similar colour.

Orange. Dragon's blood, a powder which can be bought from the chemist, gives a fine orange.

Dyes are prepared from the materials mentioned above by boiling them in water in a good enamel kettle. If any of the powders mentioned are being used a general proportion to be observed is two ounces to one gallon of water, but the proportion is not of great importance; if the dye is too strong it can be diluted, if it is not strong enough more material can be used. When using beets try six or seven large ones to a gallon of water, with cranberries try a pound, and with walnut shells, etc., three or four handfuls. How long the materials should be boiled depends on how soon they give up their colour; generally half an hour's boiling is sufficient.

When the water has become the desired colour it must be strained to get rid of any sediment. The material to be dyed must first be soaked in the mordant as already described, and then placed in the dye *while it is boiling.* (In every case the dye must be boiling when the material is immersed.) Let it remain in the liquid from fifteen to twenty minutes, or longer if necessary. Keep turning it over and over with a wooden stick, so that the colour reaches all the parts evenly.

Aniline or Chemical Dyes. These produce crude, and some say vulgar colours. George Wharton James calls them "anathema" to all true basket-lovers, and "accursed things," but *some* good fast colours can be obtained from them, if anyone is brave enough to use them after the above condemnation. Aniline dyes are sold in powdered form, and should be prepared by being dissolved in boiling water. The quantity of water afterward added depends upon the depth of colour desired. The material should be

immersed in the dye for five or six hours, and then be taken out and hung up to dry. No mordant need be used.

Other Suggestions for Dyeing. Children love to experiment with petals of flowers, rubbing them on the cane or raffia, and seeing what colours they can obtain. The petals of the purple iris give a beautiful shade. Coffee and tea-leaves boiled produce pretty browns. Privet-leaves yield a yellow shade, as do dock-root and heather. Lily-of-the-valley leaves produce green, dandelion-roots magenta, blackberry (the young shoots) black, elder-leaves green, pear- and plum-leaves yellow, red currants red, poplar-leaves yellow, iris-root black. With all these vegetable dyes a mordant must be used. Iron rust provides an agreeable yellow, and besides being the most indelible of all stains it is not hard to obtain, as bits of old iron left standing in water will soon manufacture it.

Chief Mordants. *Alum* is the most generally used of all mordants, and is nearly always combined with cream of tartar.

Iron or *copperas* is almost as important as alum. It is mainly used to fix the colour after the material has been dyed. It has the effect of darkening some colours.

Chrome. This is specially good for wool, and is easy to use. It leaves the wool very soft. It should be used sparingly, about half an ounce to a pound of wool; too much will spoil the colour of the dye.

General. When dyeing use only brass, copper, porcelain, or enamelled kettles, because mordants have a great affinity for iron and ruin the colour.

Dyeing is more successful in bright weather than on rainy days; and soft water is required. If the water contains much lime or earthy matter it must be neutralized by acetic acid. But in such cases it is better to use rain water.

CHAPTER IV

RAFFIA-WINDING

Time is nothing when *power* is growing.
F. W. FROEBEL

Raffia-winding. Winding raffia on to foundations of various shapes is a suitable occupation for very little children. Only the best strands should be used. They are generally prepared by being soaked in water for a minute or two, and then straightened out by being drawn between the thumb and finger, working from the broad centre toward the ends. The raffia can also be damped with a sponge. Winding-strands should not be too wide; $\frac{1}{4}$ inch to $\frac{3}{8}$ inch is wide enough. They can be split the desired width by inserting a needle and running it down the raffia. The smooth, shiny, convex side of the strand must be on the outside when winding.

Serviette-ring. This, perhaps, is the easiest for children to begin with. Cut a postal tube into rings $1\frac{1}{2}$ inches deep. Damp the raffia, gum one end to the inside of the tube, and begin to wind, taking care that each wind overlaps the last; if not, two layers will be necessary to hide the foundation.

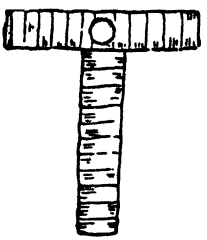


FIG. 99

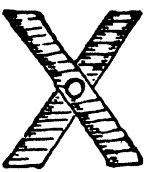


FIG. 100

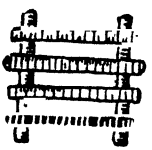


FIG. 101

Rings, hexagons, octagons, etc., can be covered to form picture-frames. All the straight-lined letters of the alphabet

can easily be made by winding round strips of cardboard, and then fastening these strips together by gumming, tying, or using paper-fasteners, as in Fig. 99. Roman numerals (Fig. 100), stands for flower-pots (Fig. 101), and photograph-frames (Fig. 102) can also be made. There are two ways of finishing off. Thread the end through a needle and stitch under the last two or three layers, or fasten the end down with a little seccotine.

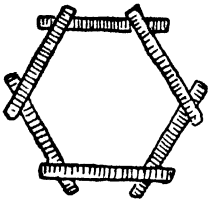


FIG. 102

Figs. 103 and 104 show dinner-mats made of cardboard and covered by winding with raffia.

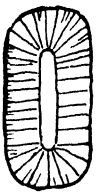


FIG. 103

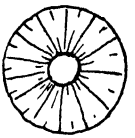


FIG. 104

Pretty *picture-frames* can be made in the following way: Fig. 105 shows an eight-pointed star formed from two squares. Paste the picture to be framed in the middle of the cardboard. Wind with coloured raffia from A B to C D, carry the raffia behind the frame to E, and wind from E F to G H, take the raffia to J, and wind from J K to A G, then take the raffia to L, and wind from L M to B H. When joining new strands take care that the knots come behind. Wind the remaining square with another colour in a similar manner. Instead of raffia, macramé cord or silk of different colours can be used. Children can think of other kinds of stars and how to wind them. A sixteen-pointed star makes a very pretty frame.

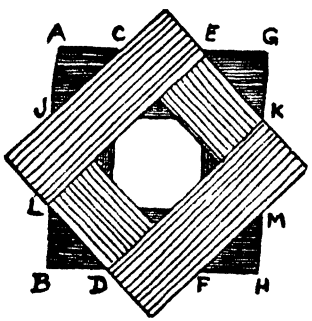


FIG. 105

Boxes of different kinds, such as match-boxes, gas-mantle boxes, etc., can be wound with raffia, and used in many ways. A gas-mantle box with the ends taken off, or a piece of postal tube makes a useful *taper-stand* or *toilet-tidy*. Wind round the outside with raffia. Place the tube on cardboard and mark out the size for the base. Cut it

out and make a hole in the centre about ¼ inch in diameter. Fig. 106 shows how to cover the base. The raffia should

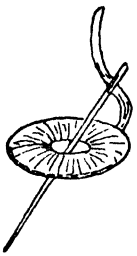


FIG. 106

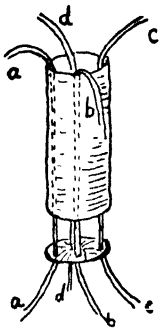


FIG. 107

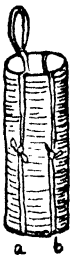


FIG. 108

be wound round until the hole is completely filled. Fig. 107 shows how to fasten the base to the tube. Take four strands of a contrasting colour, thread them through the base, then pass them through the tube. Fix the base in position and tie strands *a*, *b*, *c*, half-way down the side. The *d* strand can be knotted at the top edge to make a loop by which the box can be hung if it is to be a toilet-tidy (Fig. 108). Wind a piece of raffia round the middle to cover the knots, and tie it in a bow.

Instead of the round base the tube may be fastened to a square of cardboard and so form a useful stand for tapers.

Fig. 109 shows the method of fixing a box of any shape to a stand. Four holes are made in the stand as at *a*, *b*. Pass the needle through *a* on the inside of the box, then into *a* again, out on the outside and so on, tightening the strand at each corner. Tie the loose ends, *e* and *f*, together and stitch them under the box.

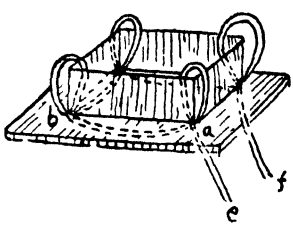


FIG. 109

A Small Brush. Take seven or eight strands of natural raffia, twist the strands in the middle and bend round to form a loop (A in Fig. 110). Take one loose strand and

bind round the others for a short distance from the loop. In the middle of the strands place a piece of fairly thick cane about 5 or 6 inches long, and wind round it to keep it in position. Cut the strands to the length required for the brush and use the ends for strengthening the foundation (Fig. 110). Wind down to the end of the cane, then tie the winding-strand to one of the loose ends. With a coloured strand wind round the loop and along the handle, taking care that each wind overlaps the last. Bind the loose ends with the same colour, about ½ inch from the winding. Fray out the ends of the brush with a pin (Fig. 111).

FIG. 110

FIG. 111

A Whip. Take two pieces of No. 5 or 6 cane about 20 or 22 inches long. Bend the canes in the middle to form a rounded handle (Fig. 112). Begin binding with raffia at *a* (Fig. 112), and continue round the loop and down the

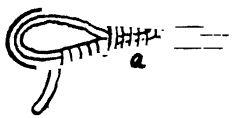


FIG. 112

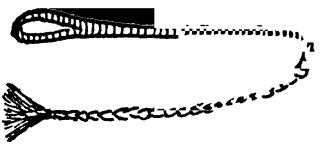


FIG. 113

handle, enclosing five strands of raffia to form the whip. Plait these strands as explained in Chapter V, and work in

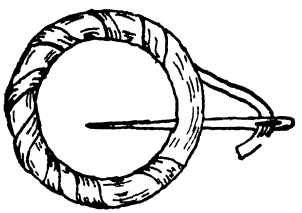


FIG. 114

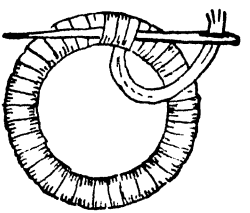


FIG. 115

the end of the winding-strand. Bind round the ends and fray out (Fig.

Raffia Rings can be used for a variety of purposes. Fastened together by stitching or tying, they form mats for the table, covers for plant-pots, curtain-loops, picture-frames, and serviette-rings. They can also be used for the rings required in making the hammock and the lamp-shade (see Chapter IX).

Twist a strand of raffia round three fingers, two or three times. Wind the end of the strand round and round this ring, stitching through it as shown in Fig. 114, then wind another strand very tightly and evenly round the foundation, and finish off by stitching under the winding (Fig. 115).

CHAPTER V

PLAITING WITH PAPER AND RAFFIA

Train well the hand and teach the eye to see,
Firm grows the will, sound shall the judgment be.
Motto of Leipsic Manual Training School

Paper-plaiting. *Plait of Three* (Fig. 116). This is very like the weaving described in Chapter VI. Three strips of coloured paper are fastened to a drawing-board with pins, or they can be gummed in place to start with. The plait is then the common plait of three. Crease the sides as each strip is turned over (Fig. 116). It is very pretty plaited in different colours, and can be sewn together to form mats, bags, picture-frames, etc. The columns of a newspaper are suitable for this and the next plait. Newspaper bags for fish or other light articles may be made of these strips.

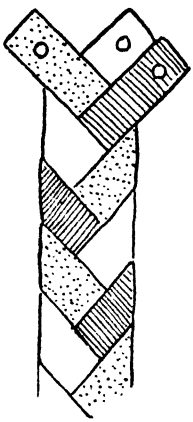


FIG. 116

Plait of Four, with Vandyke Edge (Fig. 117). Arrange the four strands as shown in Fig. 117. Three only need be pinned. Take strip *a* and bend it under the next strand, *b*, take the next strand, *b*, make the vandyke with it and pass it under *a* over two strips straight across to the other side. Then begin from the other side, pass the outside strip under one, make the vandyke with the next strip, which is now the outside, and pass it straight across to the other side. The pattern

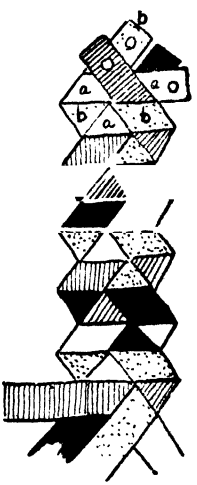


FIG. 117

is very simple when the vandyke edge is known. It becomes —under one, and vandyke, pass over two *straight* across to other side; under one, and vandyke, pass back over two. This plait makes pretty picture-frames.

Crêpe paper is as easy to plait as raffia, and from it many useful articles can be made, particularly hats. Indeed, crêpe paper, 3 feet wide and 12½ feet long, is specially made for this purpose. This extra wide paper will produce plaits 28 inches in length, whereas the ordinary crêpe-paper roll will only make a 15-inch plait. For plaiting always cut the paper with the grain, in strips from ½ inch to 1½ inches wide, according to the width of the plait required.

Methods of Joining. Joins must be made in the plaiting when anything as big as a hat is being made. (Eight yards at least are required for an ordinary hat.) The new strand can be stitched to the old strand with cotton of the same colour, or it may be gummed, in which case it must be allowed to dry before plaiting.

To Prepare for Plaiting. Cut the paper in ½ inch to 1½ inch strips, fold each strip to bring the cut edges together, then place three, four, or more strands one upon the other according to the width of plait required, and fasten them at one end with a pin or a stitch or two. The first set of strands must all be of uneven lengths to avoid two joins coming together. Always endeavour to get a join underneath—that is, at the back of a plait—and always avoid a join coming at either edge. This is easily done by cutting off a little more or less of the plaiting strand before joining on a fresh piece.

Four, five, and seven plaits are the most useful for general purposes.

Instructions for Plaiting with an Odd Number of Strands, say Seven. (1) Separate the strands into two groups, grasping four in one hand and three in the other. (2) Take the outside strand of the four group, and weave to the centre, thus making four on the opposite side. (3) Take the outside strand on the opposite side, and weave to the centre. (4) Repeat, always weaving to the centre, and using the outside strand of the group having the larger number.

To Plait with an Even Number of Strands, say Twelve. Begin *each* stroke with the outside strand on the left and work over and under to the other side.

The *rustic* or *basket plait* is very simple and effective, and takes less paper than the other plaits. Cut four strands all of one colour, say white, fold lengthways to bring the cut edges together, then cut the fifth strand, which is the weaving strand, in another colour, say black. Place all the strands over one another with the black one underneath. Tie the ends together and pin to the table or desk. Pull the black strand to the right side, pass it over and under the white strands to the other side. Now the black strand is on the left, work it back again, and so on. The black strand is the working strand, and it is taken alternately from right to left and left to right.

To make crêpe-paper hats the plaits are sewn together to form the desired shape and afterward wired.

Plaiting with Raffia. Many of the directions given above apply to plaiting with raffia, especially plaiting with odd and even numbers. The raffia may be softened, if desired, by wiping it lightly with a damp sponge. There are two ways of *joining a strand.* (1) Place the new strand beside the end of the old and weave them both together for a little way. (2) Join by knotting, taking care that in plaiting the knot comes behind.

Methods of Finishing off Plait. (1) Knot or bind the loose ends, cut them evenly, and fray out with a pin. (2) Each strand can be threaded on a needle and woven back on itself.

One of the simplest things that can be made by plaiting is a picture-cord. Tie three strands together by a knot about 1½ inches from the ends. Plait the strands to the required length, tie a knot, and cut off the ends about 1½ inches from the knot. Fray them out with a pin.

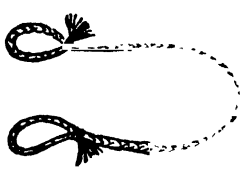


FIG. 118

Reins for a Child. Make a seven- or eight-plait of contrasting colours of a suitable length. Finish off the ends by binding and fraying. Turn each

end back to form arm-loops as in Fig. 118, and bind with a strong strand.

A Curtain-loop. Make two raffia rings 1½ or 1¾ inches in diameter. Pass five or six strands of contrasting colours through one ring, thus making ten or twelve strands. Work the plait for about 15 inches. Draw the loose ends through the second ring and bind them tightly on to the plait. Cut the ends evenly and fray them out, thus forming a tassel.

An Oval Dinner-mat. Bind the ends of ten strands of natural raffia and separate them into pairs. Work a five-plait with the double strands to about 4 feet in length. Bind the plait again very neatly about an inch from the first binding and cut off the rough end close to the binding. Fig. 119 shows how to begin sewing the plait together. The part of the plait that is bent round is about an inch in length. The plait must be worked to shape with the fingers and thumb. Begin stitching at the bend and work from right to left. Bind the end of the plait and finish off by gradually working it underneath the mat. If the mat is not very flat it should be damped and placed under a heavy weight for a few hours. A coloured border in buttonhole stitch can be worked round the mat when it is dry.

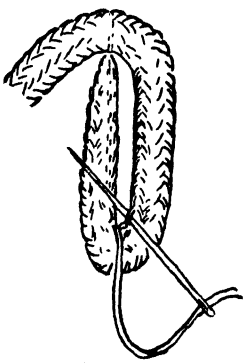


FIG. 119

FIG. 120

Mats of all shapes and sizes can be worked in this way as well as plant-pot holders, hats, and bags. When a special shape is required, as for a hat or bag, the plait must be held in position before each stitch is taken.

A Pair of Slippers. The plait should not be a very wide one (three- or four-plait is wide enough) as it is difficult to shape it. Begin by coiling the plait round itself, as in Fig. 120, to form a centre, then leave the loop as shown and work round this to the size required; gradually draw in for the sole and finish by joining down the middle.

Wide Plaits. Methods of beginning. (1) Knot the end of each strand and fix it between the teeth of a comb. The comb should be held by some one until the plait is well started; then it can be pinned down to the top of the desk. (2) Tie a steel knitting-needle by both ends to the top bar of a chair and let it hang level about 2 inches below it. Hang two strands, *a* and *b* (Fig. 121), over the needle, the under halves, 1 and 2, toward the left, the upper, 3 and 4, toward the right. Take underhalf 2, and place it over 3 and under 1. Bring 1 over to the right to form the edge of the plait. Hang on another strand, *c*, and weave it in a similar manner. If an odd number of strands is required, take one that is half the thickness of the others, hang it over the needle and use both halves as one strand.

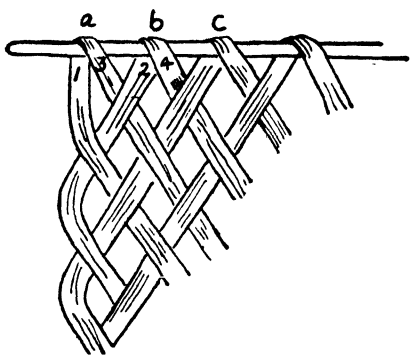


FIG. 121

A Lady's Belt. For this a thirteen- or fifteen-plait is very suitable, of two contrasting colours. Finish off the end to a point as shown in Fig. 122. Fix the straight end of the belt to the middle bar of a buckle by wrapping it over and sewing firmly. Cover the buckle by winding or buttonholing. Pierce a hole in the plait for the buckle, and oversew it round the edge with a thin strand. Make a seven-plait long enough to go round the large plait to form the sliding strap for holding the flap.

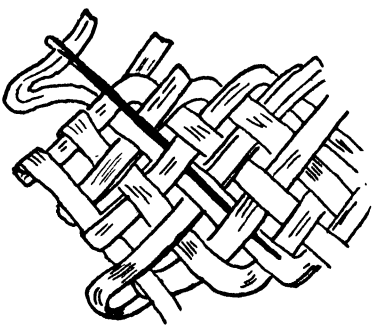


FIG. 122

A plaited raffia *bag* can be made by sewing wide plaits of suitable length together. In this case both ends of the plait must be straight, hence the plait is finished off as

heel, and sew it neatly on to the sole; then bind the upper edge with coloured braid, leaving two ends at the back to tie round the ankles (Fig. 124).

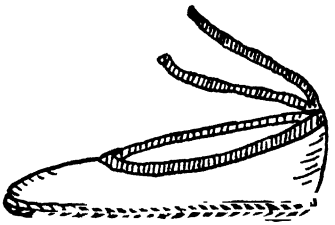


FIG. 124

A Plaited Bag. Wind a strand of raffia three times round the small end of a flower-pot. Tie it to form a ring, leaving the ends, which should be about 7 inches long. Slip the ring off the pot. Cut some raffia into equal lengths of about 14 inches. Take each length, double it in half, and fasten it to the ring as shown in Fig. 125. The ring has then a fringe all round. The number of lengths put on should be some multiple of three. Take three fringes and plait them to the end, then plait the next three, and so on to the end. Replace the ring over the flower-pot. Tie all the ends together under the pot. Thread a needle with a long strand of raffia and fasten it to one of the plaits about ½ inch below the top. Run the needle through each plait to form a circle round the pot, keeping an even distance from the top. When the first circle is complete, slip the needle a little lower and make another circle with running stitch. Continue to the bottom of the pot. Untie the plaits at the bottom. Slip the flower-pot out and retie the plaits. Cut the ends even and fray out to form a tassel as in Fig. 126. The handle is made of a simple plait.

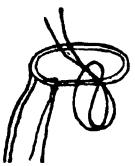


FIG. 125

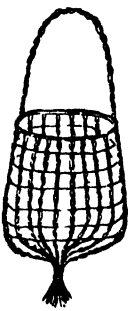


FIG. 126

CHAPTER VI

WEAVING WITH PAPER, OR THE MAT WEAVE

There she weaves by night and day
A magic web with colours gay.
TENNYSON

FIG. 127 shows the easiest mat for little ones to weave. It is a square of paper with slits cut in it, and through these slits strips of different coloured paper are woven. Many firms supply mats like this, strips for weaving, and steel needles with a spring action at the end for holding the weaving-strip. But at first it is well to use the fingers as much as possible without any special instrument, and only fall back on the tool when its use seems essential. Quite nice mats can be made of brown paper and wallpaper. The weaving

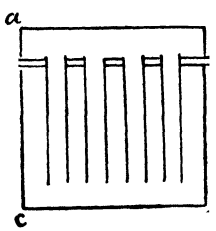


FIG. 127

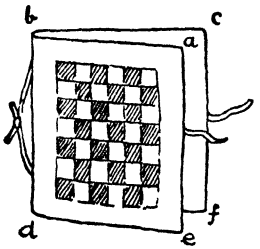


FIG. 128

of 'one' is the pattern that the children first discover—that is, 'over one, under one, etc.' Variety may be obtained by using strips of different colours and different widths.

Brown paper cut in different shapes will make various useful things. Fig. 128 shows an oblong piece of brown paper bent down the middle, *b d*, to form a cover for a *blotter*, or *note-book*, etc. The inside of the cover should be lined with brown paper to make it stiffer, and hide the ends of the weavers which are gummed to the inside.

A book-marker, needlebook, mats for doll's houses, etc., can be made, and thus the children learn something about number, form, and colour in a pleasing way.

When they get a little more skilful they will delight in weaving patterns. A study of Chapter II will help them here. There is no end to the patterns they can make by weaving over or under a different number of strands, as in Fig. 129, where the weaver goes under two, over two, etc.

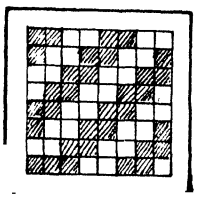


FIG. 129

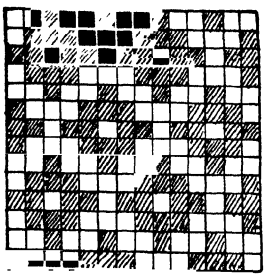


FIG. 130

Fig. 130 shows a pretty, easy pattern. But the children should be allowed the pleasure of thinking out their own patterns.

Hair-tidies can be made by twisting the mat round to form a cone. Six mats pasted on a continuous strip of cardboard will make a hexagonal flower-pot cover ; bend the cardboard between each mat by making a half-cut. Mats, prettily woven, can be pasted on stout cardboard to form a *fire-screen*. In this way the mats woven by a whole form can be used. A four-fold screen to paste the mats on can be made by joining four oblong pieces of stout cardboard with strips of unbleached calico. When gluing the calico to the cardboard remember to leave sufficient space between the two pieces of cardboard for the calico to act as a hinge, so that the screen can be folded. Paper-fasteners help to keep the calico in its place, and may be made to look ornamental. Such a screen is useful for little children's plays, and will not hurt if it falls on them. Indeed, paper woven as described above can be made into many useful things.

Fig. 131 shows how a pretty oblong *basket* can be made. Begin with an oblong piece of paper, *a b c d*, 2 inches by 4 or 5 inches by 7, etc., according to the size of the basket desired. It is best to weave the basket with a strip of paper ½ inch wide; therefore when deciding on the height of the basket, *e f*, we must see it contains an exact number of half-inches. Divide each side into half-inches, draw lines as in Fig. 131, cut away shaded portions, cut along dark lines,

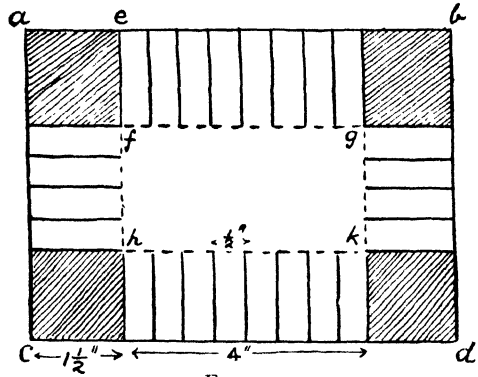


FIG. 131

and fold along dotted lines. The number of weavers will depend on the height of the side. The length of the weaver will be $f h + h k + k g + g f$. The first weaver should be gummed in its place before the second weaver is used. To finish off the top a strip of paper the same length as the weaver but twice as broad is taken, folded lengthwise, and gummed round the top as in Fig. 132, A B C D. A handle can be made of a folded strip.

FIG. 132

Fig. 133 shows another basket, made from a square piece of paper, *a b c d*, sides 8 inches, fold along middle, *e f*. Cut slits ½ inch apart. Carry the weavers, which must be a little over 16 inches long, all the way round. Gum each weaver in place. Finish off as for

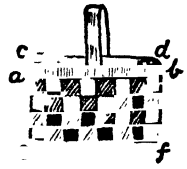


FIG. 133

the first basket and add the handle. Baskets such as these can be made of other material besides paper, American cloth for example.

Fig. 134 shows how a round basket can be planned out. The shaded portion is cut away, the spokes *a*, *b*, *c*, etc., are bent up. Strips of paper are woven round, and the basket is finished as already described for Fig. 132.

Another round basket can be made by cutting strips of paper all the same length and about ½ inch broad. Place them one by one in order on the table or a small board

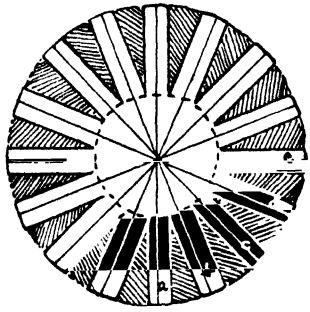


FIG. 134

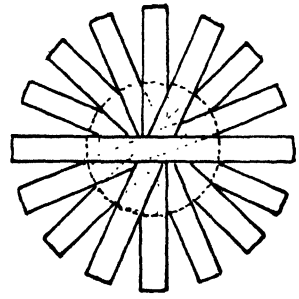


FIG. 135

as shown in Fig. 135, taking care that they are equidistant and regular at the edges. They can be pinned or gummed together in this position. Then take each spoke and bend it up to form the foundation for the sides. Having decided on the diameter of the basket, a mark should be made on each spoke to show where to bend it up. Weave with strips of paper as already described. This basket is very similar to the round baskets made in America of splint and sweet grass. In these baskets the splints are not gummed together but held in position while the weaver (of grass) is taken round two or three times just where the splints are to be turned up, then the splints are bent up each in turn and the weaving of the sides begins. The weaver must be taken over two spokes each time round, as there is an even number of spokes.

Open Weaving. This is a pleasant change from the weaving we have been describing, but more difficult. The

patterns are still geometrical but open in construction; indeed the beauty of the work lies chiefly in the open spaces, which, when filled in with a contrasting coloured lining, add to the effect of the weaving.

A B C D (Fig. 136) shows a mat from which some of the strips have been cut away to leave wide openings, E. Gum strips F horizontally across the mat, to form squares with the vertical strands. Take a strip of a different colour and begin weaving at G, under the border; pass over the first vertical strand and under the first horizontal. Continue

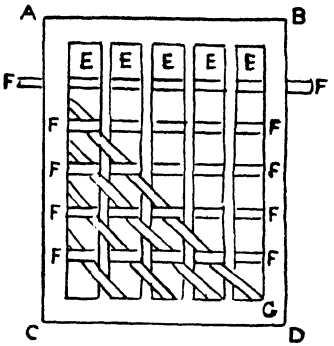


FIG. 136

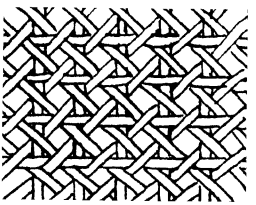


FIG. 137

over each vertical and under each horizontal till the strip reaches the other side. Then begin at the next space and continue until the mat is entirely crossed one way as in Fig. 136. Turn the mat lengthways and proceed as before. The diagonals must be pasted in position and cut the right length when finished (Fig. 137).

These mats may be made into many useful things. Children like to use this method of weaving for making seats for doll's chairs, etc. Real seats can be caned in this way, or string may be used.

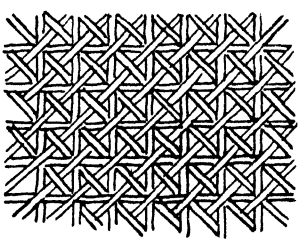


FIG. 138

Fig. 138 shows another diagonal weave. Begin the weave from the lower left-hand corner and run the weaver to the upper right-hand corner.

When one set of diagonal weavers is in place begin the next set, taking each weaver under a cross and over a single weaver.

Weaving with Loose Strips. These strips need not be paper, but thin wood (such as ash, oak, etc.) can be used. Mats can be woven into many beautiful patterns with loose strips, as explained before. The Chetemache Indians who live on Avery Island, Labrador, make mats and baskets of a variety of shapes, using strips of palmetto. The colours they employ are a dull Indian red and black (obtained from vegetable dyes), with the natural greenish grey of the palmetto. Some of their designs in these colours are very beautiful, and if palmetto can be obtained the children will love to imitate them.

If little children are being shown how to weave with loose strips, the first exercises might well be the letters of the alphabet, say the letter I to begin with. Take two strips of yellow paper 14 inches long and ½ inch wide. Double the strips in half and place them vertically side by side as A B and C D in Fig. 139. Notice the bend of one, A, is up, the bend of the other, D, down. Now take eight brown strips 6 inches long and ½ inch wide. Double one in half, and pass it round the doubled yellow strand C D, and both ends of brown through the loop of the next yellow strip A B, like *a b* in Fig. 139. Take a second brown strip, double in half and repeat the process from the left hand side (*c d* in Fig. 139). Continue weaving with brown strips from the right and left respectively. Children will readily learn that the brown and yellow take it in turns to go *inside* and *outside* each other. To finish take hold of ends B and C, the top and bottom of the vertical strips, and pull tightly until the loops are close to the horizontal strips. Next pull

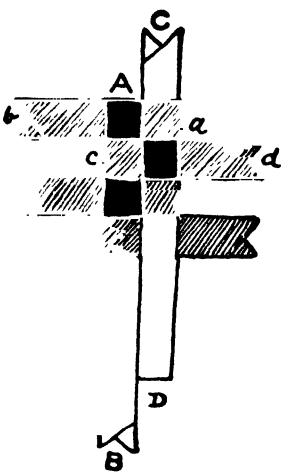


FIG. 139

every two horizontal strips right and left till the weaving is close and compact. The ends must be cut, and perhaps a touch of gum added to keep the weaving secure, and so we get the letter I. To make letters L, T, H, etc., the vertical portion must be woven first, but long horizontal strips must be introduced where the wide part of the letter will come. To do this it may be necessary to put two vertical strips in from the left, as in Fig. 140, where long strips *a b* and *c d* have been introduced to make the letter F. Turn the letter round so that the long strips become vertical, and work them as such, but with yellow strips in this case. Letters such as O, S, Q, etc., are made by cutting the letter out in duplicate, and using these doubled forms in the same way as the two vertical strips. For example, to make the letter O cut two large ovals of exact size, and then two smaller ovals that exactly fit in the large ones. There are thus four ovals. Take some short strips of brown paper, and narrow them off to fit the inner circle. In one case the loop must be narrowed, in the next case the free ends. Weave these strips in and out the double circles, just as in straight weaving (Fig. 141).

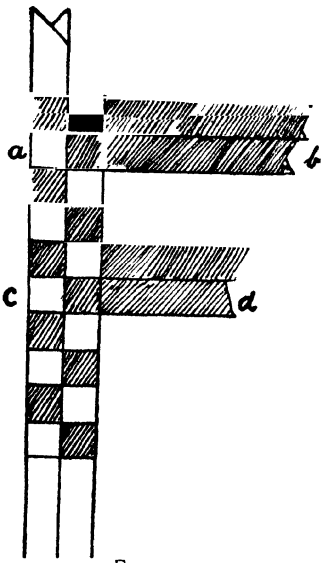


FIG. 140

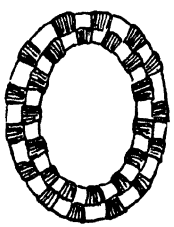


FIG. 141


FIG. 142

These curved letters are more difficult for children to manage, but they enjoy trying them. Fig. 142 shows the letter S made in the same way.

Of the various illustrations shown so far in this chapter Fig. 139 is the most important. It shows the foundation of mat work, for by adding more yellow and brown strips the children can make what size mat they like. Baskets also, of various kinds, can be made from this foundation. The question of the size of the basket can readily be determined with a little thought. First the width of the strip must be considered. Then there are practically five sides, viz., bottom, two ends, two sides. These sizes decided on, it is easy to cut the strips the right length or to make them longer by joining others to them. Care must be taken to allow 2 inches or so for turning in at the edges. For good work in all the models shown above it is essential that the strips be of perfectly even width.

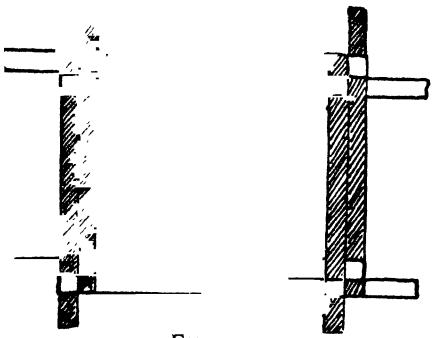


FIG. 143

Picture-frame. Cut eight long strips of one colour or different colours. Begin as described for Fig. 139; open up as in Fig. 143. Then insert small strips, as used when making the letter I, round each side (Fig. 143). Trim off the loose edges, and fasten on to cardboard back.

The Diagonal Mat Weave. This is rather like plaiting. Take four long strips, lay two horizontally and two vertically, under and over as in Fig. 144. Take strip *a b*, fold it down as in Fig. 145, bringing edge parallel with *c d*. Now take strip *e f*, fold it so that its upper edge lies parallel with *g h*, and it passes under *c d* and over *a b*. Continue in the same way, folding upper horizontal strip *g h* downward and left perpendicular strip *c d* under *a b* and over next strip, etc. From this pretty weave a napkin-ring can be made, by tucking in the edges. Children will think of other ways of finishing off the ring, for example, leave longer ends to the diagonally woven strips, bring them together and unite them with the ordinary flat mat weave, tuck in the edges.

Boxes, cornucopias, covers, etc., of almost every shape and size can be made upon these principles.

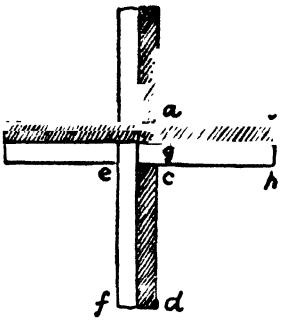


FIG. 144

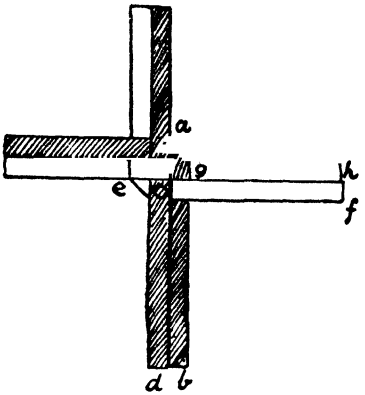


FIG. 145

Fig. 146 shows a pretty *eight-pointed star* that can be woven. It is made with four 16-inch strips, each 1 inch wide. Double each strip in half and weave as in Fig. 189. Four double strips now project from a square. Begin at

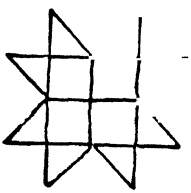


FIG. 146

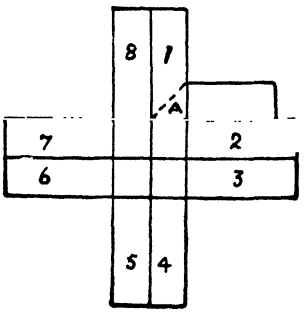


FIG. 147

the bottom and fold back the upper one of each of the double strips. As this is done another square is woven on top of the first one. To secure the last strip pass it under the square next to it and pull it through. There are now eight single strips, two on each side. To form these into points for a star, number the strips from 1 to 8, beginning

with the right-hand strip at the top (Fig. 147). Fold number 1 back toward the right as in Fig. 147, then fold it straight back toward the left, then bend it down so that a second triangle is formed on A, slip the end of the strip under the square next to it and cut it off. Proceed in the same way with strips 3, 5, and 7. Then turn the form over and fold the strips 2, 4, 6, and 8 in the same way, cutting off the ends of the strips when finished. These stars are pretty when made of gilt or coloured paper for Christmas decorations.

CHAPTER VII

WEAVING. ITS HISTORY AS FAR AS IT INTERESTS CHILDREN—SOME SIMPLE MODEL LOOMS

The weaver's craft
Still find we up and down
In country and in town,
The footprints of our father's holier tread;
A relic here and there,
A pageant or a fair,
An old tradition floating round the dead.

L. L. PLAISTED

WEAVING was one of the earliest and still is one of the most universal of the textile trades. It is interesting not only from the economic point of view (with which we are not concerned in this book), but also on account of the great amount of invention and ingenuity (both mechanical and artistic) that it has been the means of calling forth. Weaving, moreover, seems to have been a most attractive and interesting subject to both ancient and modern poets and prose-writers. Hence some simple technical knowledge of the weaver's art not only enriches one's vocabulary, but helps one to appreciate the frequent references to the art of weaving found in literature. Weaving forms an introduction to the making of designs such as we have shown in Chapters II, VI, and X.

Some account of the history of weaving is interesting, especially when some of the old contrivances for weaving can be made and used.

The weaving of mats and baskets from natural grasses and rushes can, of course, be done without any special contrivance. But when pliant thread has to be woven, and a considerable length of web is required, some means of stretching and keeping the threads in order is needed. The device generally used for this is a *loom*, which has become

more and more elaborate with time. The threads which are stretched across the loom from top to bottom are called the *warp*, and those woven in and out are called the *woof*, or *filling*, or *weft*. The *shuttle* is the tool on which the weft is wound, and by means of which it is woven or thrown from one side of the warp to the other.

Weaving consists of three processes:

(1) Taking up or lowering alternate warp-threads so that a space is opened out through which the shuttle can pass. This space is called the *shed*. The device for lifting or depressing sets of threads is called a *heddle* or *heald*.

(2) Passing the shuttle from side to side—'throwing the shuttle.'

(3) Pressing the woof or weft down in its place on top of the other woof-threads by means of a *batten*. The batten may be a finger, a pencil, a stick, etc., or a special tool made for the purpose; it will depend upon the kind of loom.

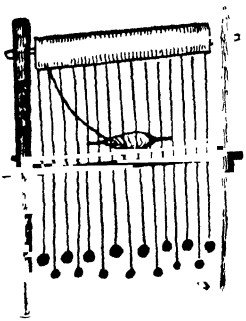


FIG. 148

The first looms were perhaps made by hanging the threads that form the warp from the branches of trees and attaching weights (stones) to the other ends. Perhaps two sticks were pushed in the ground to serve as supports for a third, to which the warp was attached as in Fig. 148, which shows Circe's loom. (A painting of this will be found on a Greek vase of about 500 B.C. in the British Museum, and also on a Greek vase in the Ashmolean Museum.) Notice the weighted warp-strands, revolving beam, stick-shuttle, and probably shed-rod, and rod-heddle.

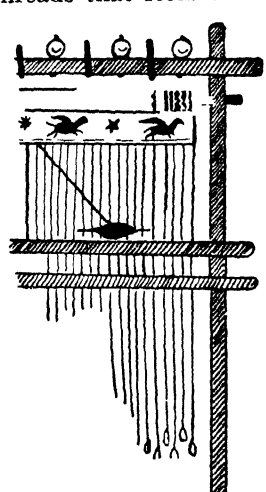


FIG. 149

Fig. 149 shows a portion of Penelope's loom, from an

Etruscan vase of about 500 B.C. (Chiusi Museum). Notice that a portion of the cloth has been wound on the revolving beam; below it is a decorative border with the stick-shuttle ready to weave farther. Similar weighted warp looms were used in Iceland and Scandinavia.

Figs. 150, 151, and 152 show Egyptian looms. The most ancient illustrations of looms are to be found among

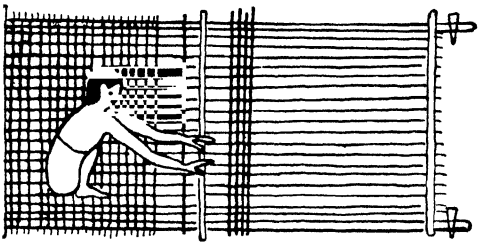


FIG. 150

the wall-paintings in a tomb at Beni Hasan, in Egypt. It is difficult always to tell from the drawings whether the Egyptian looms are vertical or horizontal. Fig. 150 is obviously a horizontal loom of two beams pegged to the ground. The weaver is obliged to sit upon the finished web as he works, because the cloth beam does not revolve.

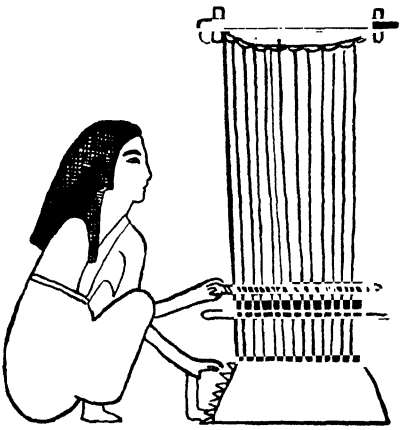


FIG. 151

Fig. 151 shows probably an upright frame with two beams. Fig. 152 shows a loom of more elaborate construction. This painting is at Thebes and shows a weaver hard at work at an upright frame, on which he is weaving cloth by means of a stick having a hook at the end. No threads are shown on the loom either of warp or weft. Unfortunately

there are very few pictures of either Greek or Egyptian looms; we have given the chief ones above. This absence of pictures seems strange when we remember that Egypt was the seat of a great linen industry, and was famous throughout the ancient world for the manufacture of 'fine' linen; and that in ancient Greece and Rome weaving was

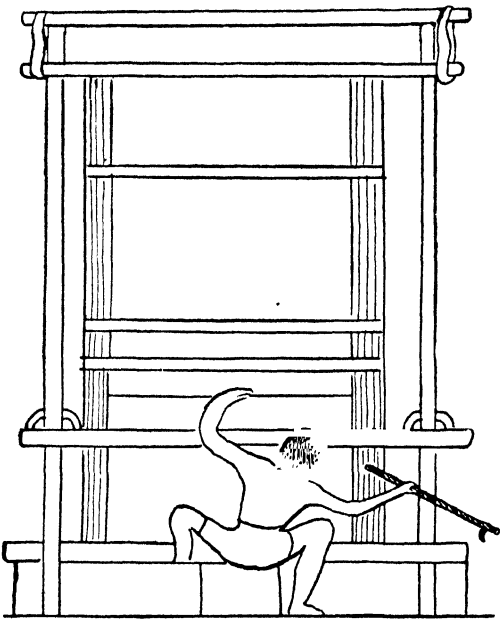


FIG. 152

a common domestic occupation carried on under the protection of Athena or Minerva. From the drawings given above we can see that as in Greece the warp-strings were stretched by means of a weight hung on each separate string and in Egypt the threads were tightly stretched all together on the frame, so the Greeks beat their weft up from below and the Egyptians beat theirs down from above.

A very simple loom to show all the essential parts we have mentioned above can be made from the lid of a strong cardboard box, oblong in shape (4 inches by 12 is a good size, but almost any oblong will do). The two long sides

are broken away altogether (Fig. 153). The short edges, *a b* and *c d*, are lengthened to *e* and *f* respectively, either by bending up about an inch of the long sides or by gumming a strip of cardboard to *a b* and *c d*. To this projection the warp is tied. The warp-string being fastened to *e* is wound round the loom lengthwise for the desired number of times, then carried down the back and tied to the other projecting end, *f*. In Fig. 153 the strings are shown intersected by two rods, *g*, *g*, in such a way that alternate strings go over and under each rod. While these rods are kept in position in the warp it is impossible for the threads to get entangled. This cross in the warp, sometimes called the *lease*, is really an indispensable part of the loom and is undoubtedly prehistoric. The need of it is not so apparent when only a few threads are being used, and when the finished work is not longer than the loom itself, because there is less difficulty in keeping the warp from getting entangled under these conditions.

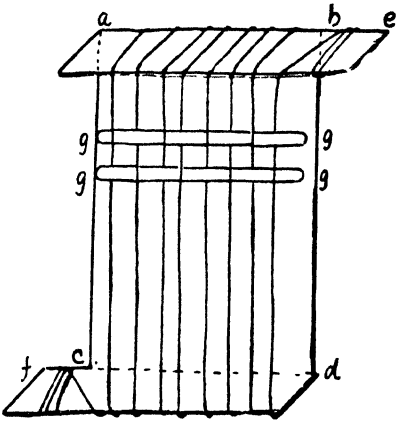


FIG. 153

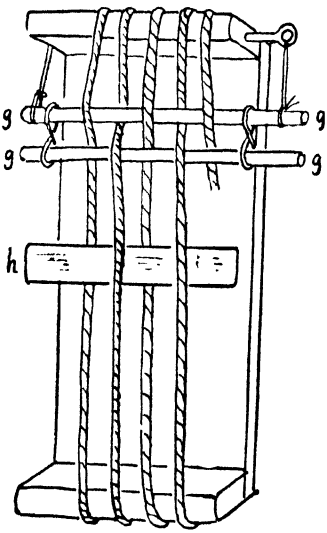


FIG. 154

This simple loom can be made of wood, and nails put in at *e* and *f* for fastening the warp. Many beautiful webs for braiding, etc., can be made on it, as we shall see later on.

Fig. 154 shows a flat rod, *h*, which should be turned

edgeways in the loom. This is called the *shed-stick* because it is used for widening the shed. Notice that rods *g g* in Fig. 154 are attached by loops of string to the top edge to keep them in their place. If these cross-rods are of good size the shed-stick may be dispensed with.

The above loom and its contrivances is typical of all primitive weaving machines, ancient and modern. Egyptian

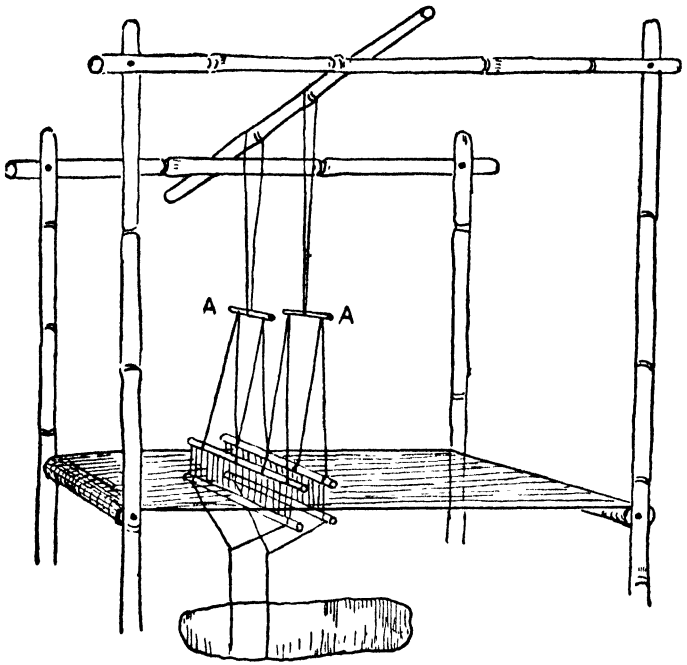


FIG. 155

and Greek weaving was no less simple. Rollers were added later to enable the weaver to make long lengths of cloth. The headle-rod or heddle, the contrivance for bringing forward the back threads of the warp all together and forming the shed, instead of picking them up separately on the fingers, as must be done in the loom above, to aid the passage of the shuttle, may have been in use in ancient Egypt and Greece. It is impossible to say how early in the history of weaving (1) the heddle was used, and (2) the

warp placed horizontally. Both improvements probably came from China, and from China spread to India and throughout the East generally.

Fig. 155 shows an old Indian loom, probably used before the birth of Christ. Notice the contrivance for opening the shed—the heddles A A. Children who can do woodwork might like to try this loom. They must remember, however, that the two chief requisites of the loom-frame are strength and rigidity.

In India to-day most looms are stretched on the ground and the Hindu weaver sits out of doors, with her feet dangling in a hole cut in the ground.

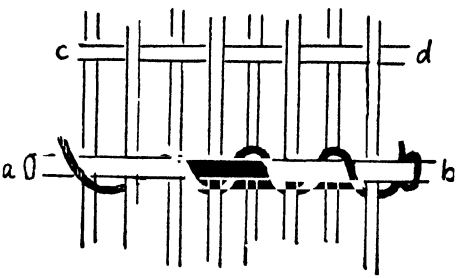


FIG. 156

It was probably about the sixteenth century that the heddle was introduced into Europe. Fig. 156 shows the details of the simplest and perhaps earliest form of heddle. It is a bar, *a b*, on which are a number of loops of thread. These loops can be made in different ways, Fig. 156 shows a simple way of obtaining them. Each alternate warp-thread must pass through a loop, which must be fairly large. By lifting the loop-rod alternate strands of warp are raised in order to make a passage for the needle or shuttle. To form the necessary second shed a rod, *c d*, is placed on the top of these and below the threads which are not caught through the loops (Fig. 156). When this rod, *c d*, is

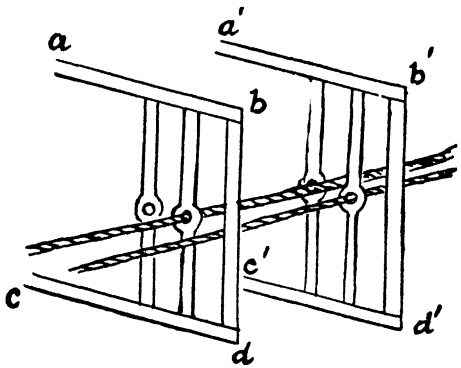


FIG. 157

depressed the second shed is made. By alternately raising the loop-rod and depressing the unattached rod the shuttle can be quickly passed from side to side.

Fig. 157 shows details of a heddle probably used in Europe in the sixteenth century. It consists of two parallel bars, *a b* and *c d*, joined by several small bars of wood or metal. In the middle of each is a hole or 'mail.' Thus in each heddle are alternate slits and holes. Alternate warp-threads are carried through the holes of one heddle and then through the slits of the second heddle (when there are

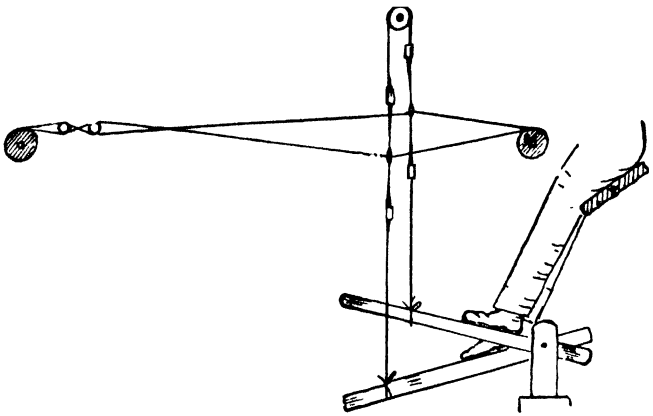


FIG. 158

two). The two heddles, and the threading of them, are clearly seen in Fig. 157, *a b c d* and $a^1\ b^1\ c^1\ d^1$. By raising the heddles alternately two different sets of threads are raised, thus forming two sheds necessary for simple weaving. By using additional heddles various patterns can be woven. In hand-looms the heddles are worked by treadles. Fig. 158 shows the method of working. Children who do wood-work will like to add this bit of mechanism to their model.

Fig. 159 shows a simple cardboard heddle, such as younger children can make to go in their toy looms, and work up and down with their hands. For when once they understand the principles of weaving they soon begin to contrive looms from cigar-boxes, and from cardboard boxes of different kinds; a few of these will be described later on.

A heddle such as is shown in Fig. 159 is sufficient for a small loom, if the warp is threaded alternately through the slits and holes, since by raising it the shuttle may be put through one shed, and by depressing it a second shed is made.

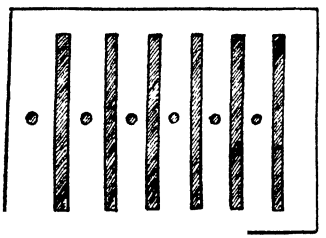


FIG. 159

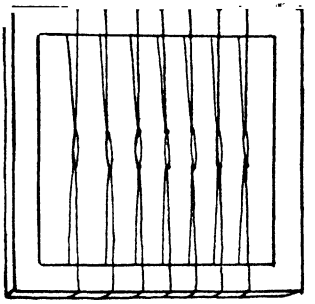


FIG. 160

Fig. 160 shows a heddle made of knotted threads. Thin threads are fastened round a frame, and each pair of threads is knotted twice either above or below the middle of the heddle, thus forming a loop through which alternate threads can be strung.

While the upright loom only was used the weft was probably passed through the openings in the warp in little skeins wound on the hand, or on the long spindles on which it was spun. When the loom was placed horizontally on the ground, some sort of shuttle that could be thrown from side to side and so facilitate the work became necessary. Obviously the chief qualities required in the shuttle are: (1) slenderness; (2) capacity for carrying a great length of thread; (3) weight, to steady it in its rapid movement; (4) perfect smoothness, so that it can run from side to side

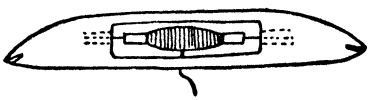


FIG. 161

FIG. 162

without catching up or fraying the warp. There are some interesting old shuttles in the British and other Museums.

Figs. 161 and 162 show the general shape and section of

the modern hand-shuttle. They are generally about 8 inches long, and 1 inch wide by ¾ inch deep. Children can invent shuttles of their own for their looms. Figs. 163, 164, and 165 show some. Fig. 163 is made of wood and is based on the netting-needle. Fig. 164 is a strip of cardboard. Fig. 165 is made of cardboard and a small cork.

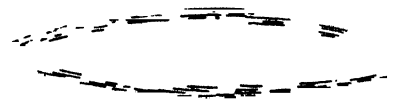


FIG. 163

The simple invention of the fly-shuttle in the eighteenth century was an extremely important event in the history

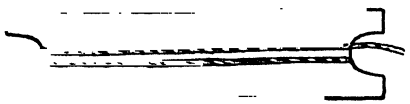


FIG. 164

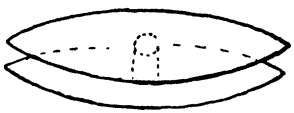


FIG. 165

and development of weaving, for the fly-shuttle races from side to side by merely working a handle. One hand only is required to work this handle, the other therefore being free to manipulate the batten, the beats of which can be more rapid. Webs of great width could now be woven as quickly as narrow ones. Before the invention of the fly-shuttle it was rare to find any woven stuff more than 30 inches wide, because the shuttle had to be thrown from one hand to the other. If wide stuff were attempted, two weavers had to be employed, one to throw, and the other to catch the shuttle. It would take too long, and perhaps be beyond the scope of this book, to describe the clever mechanism used for working the fly-shuttle. Those interested should consult *Hand-loom Weaving*, by Luther Hooper.

It should be noted here that it was the invention of the fly-shuttle that made the power-loom possible, for the throwing of the shuttle was the chief difficulty that the inventors who attempted to apply steam-power to the loom had to overcome.

The batten used by children for their looms can be a ruler, which resembles the old weaver's *sword* which was used both for enlarging the shed and battening down the

weft. In many museums there are beautifully ornamented weaver's swords from Japan and the East Indies. The skill and thought expended upon their design show how those people of long ago loved their work.

The comb or reed (Fig. 166) is another form of batten. It is used both for beating the weft together and keeping the warp-threads evenly distributed. Weavers call the long comb the reed, because the divisions were originally made of fine strips of cane or reed fixed between four half-round laths. These laths were bound together in pairs by fine waxed cord, the strips of cane being put in between the laths, the spaces between the strips being regulated by the thickness of the cord itself. The bound laths were finally steeped in melted resin to fix everything securely. In Fig. 166 *a a* and *b b* are pairs of half-round laths; *c c* are the reeds that are held between the laths by the cord *d*.

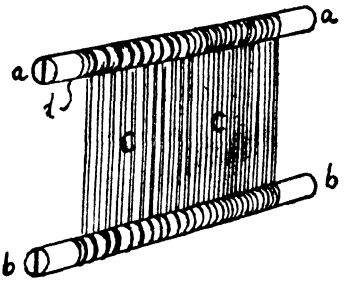


FIG. 166

The reed is generally fixed in a heavy, swinging frame called the batten; hence the whole is often called the batten. In most pictures of Old English looms the batten or reed is clearly shown. Children can use an ordinary comb for their batten, or make one by inserting thin, strong pieces of wire, or kindergarten round sticks, or match stales between two cross-bars as in Fig. 167.

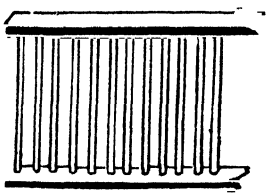


FIG. 167

Fig. 168 is a fairly correct drawing of an Old English loom, and shows clearly all the different parts of the loom we have been writing about. It is a useful drawing to consult when making a loom oneself.

A, A represent the cross-sticks and cross in the warp known as the lease, that prevents the threads from getting

entangled; B, B are the heddles; C C C C is the batten; D D the back or cane roller, or beam, on which the warp is wound; E E the front or breast roller on which the

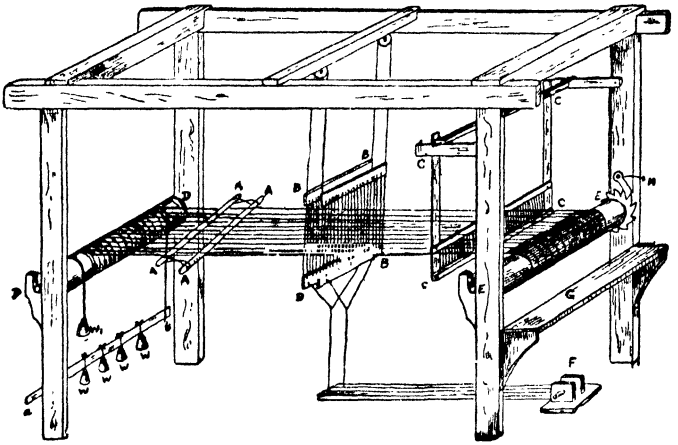


FIG. 168

finished cloth is wound; G the weaver's seat; F the treadles. *a b* is a bar suspended between two ropes, upon which any amount of weight (W) that may be required is hung. The ropes that suspend *a b* are wound three times round the roller at each end and have a small weight, W_1 (just heavy enough to prevent the rope slipping too freely when the bar is heavily weighted), attached to their other ends. It is obvious that the warp will be stretched in proportion to the amount of weight hung upon it. A box instead of a bar is sometimes suspended from the back roller into which weights are put H shows ratchet and wheel attachment which allows the front roller to be turned only in one direction.

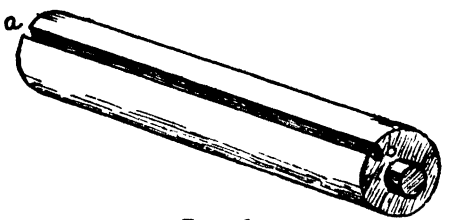


FIG. 169

Fig. 169 shows the cane roller. It has a groove, *a b*, running from end to end, deep enough for two smooth wooden or metal sticks to be placed one above the

other in it. On one of these the warp is spread (Fig. 170). It is then slipped into the groove, *a b*. To fix it the other stick must be passed underneath the roller and the warp into

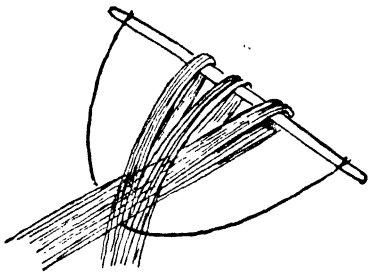


FIG. 170

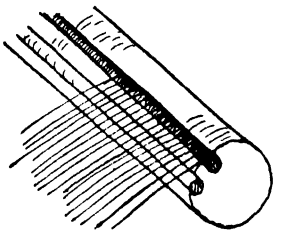


FIG. 171

the groove as shown in Fig. 171. For spreading the warp on the cane-stick an instrument known as the *raddle* is used. It is like a comb standing upright, between the teeth of which the warp is placed. A cap is then placed on the raddle to keep the warp safe. The cane-stick having been put in the roller as described above, the warp can be safely wound on and will be evenly distributed along the roller. The front roller has a similar groove. The loom described above is too difficult for many children to make, though some of the details may be copied on their toy looms.

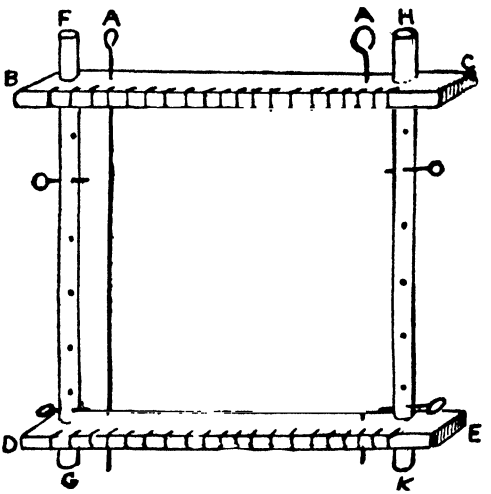


FIG. 172

Excellent little looms of different kinds for the children to work on may be brought from various educational institutions. Wooden frame looms of different kinds also have been patented, and can be obtained from the various

educational supply stores at prices varying from 2s. to 8s. 6d. each. These wooden frame looms can, however, be quite easily made in the woodwork class.

Fig. 172 shows a simple wooden frame that explains itself. The pieces of wire, A A, are for keeping the selvedge straight. When weaving the weft should go round this wire as well as the outside strand of the warp. Notice the grooves ($\frac{1}{4}$ inch deep, $\frac{1}{4}$ inch apart) in cross-pieces, B C and D E, for holding the warp. The holes in the rods, F G and H K, are for regulating the length of the material.

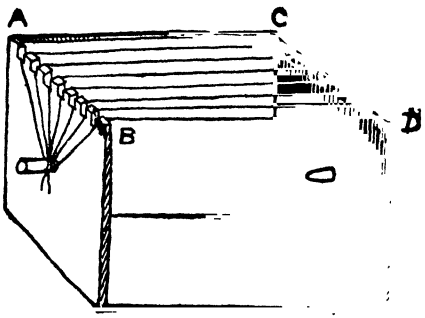


FIG. 173

Fig. 173 shows a chalk-box ingeniously fitted up as a loom. A B and C D are the dove-tailed edges where a side is fitted in. This loom is quite a valuable one for bead-work, as will be seen in Chapter XXI.

It would take too long to describe the various clever looms thought out by children. Two more only are given

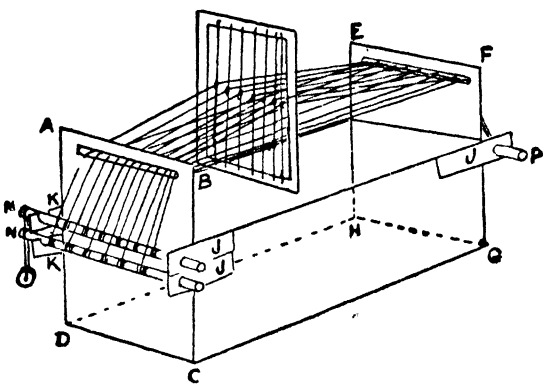


FIG. 174

here that other children may like to copy. (1) A simple loom can be made from a cardboard box (Fig. 174), a

suitable shape being that of a shoe-box, 10½ inches long, 5½ inches wide, and 8½ inches deep. Cut two pieces of cardboard 5½ inches square. About ½ inch from one end of each cut a long, narrow slit. Gum these pieces to each end of the box (A B C D and E F G H in Fig. 174). Cut three pieces of card like J (Fig. 175), and three like K (Fig. 176).

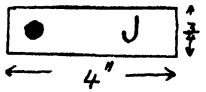


FIG. 175

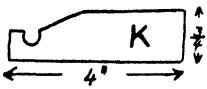


FIG. 176

Gum these to the sides of the box to hold the rollers as in Fig. 174. The rollers are pieces of round rod about 7 inches long. The heddle may be made as already described in this chapter. The one in Fig. 174 is a cardboard frame (width of frame ¼ inch) 5 inches square, the threads are ¼ inch apart. A loop is made in the middle of each thread. Tie a

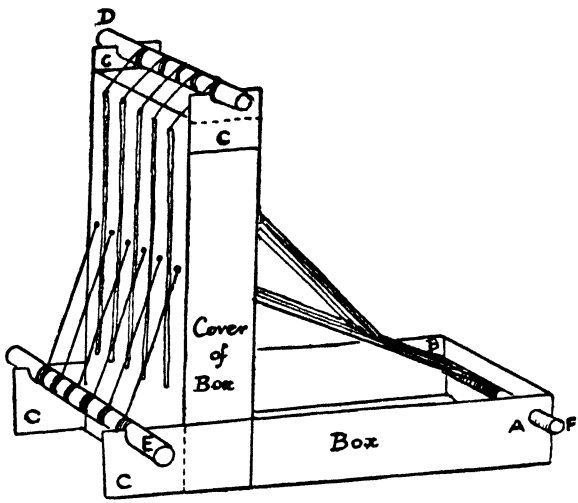


FIG. 177

number of threads to rod P (clever children can try to make a roller with a groove), pass all through the slit in E F G H (Fig. 174), and alternately between the strings and through the loops in the strings of the heddle. Tie all threads passing

through the loops in the string to the rod M, and all passing between the strings to rod N. Roll up the thread on both rods and fix them in position; tie weights at each end to keep the threads tight. On this loom the children can make a necktie 15 inches long by 1 inch wide.

(2) Another simple loom (Fig. 177). Take a small cardboard box with a cover (6 inches by 3 inches and $1\frac{1}{2}$ inches deep is a good size). In the cover cut five long, narrow slits about $\frac{1}{2}$ inch apart, and between each slit and half-way between the two ends of the cover bore holes as in Fig. 177. Make two holes, A and B, in the sides of the box near one end, to pass a round rod through. Fig. 177 shows how the box is gummed into the cover. Four pieces of cardboard (C in Fig. 177) are gummed to the sides of the box and cover to carry rods D and E. Tie eleven threads of wool or thick silk to the rod F. Put every alternate thread through the holes and tie it to rod E; the other threads are passed through the slits and tied to rod D. Wind up the threads on these rods and place them in position. Weights can be tied to rod E to keep it in position and to keep the threads taut. By lowering and raising rod D different sheds are made for the shuttle to pass through. Doll's mats, blankets, and towels $2\frac{1}{4}$ inches wide can be woven on this loom.

CHAPTER VIII

SPINNING

> And all the women that were wise-hearted did spin with their hands, and brought that which they had spun, both of blue, and of purple, and of scarlet, and of fine linen. And all the women whose heart stirred them up in wisdom spun goats' hair.
>
> *Exodus xxxv*, 25, 26

THE children having learnt so much about weaving will want to know how the cotton and woollen threads they use are made. Spinning is more difficult for children than weaving, and perhaps less practical in school, but in any case they will love to hear the full story of how the fleece from the sheep's back becomes woollen stuff ready for wear.

The wool has to go through six processes before it is ready to be put upon the loom and woven · (1) scouring, (2) dyeing, (3) teasing, (4) oiling, (5) carding, (6) spinning. If raw wool is obtainable the children themselves can put the wool through all these operations.

Scouring. Take the fleece as it comes from the shearer, open it, and put it to soak in cold or warm water. After some hours wash it in soft-soap lather and warm water, taking care to keep it light and unfelted. Rinse it well, pull it out. and spread out to dry

Dyeing. The simplest method of dyeing is to use a lichen (crotal) which grows on trees and rocks Gather the old lichen, grey and black The dye-pot can be an enamelled saucepan Put in a layer of crotal, then a layer of fleece. then crotal, and so on. When half filled add cold water until the pot is three-quarters full. Bring to the boil, and boil from one to two hours, stirring only occasionally. Take the fleece out, rinse it well, and spread out to dry. Pick out any pieces of crotal. Other methods of dyeing will be found in Chapter III. Crotal gives a rich red-brown.

Teasing. Pull the dry, dyed fleece into fluff. Pull it lengthways as far as you can, then sideways, pick it over little by little. Throw away burrs or any odd bits.

Oiling. Sprinkle the teased wool with 'cloth-oil,' or any cheap oil, until it is fairly greasy. The oil is worked in with the fingers. This makes the wool easier to spin.

Carding. The process of getting the fluffy wool into separate fibres and preparing it for spinning is done with carders. The 'cards' are two pieces of wood about 9 inches long and 5 inches wide with handles. Each piece of wood is fitted with bent-wire teeth, the bent ends turning toward the handles. They are used to brush the wool into order for spinning. Carders can be obtained through any school of weaving. When carding you should sit on a low stool so that the feet rest on the ground. Hold one card in the left hand, the handle pointing to the left, away from you (Fig. 178). Put a small handful of oiled wool on its wires; take the handle of the other card in the right hand, the forefinger

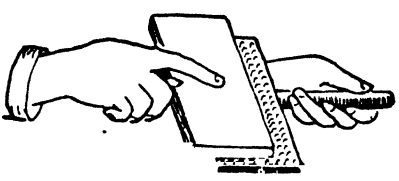


FIG. 178

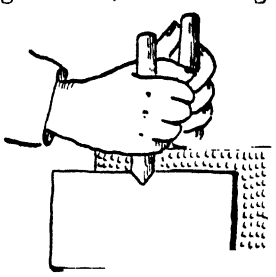


FIG. 179

stretched out on the card's back in the traditional way. Now lightly draw the right card over the left, and repeat this several times. The wool will now be nearly all on the right carder, and it must be got on to the left one again. To do this lift the carders up and let them face each other, with the handles pointing upward and both hands turned inward (Fig. 179). Now push the surface of the right carder down over that of the left one, draw it up again, and nearly all the wool will be on the left carder. Repeat this once or twice until all the wool lies loosely on it. Pick it up lightly with the right carder and shake it on the back of the left

one (which has by this time been turned over). Roll it between the backs of the carders and it is now a soft roll or *rolag*, ready for use.

Spinning. Now we come to the actual spinning of the short fibres of wool into a continuous thread. This is a matter of twisting, and the children can experiment for a little while, rubbing a few fibres between the palms of the hands or down the thigh. There are two methods of spinning (*a*) with the spindle alone, (*b*) with the wheel. The spindle is the more primitive form, so we will begin with that.

The Spindle. The simplest form of a spindle consists of a piece of stick with either a hook, spiral, or a notch at the top in which the thread can be fixed while the stick rotates (Fig. 180). The heavier the stick the easier it is to rotate and the longer will the motion last, therefore weights in the shape of wooden discs, balls of clay or wax were added, and the spinster had time to devote her attention to controlling the amount of flax or wool to be twisted. "Even when there is no whorl," says Dr Harrison, "the spun yarn that is wound on the spindle after a time becomes heavy enough to increase the length of the spin to a perceptible extent. It may have been the observation of this fact that led to the invention of the spindle-whorl, which is probably an earlier device than the thickening of the spindle itself."

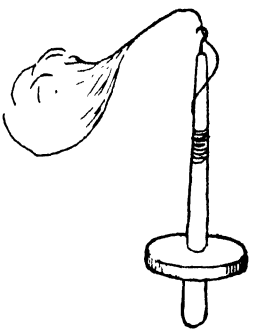


FIG. 180

The spindle-whorls found in British pit-dwellings and tombs show that the art of spinning was practised in the Bronze Age. A figure of a Greek spinster is to be seen on an ancient Greek vase in the British Museum (date 500 B.C.)

Fig. 181 shows various kinds of spindles. A has a clay ball for weight, and a little spiral at the top. B passes through a perforated stone. In C the wood is thickened toward the middle to give weight. D is a modern steel spindle from a machine, showing how little it has altered. The whorl is represented by a pulley round which passes the cord which

brings about the rotation of the spindle. E shows the kind of spindle still used in the Highlands; some of the wool has been twisted and fastened to the spindle so that it is ready for use. The spindle is also still used in the East Indies where the exceedingly delicate yarn for Dacca muslins is made on it. From pictures, photographs, and visits to museums and exhibitions children can learn much about spindles and the various ways of using them —*e.g.*, resting the end on the ground or in a bowl, holding it so that it hangs in the air supported by yarn and fibre, rolling it on the hip, etc.

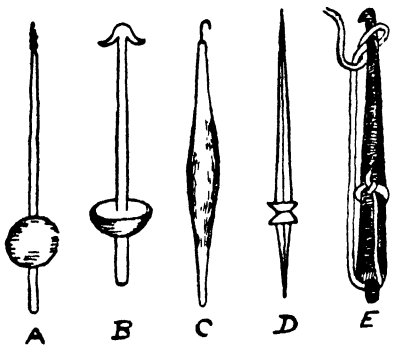


FIG. 181

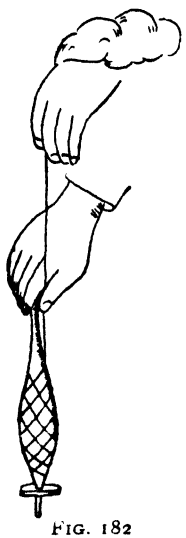


FIG. 182

Fig. 182 shows how to spin on a spindle When beginning, take a rolag and from it draw out a little piece of wool. twisting it as it is pulled. Make about 12 inches of thread in this way, and tie the end under the hook of the spindle. Hold the rolag in the left hand so that it hangs over the back of the hand, and let the spindle hang down With the thumb and finger of the right hand twist the spindle sharply to the right at the hook end. Now take hold of the thread just below the point at which the left hand is holding the rolag. Draw the left hand up the rolag about an inch, and thin out the wool thus exposed by drawing the two hands apart from each other vertically. Take the right hand away, and the thin piece of wool will twist into a thread. To prevent the wool running into the rolag before it is thinned, hold very tightly with the left hand. Repeat the drawing out several times. When the spindle ceases to spin it must be twisted again.

The Distaff. Before we leave the spindle we must say a word about the distaff, its traditional companion. The real meaning of distaff is 'bunch-stick, because at one end of a stick a number of rolags are bunched up and tied. The stick was generally a firm one (about 3 feet long). At one end of it paper was wound until it formed an elongated ball; it was then tied on with tape The rolags (about ten to twelve) are stretched longways and doubled: they are then placed round the paper ball, the doubled parts downward and the ends at the top A piece of tape is tied firmly round the rolags near the tops, the rest of the wool is bound loosely with pretty ribbon (Fig. 183). The distaff is fixed either into the belt, or by means of a piece of ribbon to the shoulder, or held under the arm

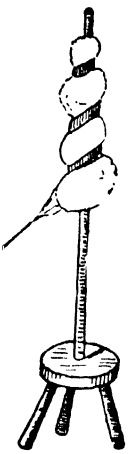


FIG. 183

When trying to spin with the spindle the children find that the hands have almost too much to do—the twirling of the spindle, the holding and thinning of the fluffy wool, and the important 'nip' needed on the thread to prevent the 'spin' running right up to the mass of wool - and that some way is needed to relieve the hands. In Saxon times we find record of a fixed distaff, mounted on a stand (Fig. 183), so that the spinster had a little more freedom. The first great improvement in the spindle, however, consisted in fixing it horizontally in bearings and causing it to rotate by a belt passed over a great wheel. This wheel was first turned by the hand. Next came the fitting of a separate bobbin on the spindle to receive the spun yarn, and this, in effect, constitutes the spinning-wheel of the East, which has been in use from time immemorial (the Chinese and Hindus were perhaps the first to use the wheel), and also the 'muckle wheel' (used in Scotland until recent times). This simple wheel was known in Europe as early as the fourteenth century, but the greatly improved small, or Saxon, wheel, worked with a treadle, and allowing the spinner to sit with both hands free, was not known until much later times (seventeenth and eighteenth centuries). The Saxon wheel

changed spinning from an intermittent into a continuous process.

The Spinning-wheel (Fig. 184). The spindle is made of iron and placed horizontally between two pillars *a* and *b*,

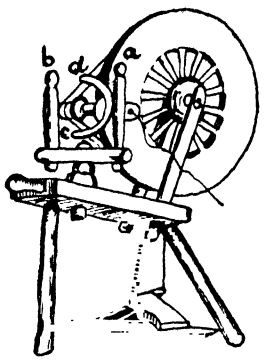


FIG. 184

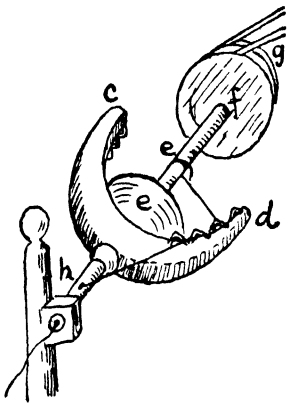


FIG. 185

its ends resting in holes in pieces of leather attached to the pillars. On the spindle is fixed a pair of wooden wings, the fliers (*c d* in Figs. 184 and 185), fitted with wire hooks. There is also a reel (*e* in Figs. 185 and 186) with a groove at the farther end (*f* in Figs. 185 and 186). This reel is for winding the spun yarn on. Last of all there is a wooden reel (*g* in Figs. 185 and 186) with one or two grooves for turning the spindle. The spindle is twisted by means of a double driving-band which passes twice round the great wheel, once round the reel-wheel (*g* in Fig. 186), and once round the spindle-reel (*f* in Fig. 186). To spin, a piece of hand-spun yarn is tied to the reel *e* (Fig. 185), passed round one of the wire hooks, through one of the openings of the spindle (*h* in Figs. 185 and 186) and out at its end. Turn the wheel with the right hand, treadle, and the yarn will be drawn into the reel. When it is nearly all in join on a rolag and spin, keeping both hands above the yarn as in Fig. 187. The reel is filled

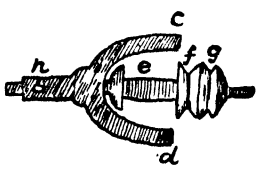


FIG. 186

evenly by putting the yarn over the different hooks in succession.

Clever children will be able to make a toy model of a spinning-wheel from this description. The wheels may be

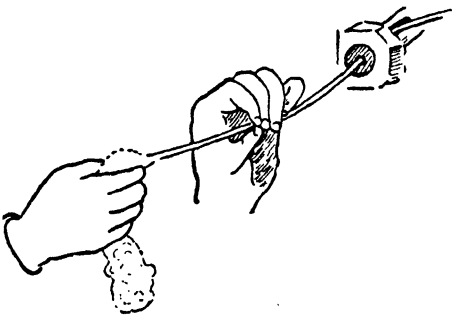


FIG. 187

made of cardboard, several layers being gummed together to form the necessary groove; the spindle may be a smooth round wooden rod (or a knitting-needle) with a hole bored a little way down it, etc. The wheel may be turned by hand if a treadle is too difficult to make.

CHAPTER IX

CARDBOARD LOOMS FOR DOLL'S CLOTHES, ETC.

Thin lay your warp ; when you the loom prepare
And close to weave the woof no labour spare.
The rigour of the day a man defies
Thus clothed, nor sees his hairs like bristles rise.

HESIOD, *Works and Days*

THERE are many ways of making simple looms, some of which children can suggest for themselves.

(1) Notches can be cut along the opposite sides of pieces of fairly stiff cardboard. These looms are very convenient, as they can be used many times.

(2) Holes can be bored along the opposite sides of cardboard, through which the warp is threaded. The disadvantage of this loom is that the cardboard must be cut to take the weaving off.

(3) Four thin strips of wood can be tied together at the corners, or nailed and glued if greater strength is required.

(4) The sides and ends of wooden chalk-boxes, if fitted by dovetailing, form very good looms. When soaked in water they come to pieces very easily.

(5) Nails can be hammered in along the opposite sides of any piece of fairly thin wood—*e.g.*, the lid of a cigar-box. For little children who are beginning weaving the notches, holes, or nails should be wide apart, about $\frac{1}{2}$ inch to $\frac{3}{4}$ inch, but as they get older and more experienced the space between can be made much smaller, *e.g.*, $\frac{1}{4}$ inch.

THE FRAME LOOM

Fig. 188 shows the method of stringing the frame loom for a mat. The warp should not be wound round too closely together nor too tightly. Tie the woof at A. Join a new strand to the old by a reef knot (see Chapter XVIII), and

take care that all such knots come near the edge. When the mat is finished stitch round the four edges as in Fig. 189.

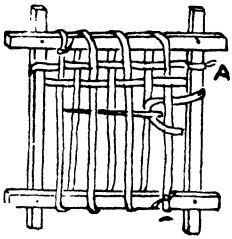


FIG. 188

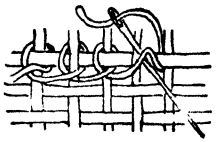


FIG. 189

Cut through the strands round the frame and fray out to form a fringe. Another method of finishing off is to cut the strands, knot the ends together, and then fray out as before.

THE CARDBOARD LOOM

Fig. 190 shows the method of stringing the cardboard loom for a mat. There must be an uneven number of notches in order to get an uneven number of threads. Then the rows of weaving alternate with each other.

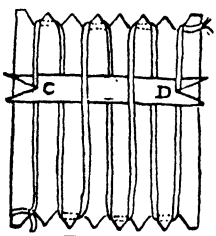


FIG. 190

It is very difficult for children to avoid pulling the warp threads together when weaving mats on the cardboard loom, hence some device must be thought of to prevent this. A piece of cardboard, C D, notched at each end can be used to hold the threads in place, and will also serve as a batten. Another way is to sew knitting-needles or very stiff pieces of cane at each end, parallel to the warp. These can be slipped out when the work is finished. Children should be encouraged to think out other methods for themselves when they realize their difficulty. The edges of the mat can be left plain, or finished with a border made as in Fig. 191 and stitched on.

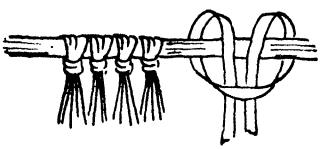


FIG. 191

Loom for a Bag. Cut a cardboard loom 6 inches by 8 inches. Rule lines across it ¼ inch apart. Cut the notches fairly deep, especially along the top. To string the loom begin with the thread E (Fig. 192). Notice that the warp is wound round the loom along the bottom, C D, but behind or in front of the notches along A B, the top, which is thus left open. To begin the weaving tie one end of the woof to the top of one of the warp-strands (A in Fig. 193), and weave round the loom, opening one of the double strands in the notch F (Fig. 192) to obtain an odd number of strands. As the weaving for the bag is very close the neatest method of joining a new strand is to place it close to the old one, thus making a double woof (Fig. 193) for a short distance. Take the bag from the loom by slipping the loops over the points, and gently pull the woof up to fill the spaces in these loops. The two loose ends of the warp must be knotted and stitched into the weaving. The border may be left plain or made stronger by plaits. For handles make two- three- or five-plaits, about 5 or 6 inches long, bind, fray the ends, and stitch to the sides of the bag.

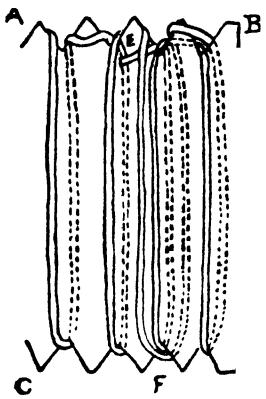


FIG. 192

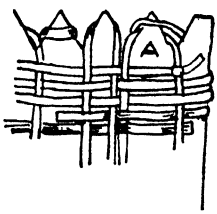


FIG. 193

Looms for a doll's hood, muff, etc., can be made in a similar manner, using the method of stringing shown in Fig. 192 for the sides of the loom that have to be left open.

The following are some simple looms that will interest children.

Loom for a Hammock. On a piece of cardboard draw a rectangle, A B C D (Fig. 194). Draw A D and B C crossing at E. With E as centre, and radius E A, describe arcs on A B and C D. Divide the lines A B and C D into divisions of ¼ inches and project them on to the arcs. Draw the

notches and cut out as shown in the diagram. Mark two points on either side of E, ½ inch away from it, namely F and G. Make holes through these and to them fasten two small rings. Tie one end of the warp to the ring F, pass it over notches 1 and 2, slip it through the ring G, then back over notches 3 and 4, and through ring F, and so on until the loom is strung; then tie the end of the warp to one of the rings.

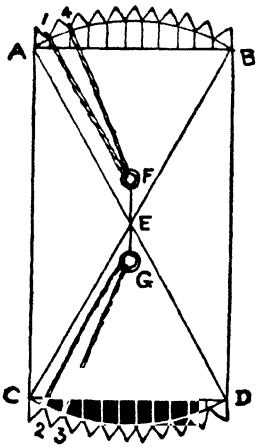


FIG. 194

There are two ways of weaving the hammock:

(1) Cut different coloured pieces of wool of sufficient length to leave a fringe on each side of the hammock, and weave them in patterns in the warp. To prevent the threads from slipping out of place weave a few rows at the top of the warp near the rings G and F. Oversew or buttonhole these rings before taking off the hammock. Cut the fringe evenly and fasten it at the outer warp-threads by stitches.

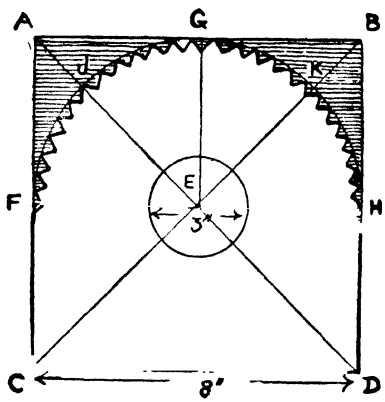


FIG. 195

(2) Use long threads of different coloured wool and weave backward and forward, thus having no fringe.

Loom for a Small Lampshade (Fig. 195). Cut a piece of cardboard 8 inches square, A B C D. Draw diagonals A D and B C crossing at E. With E as centre, and radius E F, describe the semicircle F G H. With the same centre, and radius 1½ inches, describe a small circle. Divide the arcs F J, J G, G K into eight divisions, and arc K H into nine.[1] This gives the uneven

[1] The divisions marked in Fig. 195 are not to be taken as exact.

number necessary for weaving. Mark notches as shown in the diagram, and cut off the shaded portion.

Make a thin raffia ring, 3 inches in diameter, and stitch it over the small circle on the loom. Tie a piece of raffia to the ring, pass it behind notch F and through the ring, and so on until the loom is threaded. Now stitch an end of raffia through the ring coil and begin weaving, pulling the raffia toward the centre. When the weaving is finished cut the stitches that fasten the ring, bend the loom slightly, and slip the loops over the points. Sew the outer warp-threads to the ring to prevent their slipping off, and cut off the exposed half of the ring. Sew the cut edges of the raffia ring together with a fine strand of raffia, and the straight edges of the weaving to make the shade. A raffia fringe can be made and sewn round the edge of the shade.

Loom for Doll's Knickers (Fig. 196). The size of the loom will depend upon the size of the doll. Measure from the waist of the doll to just below the knees; measure also the width of the doll. Make a rectangle, A B C D (Fig. 196), of which side A D is the length of the first measurement, and A B is one and three-quarter times the second. A E is the measurement from the waist to the top of the legs. Find the centre of E F, namely G, and mark on each side of it, ¼ inch distant, points H and J. Make D K equal to E H and L C equal to J E. Join H K and J L. Cut off the shaded part, H J L K. Divide A D and B C into divisions of ¼ inches and draw lines across At the ends of these cut very small notches. Tie one end of the warp at C and wind round the leg until the line E F is reached. Take the warp across to E and wind it round the

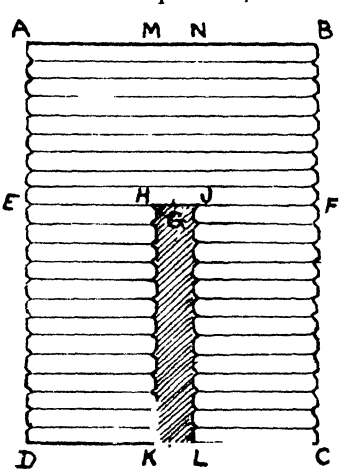


FIG. 196

other leg. When D is reached take the loose end of the warp and pass it over and under the strands to E, then continue winding round the rest of the loom Now weave the weft-thread up and down each side of each leg. A strip, M H J N, is left unwoven on both sides of the loom. Weave down from M to H, turn the loom and weave up to the waist, then down again, turn the loom and weave up, continuing thus until the whole is filled. When the knickers are taken from the loom a piece of thick silk should be run round the waist to tie them on the doll.

Loom for a Jersey. The size will, of course, depend upon the doll. The measurements for the width of the body and the sleeves of the cardboard loom should be about one and three-quarter times the measurements taken from the doll. Draw the plan on cardboard (Fig. 197), adding the part for the neck about ½ inch deep. Cut notches ¼ inch apart, small along the sides of the body but deeper on the sleeves and neck. Tie the end of the warp to A and wind round the loom until the sleeves are reached. As their ends must be left open, thread this part of the loom as already described (Fig. 192). Take a new piece of thread for the neck and thread as described for the bag (Fig. 192), because the left side must be left open so that the jersey can be slipped over the doll's head. Weave the two sleeves first, carrying the weft round and round. Then weave up and down the front of the body until the right shoulder is reached, and as this is not to be left open carry the weft down the back of the loom and then up again to the front. Do this until the right side is finished. There now remains a space at the back of the loom which must be woven. When the jersey is

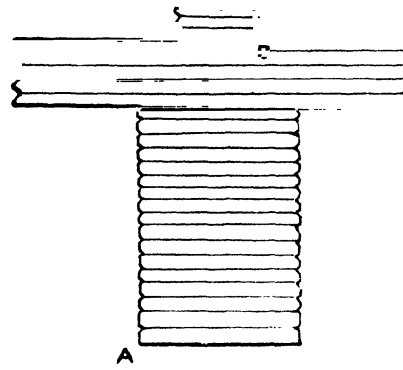


FIG. 197

taken from the loom add tiny buttons and loops at the neck and shoulder for fastening.

Another Loom for a Jersey. Fig. 198 shows a loom of another shape. When planning out this loom see that there

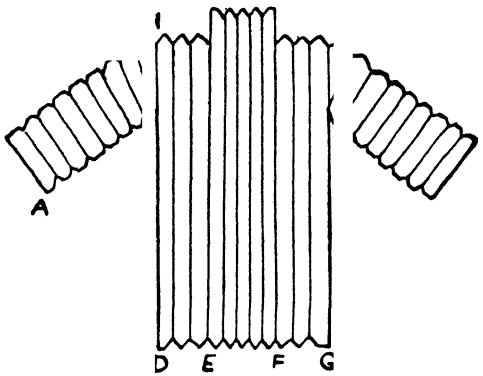


FIG. 198

is an *even* number of notches along B C. Tie the warp at A and wind round the arm until H is reached; now thread so that the part over the shoulder is closed and the part from D to E is open; continue threading, leaving the neck and bottom and the other shoulder of the jersey open. The part between B C E F remains to be threaded. Tie a new warp-thread at B and thread this part. Tie the weft-thread at D and weave right round the loom until the arms are reached, then weave across from cuff to cuff until the neck is reached, then weave round the loom again. The other sides of the sleeves and a part of the back remain to be woven.

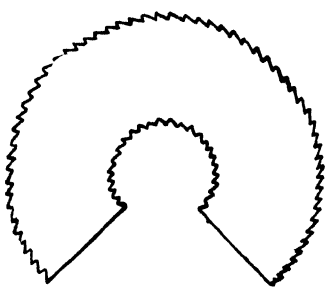


FIG. 199

Fig. 199 shows a loom for a doll's cloak. This loom is somewhat difficult to cut; the notches must be made fairly deep especially along the inner circle as the warp may slip off.

Loom for a Doll's Coat (Fig. 200). This is cut similar to the loom for the jersey, but as the coat is open in front two pieces of cardboard, A D and B C, having notches cut in them corresponding to those on the loom, are sewn down

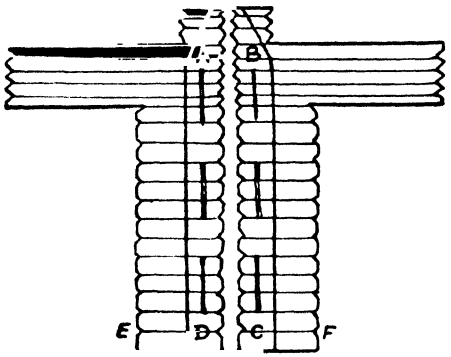


FIG. 200

the front. Tie one end of the warp at D, wind over E round at the back, to F, and round the point at C, then back to F, and round the loom to the front again, until the sleeves are reached. Then thread from the middle of the front to the cuff so that the end of the sleeve is open. Carry the warp round to the back and thread right across. Then thread the opposite front and sleeve. Use a new warp-thread for the neck. The weaving is quite easy. Weave up the edge of the fronts with a different colour to form a border.

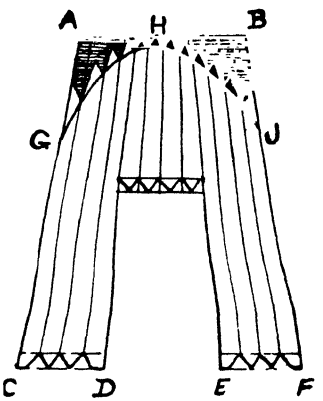
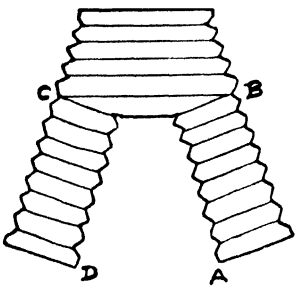


FIG. 201

Looms for Slippers. Draw the shape A B C F (Fig. 201), according to the measurements taken. Plan out the $\frac{1}{4}$ inch lines; then draw the curve G H J, taking care to leave a margin of $\frac{1}{4}$ inch for cutting the notches. Cut off the shaded part. When the weaving is finished take it from the loom, oversew the ends at the back and sew it on to a sole.

Fig. 202 shows another shaped loom. Tie the warp-thread at A, carry it to B, across to C, and down to D. When D is reached take the loose end of the warp and pass



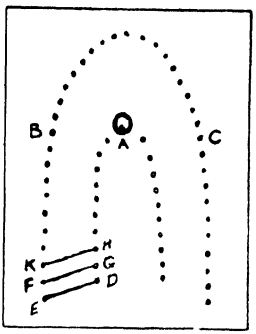


FIG. 202

it over and under the strands to C, then continue threading the rest of the loom.

Fig. 203. Draw the shape of the slipper on a piece of cardboard. Make holes about ¼ inch apart as shown in the diagram. Sew a small ring at A. Thread a needle with a piece of raffia or wool for the warp. Carry the thread from E to D then behind the loom to G, from G across to F, behind to K, and so on. When B is reached the warp passes through the ring until hole C is reached.

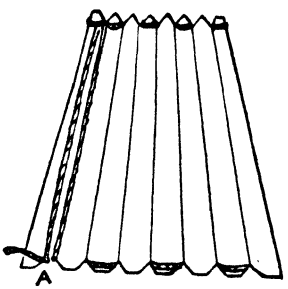


FIG. 204

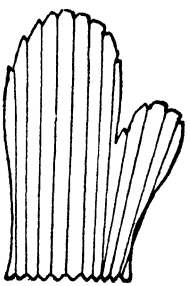


FIG. 205

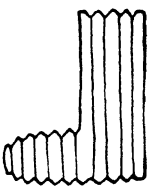


FIG. 206

Loom for a Doll's Skirt. Fig. 204 shows the shape of the loom. As the threads form an even number the weft must always be carried over two warp-threads, or a double

thread can be added as at A B. Pass a piece of thick silk through the loops at the top when the skirt is finished, for fastening it round the doll's waist.

A doll's cap or a child's pointed cap can be made on a loom similar in shape to that for the skirt.

Fig. 205 shows a loom for a mitten. A loom for a sock could be made as shown in Fig. 206.

Loom for a Child's Reins (Fig 207). Cut a piece of cardboard about 4 inches wide and as long as the chest measurement of the child for whom the reins are intended.

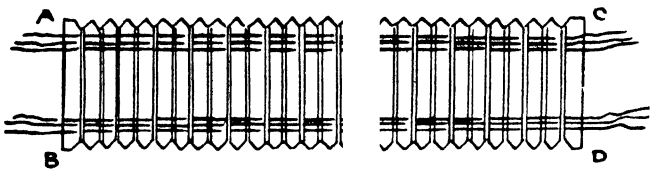


FIG. 207

This will probably be about 10 or 11 inches. Draw lines ¼ inch apart and cut notches. String the loom as for the mat (Fig. 190). Cut six pieces of thick wool about 30 inches long. Take two together and weave across the loom from A to C. Do the same with the others. Arrange the strands so that 10 or 11 inches hang over at each end. Plait the three sets of two together. Cut another set of six strands and weave them across the bottom B D in a similar manner. Then fill up the middle of the loom by weaving with a single or double thread according to the pattern desired. Fasten the two plaits on each side into a small brass ring and bind round with wool. These plaits form the loops through which the child's arms pass. Fasten plaited reins to the rings and sew bells along the middle of the band.

Circular Looms. *A Mat* (Fig. 208). Draw a circle the required size. Draw diameter, A B. Divide the half A C B into an even number of divisions. By taking on the compasses a measurement smaller (by the tiniest fraction) than one of these it is possible to mark off an odd number on the other half. At A 1 cut along the dark line to edge of second circle. Cut notches as shown in diagram.

Tie a knot to one end of the warp and pass it through the slit at A. Carry thread across the circle to B 17, behind to 16, across the circle to 33, behind to 32, across to 15, behind to 14, across circle to 31, and so on until the loom is threaded. Begin weaving from the centre round and round, drawing the first few rounds very tightly. When the mat is taken from the loom there will be loose loops all round, so that it is necessary to pull the weaving very gradually from the centre to the ends of the loops. To make a tam-o'-shanter pass a piece of wool or elastic through the loops and draw in until the right shape is obtained.

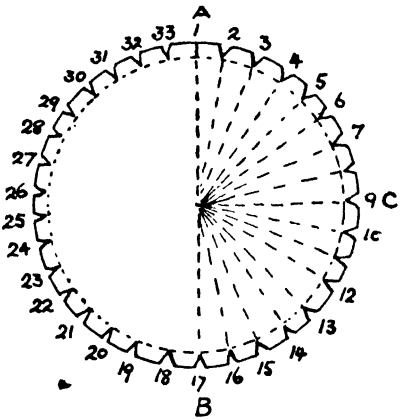


FIG. 208

Another way to thread the loom for making a mat is to sew a small ring, brass or raffia, to the middle of the circle and thread as described for the lampshade (Fig. 195).

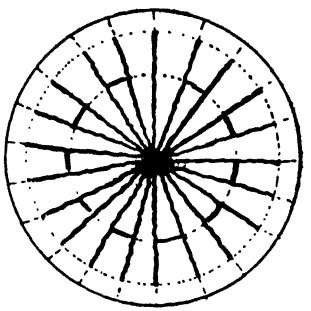


FIG. 209

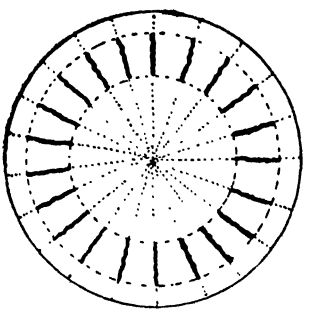


FIG. 210

Fig. 209 shows a loom for a *tam-o'-shanter*. Divide the circle as for the mat and draw lines from the divisions to the centre. Draw the two inner circles. The smallest circle is the size of the doll's head, the second is the rim of the

tam-o'-shanter. Where these circles cross the lines make holes. The loom is threaded as shown in the diagrams. Fig. 209 shows the top of the hat, Fig. 210 the under part.

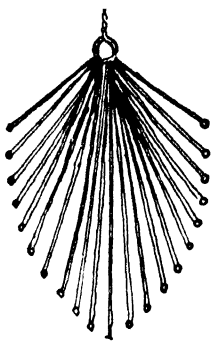


FIG. 211

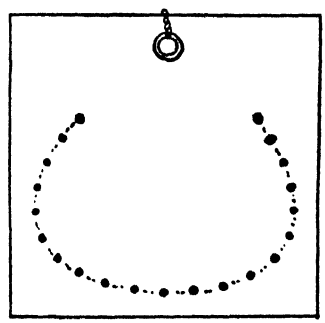


FIG. 212

Figs. 211, 212, and 213 show looms for bags of different shapes. Children should be encouraged to design shapes for themselves.

A *cosy* can be made on a loom similar to that for the bag (Fig. 213). As the edge of the cosy along A B is not

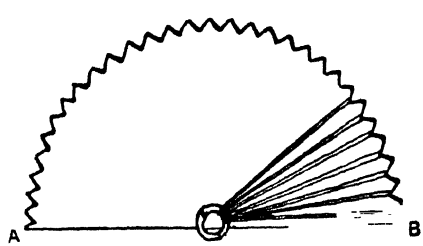


FIG. 213

straight when it is finished, the rings (for there must be two, one on each side of the loom) and part of the edge are turned in and sewn to the inner sides, so that the bottom of the cosy is quite level.

CHAPTER X

HOW TO WEAVE PATTERNS

> But now beside the ruthless sea I make my cheerless home, an alien, torn from home and friends, with none to call me wife or mother; never singing Hera's praise, my Queen in Argos, nor mid the merry whirr of looms broidering with my shuttle a picture of Athena Pallas or the Titans.
>
> EURIPIDES, *Iphigenia in Tauris*

ANCIENT weavers, with the exception perhaps of the Chinese, did not weave patterns. The fine linen of the ancient Egyptians was quite plain. Whatever ornamentation it bore was not produced in the loom, but added afterward by means of painting or embroidery. These ornamentations consisted, for the most part, of bands of colours and detached spots scattered over the ground. The dresses of both men and women were generally of fine white linen and the decoration we have mentioned above was confined chiefly

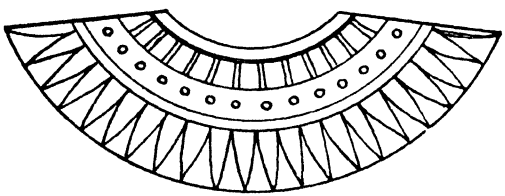


FIG 214

to the collar. The favourite lotus flower is almost always in evidence in these designs.

Fig. 214 shows an Egyptian collar; it should be painted blue, yellow, red, and green.

Horizontal Stripes. This is the easiest form of design in weaving. Before beginning let the children cut out from squared paper the size of the article to be made, and on this draw stripes of various widths and colour them suitably.

The paper showing the design can be slipped under the warp-threads as a guide. The change in colour is effected by merely changing the colour of the weft. Perhaps by striping the weft, the Egyptians first began to ornament their plain weaving. Perhaps, too, the " curtains of fine twined linen, and blue, and purple, and scarlet " of the Hebrew tabernacle were weft effects.

Vertical Stripes. These are obtained by weaving alternately one thread of one colour and one of another. For example, weave one row of black thread, then one of white, then one of black, and one of white, and so on. The result of this weaving is vertical stripes in black and white. This always strikes children as curious. Designs can be arranged with these in combination with horizontal stripes.

Patterns resulting from Striping the Warp. The Indian weavers of fine cotton fabrics have always been famous for warp-pattern effects. They were, perhaps, the first to make use of broad and narrow stripes of contrasting colours, the simplest of all patterns. In the garden-court of the palace of Shushan " were white, green, and blue hangings fastened with cords of fine linen and purple to silver rings and pillars of marble " (Esther i, 6). No doubt, white, green, and blue stripes decorated these hangings. Just such striped and coloured webs are being made to-day by the Indian weaver on his simple hand-loom.

If black and white threads are warped alternately on the loom, rather close together, so that the weft will be well covered, the result will be vertical stripes. This again strikes a child as curious, as does the method of obtaining vertical stripes with the weft described above.

Plaids. These effects are obtained by stringing the loom at regular distances with the colours used in the woof, and in the same order. Thus the warp might be arranged as follows: one scarlet thread, three navy, one scarlet, three navy, etc. Then there should be in the woof, to make a horizontal stripe, two threads of scarlet followed by about seven of navy, then two of scarlet, seven of navy, etc. Plaids may be greatly varied by adding more colours and by altering the arrangement of the warp.

Effects obtained by Tight and Loose Wefting. If the weft is pulled tight, the warp and weft will show in almost equal proportion in the finished material. If, however, the weft is placed quite slackly in the shed, when it is pressed down the warp is completely covered by it. Patterns can thus be formed by tight and loose weaving. Many ancient ornamental textiles consist of these two sorts of plain weaving. Children find this method less interesting than those already described.

Patterns obtained by Weaving under and over Two or more Warp-threads (see Chapter VI). Twill effects are produced by weaving under and over two or more warp-threads, step-fashion (Fig. 215). First row, over two, under two; second row, under one, over two, under two; third row, under two, over two; fourth row, over one, under two, over two, etc.

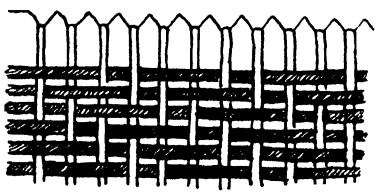


FIG. 215

Patterns without number can be woven by using two colours for alternate rows, etc., or by breaking and reversing the step in Fig. 215. The twill weave is a great favourite among Eastern races for outside matting for houses. There are other easy ways of ornamenting plain woven webs, for example, the use of different-sized threads, both in warp and weft, the use of different materials, such as silk or cotton in contrast with linen or woollen threads, etc., so that even in a simple loom there is scope for the exercise of ingenuity and design.

Tapestry Weaving. Fig. 216 is a copy of a beautiful border of a Coptic textile in the Victoria and Albert Museum. These designs were worked in the following way: the spaces for the patterns were either left unwoven, or the weft was cut away in the desired shape after the fabric was taken out of the loom, as in drawn-thread work. On the warp-threads thus laid bare, the pattern was darned by means of a needle, or worked in with the fingers. The picture tapestries so often referred to in Greek and Roman history and poetry were made in the manner described above. Tapestry

weaving is then akin to embroidery and only differs from it in that it is woven in the simplest manner on the bare warp, instead of being worked upon an already woven material.

FIG. 216

Those who wish to learn more about tapestry weaving should read *Embroidery and Tapestry-weaving* by A. H. Christie. (See also Chapter XXII.)

Inlay or Brocading. An old and favourite method of decorating woven materials was by inserting, in addition to the ordinary weft, other wefts of rich threads such as gold or silver. These extra wefts were so arranged as to form spots or ornamental shapes distributed over the ground. Brocading is sometimes done by using short pieces of coloured weft cut to the required sizes and worked in between the ordinary shoots. It is more usual, however, to use continuous threads carried on a little shuttle (each colour and each piece of design having its own shuttle), which is worked backward and forward to the shape of the ornament. The working of an ornament into a plain warp between the ordinary weaving does very well as long as the warp is fine and open and allows the bright-coloured silk to shine out from between the threads, but in thick, close warps the ornamentation would be buried and almost invisible if merely placed between the ordinary shoots of the weft. In order to make an ornament show in a close warp, the brocading weft must pass *under* only *one* in every three or more warp-threads.

Children will like to try brocading in this way on the weaving-board described in Chapter VII and shown in

Fig. 154. They will notice how well the gold or coloured weft stands out when tied down by only one in every three or more threads.

Mechanical contrivances are now used for binding the brocading ornament in the loom, that is, for selecting, automatically, certain threads under which the brocading silk is to pass. These contrivances consist mainly of extra heddles, which make the necessary shed for the brocading weft. Here we are not so much concerned with the complicated mechanism required when many heddles are used, but rather with the pleasant work the children can do with their fingers alone. We cannot do better than end this chapter with a description of Ulysses' robe.

> In the rich woof a hound, mosaic drawn,
> Bore on full stretch, and seized a dappled fawn ;
> Deep in the neck his fangs indent their fold ;
> They pant and struggle in the moving gold.
>
> "*Odyssey*," *Pope's trans.*

CHAPTER XI

WEAVING SONGS, STORIES, AND GAMES

> Knitting [or weaving] and withal singing, and it seemed that her voice comforted her hands to work.
>
> SIR PHILIP SIDNEY

THERE are many beautiful songs which can be sung during the weaving lesson, or in connexion with it; many interesting stories to be told, poems to be recited, and games to be played. In the Appendix a fairly exhaustive list of them will be found.

Weaving Stories. Children enjoy hearing stories about birds and birds' nests when at work. These stories are almost inexhaustible. Stories of the weaving birds are particularly interesting, especially the African weavers. It is said of these birds that two work at one nest, one on the outside, and one on the inside, and they pass the grass in and out to each other until the home is complete. Any good natural history book will give interesting details of nest building by different birds in different lands.

There are many classical stories to be told, such as those of Minerva and Arachne, Penelope and her loom, etc., and legends, such as that of Robert Bruce and the spider, etc. Children will be interested to find how many goddesses of olden days were interested in spinning and weaving. Besides the well-known goddess Athena (or Minerva), there are the three Fates—Clotho who spins the thread of Life, Lachesis who twists it, and Atropos who cuts the thread with pitiless shears. In China, too, to take a long jump in place, there was, or is, a Silk Goddess. In the grounds of the Imperial Palace at Peking are her altar and temple called the T'sen-tsan-tao (the Early Silkworm's Altar). The temple is dedicated to the goddess under the name of Ywenfei (First Wife), for she was supposed to be the first discoverer of the

silkworms, and annually in April the empress used to worship and offer sacrifices to her. The same goddess has several important temples in Che-kiang, a province where the silk industry flourishes.

Then there is the Norse legend of Frigga and her beautiful spinning-wheel of stars.

The following African story is much enjoyed by children. It is found among all the cloth-making tribes of West Africa.

The Invention of the Cloth Loom

Once there was a man who was a great hunter. He fell sick, and as he lay out of doors he saw a big spider making a net on a bush, and he watched him. By and by he saw how the spider caught his prey, and he said, "If I hunt as the spider hunts, make a trap like that and put it in the bush, then go aside and let the game go into it and weary itself to death, it will be quicker and safer than hunting with a spear." And so after a time he tried to make a net like the spider's out of bush-rope (the long twining plants that grow in the bush). He did it, and put his net in the forest and caught bush deer (gazelles) and porcupines. Then he made more nets, and every net he made was better than the one before, and he became a greater hunter than ever.

One day he made a fine cloth, and his wife admired it and said, "This cloth is better than our cloth (bark-cloth); make me some like it." And the man tried to, but he could not get a good shape into it, so he went to the spider again, and took him an offering and said, "O, my lord, teach me more things." And he sat and watched the spider for many days. By and by he saw more; he saw that the spider made his net *on sticks*. So he went and got new bush-rope and fixed it on to the bush near the spider, and made a new net, and got shape into it. Every day he made more nets this way, and every net was better than the other. And his wife was much pleased.

By and by the man saw that he did not want all the sticks of a bush to make his net on, only some of them, and so he took these home and put them up in his house

and made his nets there. After a time his wife said, "Why do you make the stuff for me with bush-rope? Why do you not make it with something finer?" Again he went into the bush to see the spider, and made an offering to him, saying, "O my lord, teach me more things." And he sat and watched the spider and saw how the thread came out of his body, so he said in despair, "O my lord, you are greater than I am, I cannot do this thing."

And as he went home, thinking, he saw there were different kinds of bush-rope, thin bush-rope and thick bush-rope, and there was grass which was thinner still. So he took the grass and made a net with it, and he made more nets, and every net was better than the last. His wife was really pleased now, and said, "This is good cloth." The man lived to be very old, and was a great hunter and a great chief.

This story has many morals, and one is, "It is good for man to be a great hunter, and it is good for man to please woman."

Weaving Games. Most of the games to do with weaving are suitable for very little children. First of all there is the well-known maypole, which needs no description.

To explain the raising and lowering of alternate sets of threads in order to open a space (the shed) through which to pass the woof (or weft), the following game may be played. Any number of pieces of tape, or braid, or thick string (even strips of material will do), are held at each end by children—these pieces of tape, etc., represent the warp The children number off as for drill. Two children stand each side of the warp to represent the weavers, and throw the shuttle to each other. The shuttle may be a ball of string or a stick round which the tape is wound. First the odd numbers raise their strands and the shuttle is thrown, then the even numbers, and the shuttle comes back, and so on until the children understand.

In another game the children themselves are the threads of the warp and the child who is the weaver runs in and out among the children with a long tape that is held at one end by the first girl. Kate Douglas Wiggin in *The Republic of Childhood* describes the game in this way: "First choose

a row of children for threads of the warp, standing at such a distance from each other that a child may pass easily between them. Second, choose a child or children, for the thread of the woof. After passing through the warp, each child takes his place at the end and other children are chosen."

Some play this game in still another way, using the desks or chairs as the warp, and all the children as the woof.

A Weaving Song. Weaving songs should be sung when the children play the above games. A very jolly one that little ones like is the "Weaving Song" from *Songs and Games for Little Ones*, by G. Walker and H. Jenks. It can be sung to the tune of "Nellie Bly."

Over one, under one,
Over one again.
Under one, over one;
Then we do the same.
Hi, weavers! Ho, weavers!
Come and weave with me!
You'll rarely find, go where you will,
A happier band than we!

CHAPTER XII

WRAPPED WEAVING, OR WINDING RAFFIA OVER CANE

I too have my vocation—work to do.
LEWIS F. DAY

THE mode of wrapped weaving that we are going to describe was long ago used by the Mohave Indians in the making of their carrying baskets. The following models made by wrapping raffia once round spokes of cane form useful exercises for children of five or six.

Two pieces of cane, *a b* and *c d* in Fig. 217, are crossed in the centre. The crosses may be secured with a small piece of wire, which can be taken away after the winding is completed. Wind the raffia round the cane as in Fig. 217. When the children have made a large enough square they

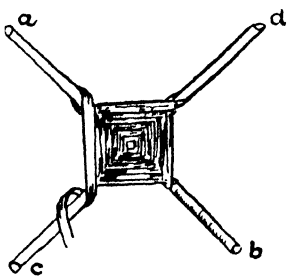


FIG. 217

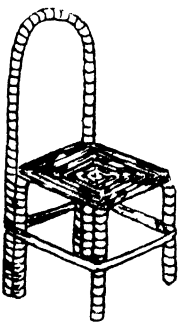


FIG. 218

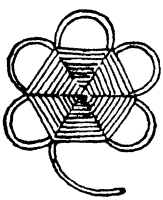


FIG. 219

can convert it into a stool, chair, table, or whatever their fancy suggests, by damping the cane and bending it down at each corner to form the legs. Raffia is wound round these legs, and a piece of cane can be added for the back as in Fig. 218. Arms for the chair can be made in the same way.

In a similar fashion children can wind round three sticks joined in the centre. This gives them a six-sided or hexagonal table or mat. To finish off the mat, each spoke of cane left should be bent round and fastened by winding to the next spoke, as in Fig. 219. The winding should be continued some little way round the double cane to make the edge strong.

The octagon, or eight-sided figure, is made from four pieces joined in the centre. Pentagonal, heptagonal, and other figures containing an odd number of sides are constructed by fastening the spokes to a centre, which may be a small cork or piece of a cork.

A Baby's Rattle (Fig. 220). Join four sticks in the centre and wind round them as in Fig. 217. When a small

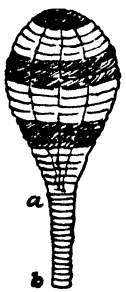


FIG. 220

FIG. 221

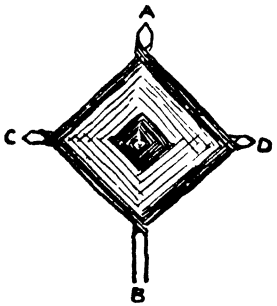


FIG 222

octagon has been made bend the spokes until they can all be held together, and complete the weaving. Put a tiny bell inside. The rattle is finished by winding round all the spokes together, from *a* to *b* in Fig. 220. Different coloured raffia can be used to make a striped pattern.

A Ball Rattle. Two lengths either of millinery wire or cane are required, about nine inches long. (The wire will make a rounder ball.) Make two circles of the wire by binding the ends together firmly with raffia. Place one ring within the other and tie firmly at *a* and *b* (Fig. 221). Take care not to have two joins coming together. Fasten one end of raffia at *a*, Fig. 221. Work from right to left. When nearly finished the bell is inserted. Fig. 222 shows a book-

marker. The cross-pieces, A B, C D, can be made of cardboard or thin wood (*e.g.*, matchwood). Raffia in two colours is wrapped from one spoke to another as before.

Children will like to try to make an umbrella as in Fig. 223. The stick, A, is a piece of fairly thick cane (say No. 4) glued into a piece of cork, B. In this cork eight small holes

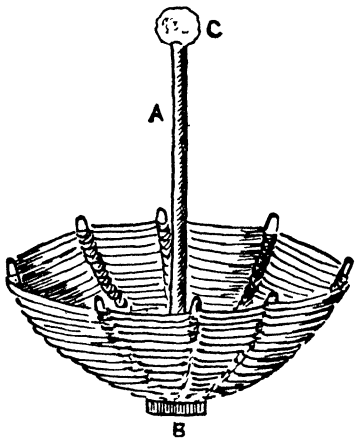


FIG. 223

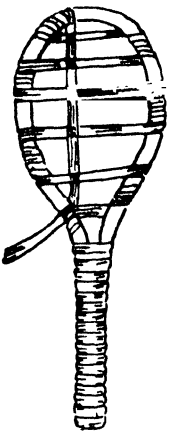


FIG. 224

are made, and eight pieces of thin cane (No. 1 or No. 2) glued. These pieces of cane form the spokes of the umbrella. Their number depends greatly on the size of the cork. Six or seven spokes may be a better number in some cases, or even five. Then wrap the raffia round each spoke as before. The handle, C, may be a big bead, or the cane damped and bent round to form a hook.

In a similar manner to the above, but without the stick, A, an open basket can be made.

Tennis Racquet. This is made from a piece of cane bent as in Fig. 224. Begin winding round the double cane to form the handle. When the oval is reached, wind the raffia four or five times round, then cross to the other side and wind four or five times, then back again, and so on. The uncovered spaces can be filled in afterward. Weave up and down until a suitable network is formed. A snowshoe can be made in a similar way.

A fan or firescreen can be made from a semicircular piece of cork and pieces of cane round which the raffia is wrapped, as in Fig. 225.

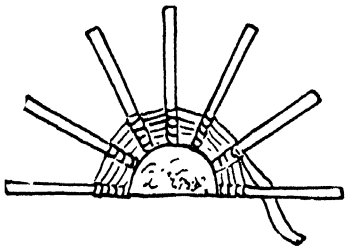


FIG. 225

Mat. Cut out a ring of cardboard (Fig. 226). Divide the 1 inch width into eight equal parts. Pierce holes through the cardboard. Thread raffia across and stretch very tightly as in Fig. 226. The edge of the mat is wound round with

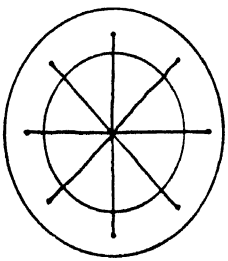


FIG. 226

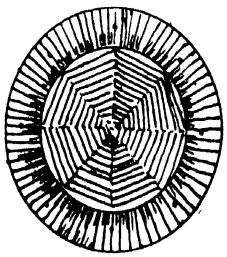


FIG. 227

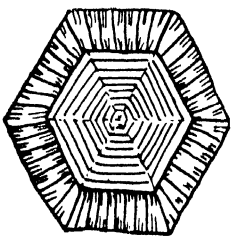


FIG. 228

raffia or worked with buttonhole stitch (see Chapter XVIII). For the centre tie a piece of raffia to the middle and begin working, wrapping the raffia round each spoke as it is wrapped round the cane in Fig. 217. Fig. 227 shows the completed article. Two contrasting colours should be used, one for the border and one for the centre. Other shapes can be covered in this way. A hexagon is very effective (Fig. 228).

CHAPTER XIII

INDIAN BASKETRY, COILED AND SEWN

Man makes beauty of that which he loves.
RENAN

BASKETRY in some form or other is practised by all primitive peoples, and is generally believed, with pottery-making, to be as old as the human race. The ancient Welsh or Britons were expert basket-makers; indeed, our word basket has itself changed but little from the original, the Welsh '*bas gawd*' meaning literally a weaving or putting together of splinters or twigs. History tells us that the halls of wealthy Roman citizens were decorated with the clever handwork of the Britons.

The so-called coiled work in cane and raffia is really an adaptation of the stitched basketry that has been in existence for ages in different parts of the world. The shape, design, and materials used vary in different climates and in different times, but the principle upon which the baskets, etc., are made is practically the same everywhere. Strips of cane and bamboo are used in Japan; palm-leaf and coco-nut fibre in Africa; grasses, inner bark of trees, and the fibrous roots of the spruce fir in America. Some of the most beautiful baskets we possess were made by the North American Indians (the tribes of the south-west). Among the Indians the women did most of the work, and their fine baskets were to them "their poems, their paintings, their sculpture, their cathedral, their music."

The material generally used for imitation Indian basketry is round cane worked over with raffia. The thickness of the cane to be used varies according to the size of the basket to be made. Thick cane would be unsuitable for small baskets, but large baskets are sometimes made of fine cane. The cane necessary for the foundation of Indian basketry

work should be of good quality. No. 4 is suitable for fine work, No. 6 for ordinary work, while for fairly coarse work No. 8 is generally used. No. 6 is a suitable size for beginners, as it is large enough to leave something substantial as the result of the work done, and yet fine enough to be pliable. For children the most suitable size is perhaps No. 5. It is doubtful whether the making of baskets should be undertaken before the age of seven years, owing to the difficulty of beginning any article, as we shall see when we come to beginnings.

Substitutes for cane are often used, especially if a very thick coil for working over is needed. Thick rushes and thick string are suitable if very even, or a bunch of raffia may be the foundation of the whole of the coil, but this entails constant watching and feeding to ensure a regular, even appearance. All soft materials need special care if the basket is to be a good shape.

For sewn basketry the old-fashioned tapestry or wool needles may be used, but a special needle is obtainable, known as the 'J' raffia needle. It is made in one size only; price about 8d. a packet. Any raffia strand which is too wide for the eye of this needle will probably be wider than is needed for ordinary work.

The Hard Coil

Centre for a Round Base. For a round mat or basket take a long No. 6 cane, wind it loosely round the hand and tie it with raffia, leaving about half a yard uncoiled with which to begin working. With a penknife carefully shave the end of the loose length of cane to a flat point, about 1½ inches long. (It must be longer in proportion when a larger sized cane is used.) This pointed end is needed to form the first tiny ring for the starting-point of the coil. Soak the pared end in hot water for a few minutes to render it pliable. Bend it carefully to form a small ring (Fig. 229).

Fig. 229

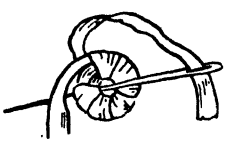


Fig. 230

In order to do this without breaking the cane, it is advisable to let the children roll it first round a thin pencil or another piece of cane. Grip the ring firmly in the left hand (between forefinger and thumb), and fix it with a raffia strand as shown in Fig. 230. From this ring the cane is carried round continuously till the work is large enough for the purpose required. As the curving for the centre is necessarily sharp the most difficult part of the coiling is over when the first three or four rows of raffia working have been done. The foundation of the coil, whether of cane or of a substitute, must drop to the left, and the work must always go from right to left.

Joining New Strands of Raffia. The end of a new strand is fixed by a few stitches, the short end of the old strand is then placed alongside the cane, and the weave is continued with the new length.

Joining the Cane. This may be done by splicing (Fig. 231), or by scarfing (Fig. 232). One or two stitches may be

FIG. 231

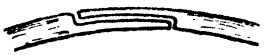


FIG. 232

taken through both ends with a fine needle and thread to hold them together while being covered.

Finishing off the Coil. Pare the end of the cane on the side nearest to the work. The ordinary stitch is continued on the shaved part until the point is covered. Finish off at the back of the work by splitting the strand, tying a knot with the split ends, and threading them under the weaving.

Another way to finish off is to continue the ordinary stitch on the shaved part till it is very thin; the needle is then taken down under the row below, this and the flat end being oversewn together: the last row should then be oversewn all the way round. Some like to have a perfect coil for the last row. This can be done by adding an extra coil before oversewing the last for its second covering. The two ends of the new coil to be used must be shaved as for a join, and the sewing-on must begin where the cane is whole, the spliced ends being placed together and sewn on later.

The stitch used for the rest of the mat is employed for sewing on the new coil. This added cane is then oversewn as described above.

Centre for an Oval Base. Soak a piece of cane and bend to the shape shown in Fig. 233. Wrap round the bend with a raffia strand—if it should crack or break the roughness can be shaved off and a little more raffia wound round it to keep the size of the coil uniform—then lace the two rows together for the full length of A B (Fig. 234). Bend the cane over the end A, and wrap round the bend; a few extra windings of raffia will be needed here, as there is no hold for the needle at this point, but as soon as the corner is turned the particular stitch desired is begun and continued. In a round base the number of stitches must be increased in every row; but in an oval base increasings only take place at the ends, each of which is practically half a round.

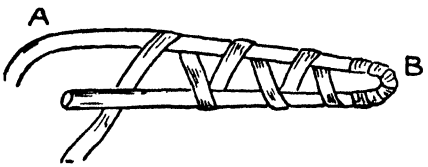


FIG. 233

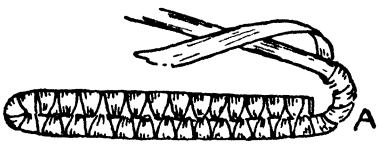


FIG. 234

The length of the 'first row' (*i.e.*, A B in Fig. 234) for any oval may be found by subtracting the width of the oval from the length. For example, to make a small dinner-mat, 8½ inches long by 6 inches wide, the length of the 'first row' must be 2½ inches.

THE SOFT COIL

To Begin the Coil of Raffia. *A Round Mat.* For the sake of crippled fingers, or the need of a larger coil, it may be necessary to use raffia for the filling. Take some strands of raffia, enough to make a coil of the thickness desired for the basket. Select a thin strand of raffia, and bind these foundation strands (Fig. 235). Cut off the short ends at A B, and by means of a needle thread the thin strand back

under the winding (Fig. 236). Curl the bound end round to form a small circle, and fix it into position by stitching through the coil (Fig. 237).

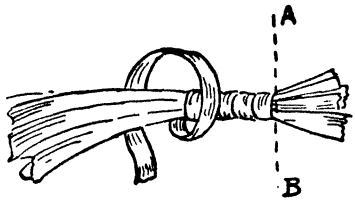


FIG. 235

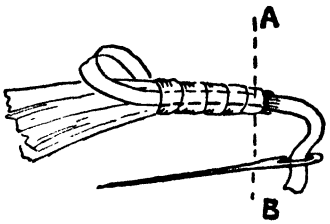


FIG. 236

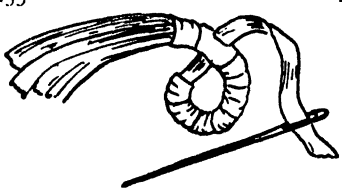


FIG. 237

Other ways of beginning will suggest themselves. A raffia ring may be made as described in Chapter IV, the size of the ring depending on the size of the basket to be made. The ring must, however, be thin so as not to make any perceptible difference. Now take some strands of raffia, enough to make a coil of the size desired, and place them beside the raffia ring (Fig. 238), the long ends dropping to the left. Begin to bind a strand of raffia firmly over both the ring and the strands, as in Fig. 238, working to the right. Continue till more than half the ring is covered, the needle going down each time into the hole in the middle (Fig. 239). The short ends may now be cut off in two or three different places to bring what is left to a gradual point (A in Fig. 239). This can then be placed against the still uncovered part of the ring and sewn on in the same way (Fig. 239). A good beginning will thus be made, and

FIG. 238

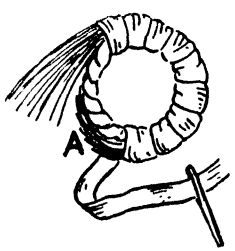


FIG. 239

the raffia strands can be carried round in the usual way. For the second row each stitch must still be taken down through the hole in the middle, but between the stitches the raffia must be taken once round the coil. The coil of raffia must be kept to a uniform thickness by adding new strands occasionally.

Centre for an Oval Base. This is made in the same way as for the hard coil. Double the foundation strands and

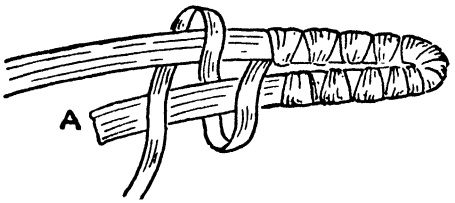


FIG. 240

work to the required length as before (Fig. 240). Cut off the ends (A in Fig. 240), and wind round the bend as shown in Fig. 234.

DIFFERENT STITCHES OR WEAVES USED IN BASKETRY

'Lazy Squaw' Weave or Stitch, sometimes called the *long and short stitch.* This is one of the easiest and most satisfactory stitches, and forms the basis for many of the other varieties. The raffia is wound as many times as desired round the coil and the needle is then put between two coils as in Fig. 241. The following points should be kept in mind when working this stitch and the following stitches. (1) Always work the coil from right to left. (2) Make all the long stitches radiate from the centre. To do this it is sometimes necessary to take two short winds or to make two long stitches in the same place. (3) The right side of the work must always face the worker. (4) On the whole it is perhaps better to push the needle through from the side nearest to the worker (*i.e.*, from front to back).

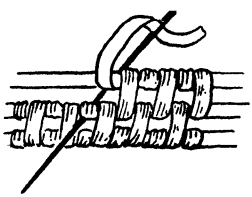


FIG. 241

Many, however, find it easier to push the needle in from the back. There is no need to insist on either method.

The **Peruvian Weave** is merely a variation of the 'Lazy Squaw' weave, the only difference being in the number of wraps round the single coil (Fig. 242). Obviously, by varying

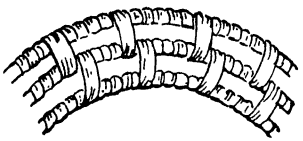


FIG. 242

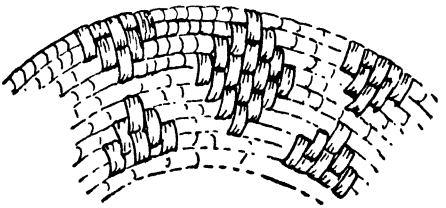


FIG. 243

the number of times the thread is wound round the coil many patterns may be made and different effects produced. The actual pattern is formed by the long stitches, which should be taken twice over the new cane and the row be-

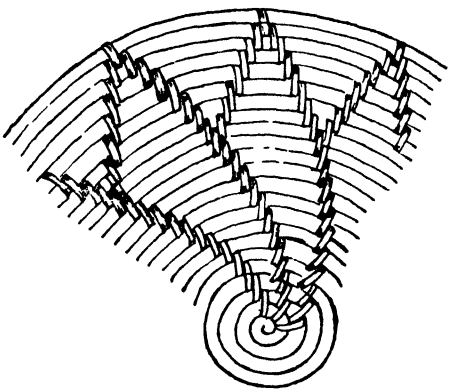


FIG. 244

neath, partly to emphasize the pattern, and partly for additional strength. The long stitches must not be too far apart, because this weakens the general result of the work. It is possible, though, to use an invisible stitch to lessen the length of the gap. Figs. 243 and 244 show patterns in long and short stitches.

Another Variation of the 'Lazy Squaw' Stitch, worked with raffia foundation. In this stitch the needle is taken *through* the coil in the row beneath instead of below the

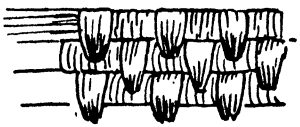


FIG. 245

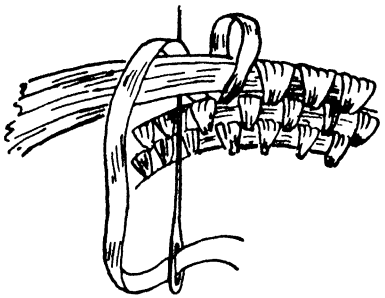


FIG. 246

coil. In Fig. 245 the stitch is taken half through the coil. In Fig. 246 the stitch is taken through the outer edge of the preceding row of the coil.

The Figure Eight Stitch or Weave, also called the *Navaho* or *Navajo.* This is the strongest of all the weaves, and the most popular. It will make a strong beginning for

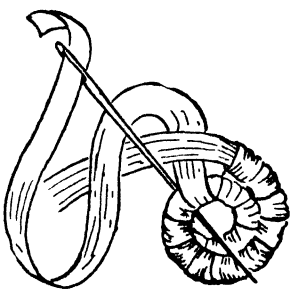


FIG. 247

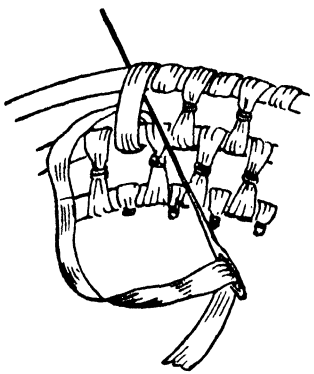


FIG. 248

any of the others. Fig. 247 shows the work in progress. In its actual formation this stitch is a series of repetitions in raffia, of the figure 8, the upper half of the figure 8 encircling the unworked cane, and the lower half encircling the cane used for the last row, thus holding the two rows together.

The detail of the working is easily seen in Fig. 233, where the stitch is on the two parallel canes necessary for starting an oval mat.

Mariposa Weave, or Knot Stitch. Take one long stitch and bring the strand to the front on the left (Fig. 248), put the needle through the hole on the right (Fig. 248), wrap the raffia once round the coil and take the long stitch again. This is also called the Lace Stitch.

Samoan Stitch. This is a variation of the above. Proceed as shown in Fig. 248, but wind the raffia several times

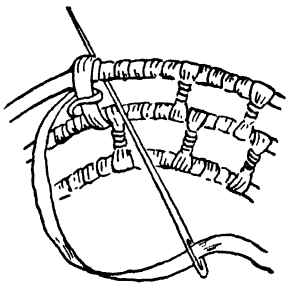


FIG. 249

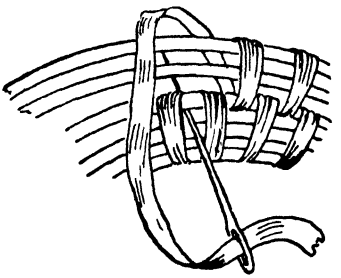


FIG. 250

round the foundation coil before taking the long stitch, and then wind the raffia several times round the long stitch, as in Fig. 249.

Two-rod Weave. Fig. 250 shows the method of working this weave. The extra cane is started after the centre is formed.

Fuegian Weave, Half-hitch, or Blanket Stitch. This is useful for finishing off. Stitch through the outer edge of the previous coil, bringing the strand back over the cane and through the loop as in blanket stitch (Fig. 251).

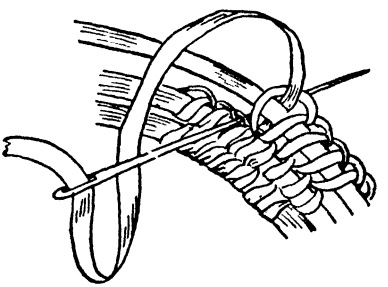


FIG. 251

The Ray Stitch. In this weave the stitches radiate from the centre and interlock without passing round the foundation coil as in the 'Lazy Squaw.' Fig. 252 shows the

ray stitch. It is also called the *Open Poma Stitch*, and can be worked also in the following way. The foundation is formed of several strands of No. 1 fine cane (raffia strands can also form the foundation). They are bound in place while being coiled by thick silk instead of raffia. The strands of cane must be scraped with a penknife into mere shreds for the first 2 inches, then twisted together like string, and coiled

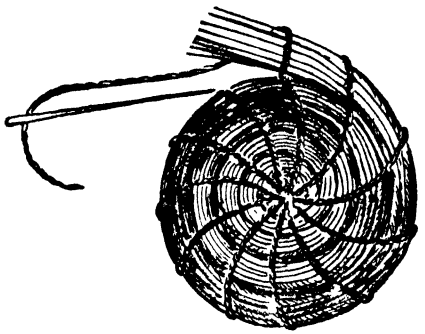


FIG. 252

round in the ordinary way. The centre ring must be oversewn until hardly any of the cane is seen between the windings. For each successive row the needle is taken from behind on the *left* of a stitch, through it (and through a few strands of the foundation canes or raffia if strength is desired), and out on the *right* of the same stitch. In the stitches already described the point of the needle comes out from the back to the front, pointing to the left, but in this stitch the point must be brought out pointing to the right, as in Fig. 252. Coloured carpet-thread, or any coarse mercerized thread or raffia can be used instead of silk.

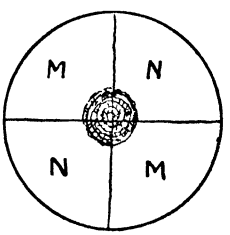


FIG. 253

The Toas Stitch. This is a combination of the Navaho and the Mariposa stitches. The first three or four coils are worked in Navaho stitch, then the mat is divided into four sections, as in Fig. 253, having the two stitches used alternately. M, in Fig. 253, shows where

Mariposa is used, and N where Navaho. The Mariposa stitch must be very tightly made, or the work will soon become an oval instead of a round; but if a slightly oval result is wanted, this is a good way of producing one.

The Shilo Stitch. This handsome corrugated stitch is produced by the use of an alternate fine and thick cane (say No. 11 and No. 1).

FIG. 254

FIG. 255

A West African Stitch. This can easily be copied from Fig. 254.

Pima Coil. Fig. 255 shows this.

CHAPTER XIV

SHAPING BASKETS, HANDLES, ETC. DESIGNS USED IN INDIAN BASKETRY

All the high and low
Of my wild life in these wild stems I snare ;
The jagged lightning and the star I show,
The spider and the trailing snake are there.

ANNA BELL

A Picture-frame. It is easier for children to make a beginning in basketry with such an object as a round picture-frame or photograph-frame (Fig. 256), because they can wind a double coil of cane into a ring and then work in this ring as a foundation. Notice how the cane is bent to form a border (Fig. 256). Blanket stitch can be worked round this piece of cane. The next stage in the making of sewn baskets will be an attempt to construct flat mats. Most beginners fail to keep the mat flat, and the result is a shallow bowl. From this shallow bowl a proper bowl may be made by raising the sides, or it may be made into a sphere with a small opening at the top. It is best both for children and adults to experiment in making shapes first and not to attempt an elaborate basket until they have gained some control over the material. **Doll's hats** are very popular with girls and form an excellent beginning to basketry. They should be made with a soft coil. First a flat crown should be formed in ' Lazy Squaw ' weave, about $2\frac{1}{2}$ inches in diameter. The sides are shaped by raising the foundation strands and holding them in position while weaving. They are worked to about $\frac{3}{4}$ inch to 1 inch in depth. A brim can be made about 1 inch to $1\frac{1}{2}$ inches in width.

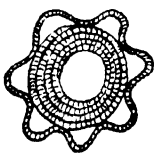


FIG. 256

Oval mats and trays can be made in various designs and colours.

A square box for handkerchiefs is rather difficult to make, but Fig. 257 shows how it can be done. It is a help to have a square of cardboard to use as a gauge when adjusting the corners, but perfect squares or perfect rounds are not possible in coiled work.

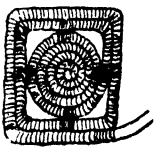


FIG. 257

A round basket can be made with a cardboard base and covered in the following way. Suppose the basket is to carry a glass when travelling. Two circles of cardboard should be cut for the base and two for the lid, and a piece of wadding put between. Fig. 258 shows how the lid is covered. An edge of cane must be added as in Fig. 259. Shave the cane

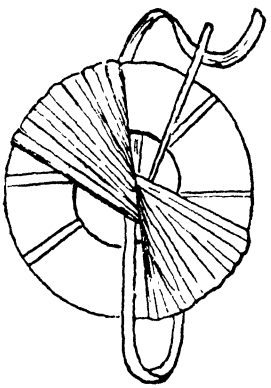


FIG. 258

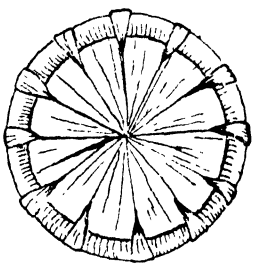


FIG. 259

to join it, as explained before, and bind it on with 'Lazy Squaw' stitch, taking the short stitches over the cane and each long stitch through the edge of the card circle (Fig. 259). The bottom is made in the same way, but a longer piece of cane is needed, and this is carried round above the first row to form the sides.

If a basket is to be made with upright sides, the base must be quite flat, and when it is large enough the cane must be gradually raised till exactly above the last row, and this gradual raising of the cane should be done in less than *three inches* of length, otherwise the sides will slope.

When shaping a basket the work must be carefully watched, and the cane adjusted, if necessary, after every 2 inches have been sewn. In this way it is easy to keep any shape true to the design or model. If too much cane is covered in a *wrong position* nothing can be done to alter it.

Ring Handles for Baskets, etc. These can be made in many different ways. (1) *Cane handles.* It is better to use two rounds of a fine cane than one round of a thick one, and if the cane is carefully shaved the shape of the ring can be perfect. 'Two rounds' rings are best joined by the Navaho stitch. A touch of seccotine or fish glue is useful in ring-making to keep all ends safely in position (Fig. 260). These rings can be made either flat or upright, and by increasing the number of coils many different articles can be made, such as serviette-rings, and frames of different kinds, as explained at the beginning of this chapter. *Hinges* for baskets are also made like this; the use of a large hatpin is necessary to make room for the hinges between the basket work. (2) *Raffia ring handles* may be made (see Chapter IV), or (3) *twisted raffia handles* (Chapter XVII), or (4) *plaited handles* (Chapter V).

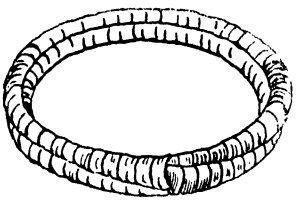


FIG. 260

To attach the ring to a basket take a strand of raffia through both ring and basket four or five times. A touch of seccotine will help to make this holder firm. See that the ring has plenty of room to move freely, then bind the raffia round the holder till it is firm, and take the needle through under the binding, as though making a raffia ring (Chapter IV).

Catches for Lids of Baskets. A plait of raffia sewn on to the lid forms the loop or catch, and a small stick of wood is attached to the basket itself by a thin plait of raffia. On the basket is a stiff loop just large enough to hold the piece of wood when the raffia loop or catch has been slipped over it. This stiff loop is made by splitting 2½ inches of fine cane in half.

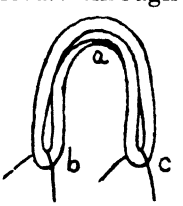


FIG. 261

One half only is required. Double back both ends of this half so that they overlap in the middle (*a* in Fig. 261), shave these ends that overlap and fasten them with seccotine. The cane is now bent round, as in Fig. 261. (It should be damped and tied into shape while damp if there

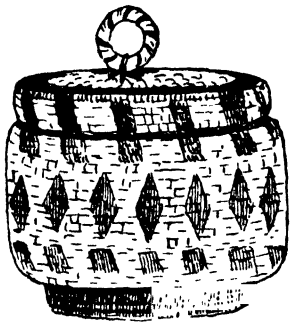


FIG. 262

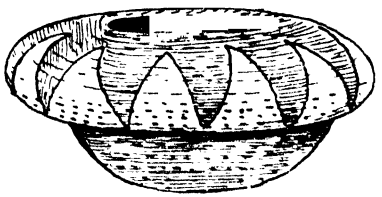


FIG. 263

is any difficulty in making this round.) The front half and two shaved ends practically form one whole cane (as in Fig. 261), but the bends at each end (*b*, *c* in Fig. 261) provide a gap through which the needle can pass when the loop is

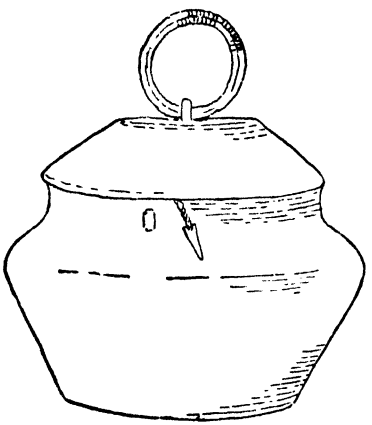


FIG. 264

being fastened to the basket. Other ways of making catches will suggest themselves, but perhaps the way described above is the best. Figs. 262, 263, and 264 show baskets of different shapes that can be copied.

A Ring-stand (Fig. 265). A is a twig bound round with raffia, or it may be made of several pieces of cane bound together. It is sewn to the centre of the little tray. When making this tray, a little hole should be left in the middle just large enough to hold the branch.

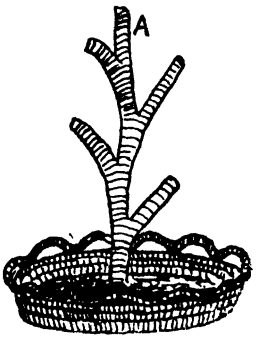


FIG. 265

Working in Coloured Raffia and Arranging Designs. It is best, perhaps, to begin working in two colours in the Navaho or figure eight stitch. The first bit of design (Fig. 266) is one row of colour. In this case only one round of colour is worked, and the colour is seen on one cane only, the others being covered by the natural coloured raffia.

FIG. 266

Notice the break at *a*, in Fig. 266, where the coloured row begins and ends. All Indian baskets have this break. It is not so apparent when isolated patterns are used. It is unnecessary to finish off with one colour before starting the other; the easiest way is to carry each colour in turn along on the underside of the cane, exchanging one for the other as needed. This rule also holds good when several colours are being used.

Fig. 267 shows a basket with a simple geometric pattern. It is worked with natural coloured raffia up to *a b*, then a

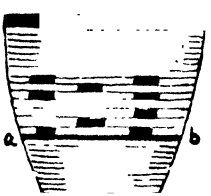


FIG. 267

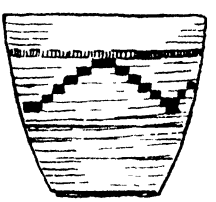


FIG. 268

coloured strand is introduced and worked over the cane and natural raffia, as described above. The six encircling rows of

dark alternating rectangles are produced by using dark and light strands in turn, in the manner described above.

Fig. 268 shows a meandering pattern formed by rectangles. In all these ornaments the forms are bounded by two classes of lines, vertical and horizontal, the lines of the warp and the woof, and *oblique* bands of colour are always made up by a series of rectangles, giving *stepped* outlines. The above are typical basket decorations, and probably the oldest. They can both with advantage be combined in the same basket. The decorations shown in Figs. 269 and 270 are also typical.

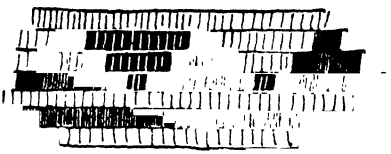


FIG 269

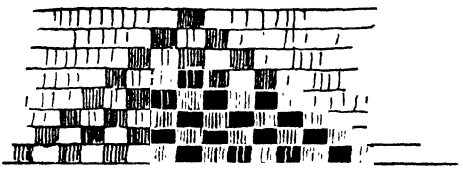


FIG. 270

When once it was discovered that by alternating different coloured stitches along different rows, different effects were produced, there was no limit to the number of inventions that could be made. From this simple discovery the old Indian woman of long ago must have soon guessed the pyramid (Fig. 270), frets, zigzags, squares, triangles, tetragons, stars, polygons, lozenges, octagons, parallelograms, etc., with all their bewildering combinations. Children will delight in working out geometric patterns for themselves, and trying them on baskets and mats. Chapter II will help them.

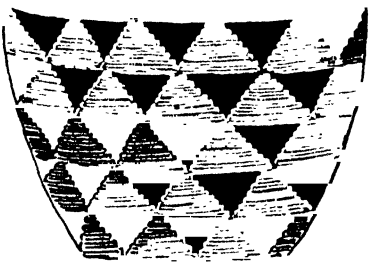


FIG 271

Fig. 271 shows a design of triangles. The Indians call this design a flower, because the triangles represent the separate petals of the flower. In the diagram the triangles are shown the same size, but the Indians generally make

each row, from the base to the top, contain successively larger triangles.

It was at a later stage in their development that the Indian women began to try to copy the things they saw around them. Many of these pictures became later, through repeated copying, conventional designs.

FIG. 272

Fig. 272 shows an arrowhead design. Different workers had often different names for the same design.

Fig. 273 shows the lightning design.

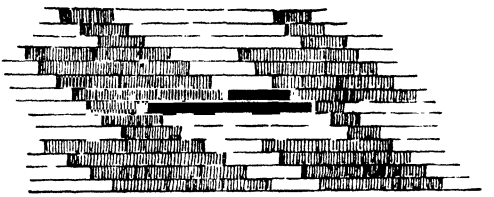


FIG. 273

How to Arrange Designs on Round Mats, or on the Round Lids of Baskets. The uniform arrangement of design is not an easy matter. When the number of marks needed for starting-places for the designs is an even number, say two, four, or eight, the following device will be useful. Cut a round of paper a little smaller than the mat, etc., to be made; fold it in half if two marks are needed, into quarters if four marks, and into eight parts if eight marks are needed. Open out the circle, run a pin through the centre and through the centre of the coiled work, and make a mark in pencil or ink on the outside row of work at each spot where a line ends. The marks will, of course, be covered by the stitches of the next row.

If the children are clever enough they can draw a 'skeleton coil,' as in Fig. 274, and draw and paint on it the

design they fancy. This will help them in their work, and the designing itself is interesting even if no mat is made like

FIG. 274

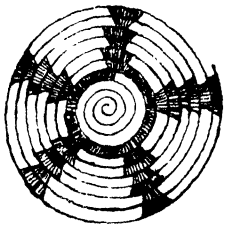


FIG. 275

it. If they have made all the toys described in Chapter 1 they will have practised making a spiral.

The easiest design to begin with is, perhaps, concentric circles (Fig. 276). The Indians of course used no such device as a 'skeleton coil,' but evolved their designs as the work proceeded. Many people trust to their eye to tell them when to begin or end any pattern, and this, perhaps, is the best way. Many count the stitches to see where to begin the design, and some stitches are very easy to count, but others

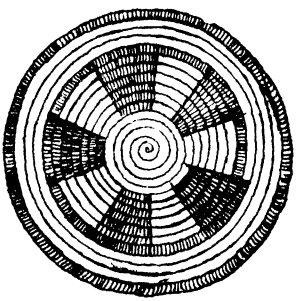


FIG. 276

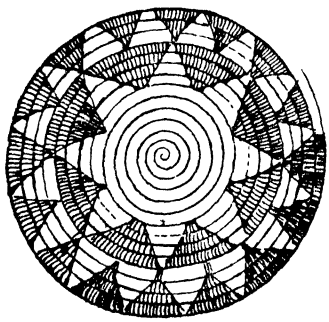


FIG. 277

are not. One difficulty lies in the fact that both in round and oval mats the number of stitches increases in each round. It is therefore well to bear in mind the rule that increasings should, if possible, be made in the ground work, so that the patterns themselves may be uniform.

Fig. 275 shows a design drawn on a 'skeleton coil,' which will guide the worker. The skeleton spiral, of a suitable size, may be bought for a few pence, and little difficulty should be found in copying in this way any of the designs

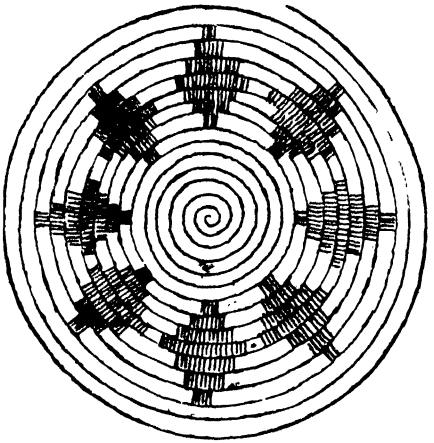


FIG. 278

shown in this chapter. Figs. 276, 277, and 278 are examples of other patterns.

For colours to be used and the meaning of colours see the next chapter.

Fig. 279 shows the star pattern, Fig. 280 the eye pattern.

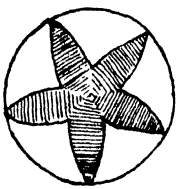


FIG. 279

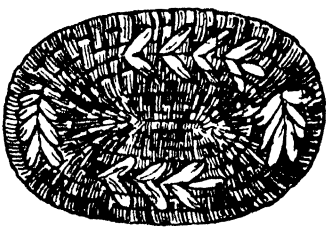


FIG. 281

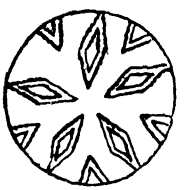


FIG. 280

Fig. 281 shows how a mat can be made in natural coloured raffia ('Lazy Squaw' stitch), and then have a simple pattern of leaves, etc., worked on it in coloured raffia.

CHAPTER XV

COLOURS USED IN INDIAN BASKETRY—INDIAN LEGENDS ABOUT BASKETS — INDIAN CRADLES

"Jasper first," I said,
"And second, sapphire; third, chalcedony;
The rest in order—last, an amethyst."
E. B. BROWNING, *Aurora Leigh*

Indian Colours. Children like to know the colours the Indians used when making their baskets, and this knowledge is an education in itself. Their colours were always pleasing, because they were natural colours. They tried always to produce the tints they saw around them. The rainbow gave them ideas, the golden clouds of sunset, the glory of the morning, the maidenhair fern with its beautiful black stem and green leaves, and many another plant or lovely scene. Many of their patterns were produced by the happy mixture of natural materials of different shades. The colours white, yellow, and brown were often natural to the materials used and not produced by either bleaching or dyeing. The black dye was made from the mud near the sulphur springs, or from the stem of the maidenhair fern. The Indian women were skilful in the preparation of many dyes, but the colours most often used were red, black, and various shades of brown.

From the earliest ages colours have had a definite meaning. For example, red is the sacred colour of the Indians and of many other nations. It is the colour connected with power, both human and divine, royal and priestly. The tabernacle of the Israelites was covered with skins dyed red, and red is the colour that to-day distinguishes the Pope and the cardinals in the Roman Catholic Church. In ancient art the proper use of each colour was a matter of much consideration because, as we have said before, each colour has a mystic sense or symbolism.

White speaks of purity, innocence, and peace. With some nations it was the colour of mourning. This colour belongs to early Christian art rather than to primitive art.

Red, as we have said before, speaks of royalty, fire, and also divine love. In an opposite sense it symbolizes to the Indians blood, war, and hatred.

Blue very naturally signifies heaven, heavenly love, and truth, therefore also spiritual life, duty, and religion.

Yellow is the colour of gold, of fire, and of the sun. It symbolizes reason, the goodness of God, fruitfulness. When it has a dirty, dingy hue it signifies jealousy and deceit. In pictures Judas is represented as dressed in this colour.

Green, the colour of spring, speaks of hope and victory. Among some Indians, because it is the colour of vegetable life, it symbolizes utility and labour. Among the Indians of the plains it was the colour to represent ice or snow.

Violet or amethyst in early Christian art signified passion and suffering. Purple from earliest days was the royal colour.

Grey and black are the colours of humility and mourning. Black is the colour of death among the Indians as among civilized races.

Mooney says that the symbolic colour scheme of the Cherokees is: East, red: success, triumph. North, blue: defeat, trouble. West, black: death. South, white: peace, happiness. It is interesting to notice that the Indians represent the four cardinal points by colours, and there is always a logical meaning for the colour chosen.

"Thus among some tribes the north is designated as yellow, because the light there at morning and evening time in winter is yellow, as also is the auroral light. The west is known as the blue world, not only because of the blue or grey twilight at evening, but because westward lies the blue Pacific. The south is red, it being the region of summer and of fire. The east is designated as white (dawnlight)."

In *Indian Basketry*, by George Wharton James, many interesting facts are given about the colours used in Indian basketry.

Indian Legends. The Indian legends about baskets are as interesting as their colour symbolism. Here are a few legends that children will like to hear when making their baskets.

The Basket-maker and the Coyote

This story is told among the Navahos (or Navajos), a large and scattered tribe which inhabits much of the country, drained by the San Juan and Little Colorado rivers, in New Mexico and Arizona. They are the present blanket-makers of North America.

Once there was a maiden who was very clever at making baskets. She was wooed by the Coyote. Now this Coyote was a very strong animal, because his life-principle was not in his heart, where it could have been easily destroyed, but in the tip of his nose and the very end of his tail. The maiden refused to marry him unless he had first been slain four times and four times had come back to life. First the Coyote allowed the maiden to beat him with a great club until she really thought him dead. Then she went back to her basket-making. She was busy making four baskets when, to her surprise, the Coyote came back. His life-principle in the very end of his nose and tip of his tail had not been hurt. Again she beat him with the club so that his body was broken into pieces, and again she returned to her basket-making, only to find the Coyote by her side saying, "Twice you have slain me but I have come back to life." A third time she tried to kill him, but she could not injure the life in the tip of his nose and end of his tail. The fourth time she was determined to succeed, so she smashed the Coyote all to pieces and mixed him with earth and ground him to powder and then scattered the powder north, south, east, and west. She really thought that that was the end of the Coyote. But after considerable trouble and after some time the Coyote managed to gather together all the pieces of his scattered body, for his life-principle had not been destroyed. Once again he returned to the surprised basket-maker, who at last rewarded him by becoming his wife.

THE STORY OF A CARRYING BASKET (Fig. 282)

This is a story about the Pueblos and the Navahos. In Chapter XXIII, where we have described the homes of some of the most interesting basket-making peoples and weavers, there is a picture of a primitive Indian village or *pueblo*. (*Pueblo* is the Spanish word for village, but it is sometimes used for the inhabitants also.) These primitive villages are found in the south-west of North America, in New Mexico and in Arizona. More will be found about them in Chapter XXIII. Now here is the story of the carrying basket.

Once, long ago, in Northern New Mexico, when the Pueblo people had a number of cliff-dwellings or pueblo-houses in a cañon there, they saw a war eagle hovering in the air. They much desired the feathers of this eagle, so they watched where the bird alighted. They found it had its nest in a cleft on the face of a precipice and the nest was quite inaccessible unless a man was lowered in a basket.

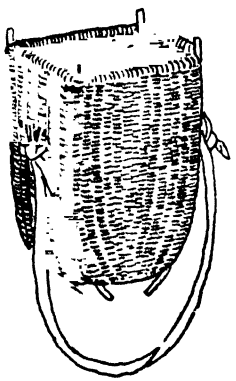


FIG. 282

Now none of the young men of the Pueblos were willing to risk their lives in an attempt to get some feathers, but they persuaded a poor Navaho to make an effort on their behalf. A great strong carrying basket, something like Fig. 282, was made, the Navaho got inside and was lowered toward the nest. He was told to drop the baby eagles he found there to the ground below, but the west wind whispered to him that the Pueblos were his enemies and he had better not obey their commands. He listened to the voice of the wind and called up to those above, "Swing the basket so that it comes close to the cliff; I cannot reach the nest." So they swung the basket and when it came close to the cliff the Navaho got out and left the basket empty. When the Pueblos found that he did not mean to return they were very angry, but their anger did not avail them much, although they tried to kill the Navaho by shooting fire arrows

at the nest. For four days the poor Navaho stayed there, starving but keeping himself warm at night by sleeping between the two young eaglets. On the fifth day the eagles —that is, the father and mother birds—came home, and they, to reward him for his gentleness to the young eaglets, took him to the upper world above the sky. There he learned all the wonderful songs, prayers, sacrifices, and ceremonies of the eagles, which are now practised by the Navahos in their great rites. He returned to earth to teach his people these things and take vengeance on his enemies.

Nearly every Indian tribe has a story of a great hero who was taken from earth and returned again to make his people better. The Blackfeet Indians have a beautiful legend which may well be called the "Christ Story of the Blackfeet." Although it has nothing to do with basket-making we give it here quite shortly, for the children will like to hear it while they make baskets. It is called The Legend of Morning Star and Young Morning Star (So-at sa ki).

Morning Star and Young Morning Star

Now Morning Star loved a maiden who lived on earth among the Blackfeet. He took her to his home in the sky to the lodge of his father the Sun. A little child was born to her, called Star Boy. The Sun did not care for the human maiden, so she came down to earth with Star Boy, and lived in poverty among the Blackfeet. On the face of Star Boy was a mysterious scar which became more marked as he grew older. He was ridiculed by every one and called Poia, or Scarface. When he grew up he loved a beautiful maiden, but she scorned him because he had no father, for she did not believe that Morning Star was his father, or that once he had lived in the lodge of the Sun. He determined to journey back to the home of the Sun-god. After many difficulties, and through his undaunted courage, he at last reached the heavenly lodge. The Sun-god received him kindly, praised his courage, and declared him worthy to be the son of Morning Star. His scar was removed and he was taught many things. Then he returned to the earth and to

the lodge of the Blackfeet, no longer Poia or Scarface, but the son of the Morning Star. He returned in glory by the Wolf Trail (the Blackfeet name for the Milky Way), the short path from Heaven to earth. When he had instructed his people fully concerning all things taught him by the Sun-god, particularly the Sun Dance, the Sun-god took him back to the sky with the girl he loved, and made him bright and beautiful, just like his father Morning Star, and so he became Young Morning Star.

On many Indian baskets will be seen figures which represent the sun, moon, evening and morning stars, and criss-cross patterns that represent the Milky Way. Such figures tell their own tales to the Indians and bring comfort to them. Their baskets, indeed, may be called their Bibles, for they remind them of a world beyond this world.

Another Legend of a Carrying Basket

This is a legend the Navahos tell about a carrying basket. (Fig. 283 shows a picture of a conical carrying basket.) In the early days of the Navahos one of their heroes was seized by a flying monster and carried to a narrow ledge on a high mountain in New Mexico. The hero's courage never failed him, and he succeeded in killing the monster and its mate and throwing them to the ground. But he could not get down from his perilous position. Then he saw the Bat Woman (one of the mythical characters of the Indians) walking along at the bottom of the mountain. He called to her and at last persuaded her to come up and carry him down in her basket, on his promising to keep his eyes closed all the time. Before he closed his eyes he noticed that the large carrying basket was held upon her back by strings as fine as those of a spider's web. But she assured him they would bear his weight, for she had carried a whole deer in this basket; further to assure him, she filled her basket with heavy

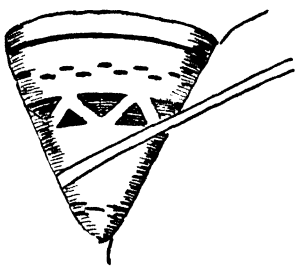


Fig. 283

stones and though the strings twanged like bow-strings they did not break. Then the hero got in and the Bat Woman cautioned him not to open his eyes. Half-way down the mountain-side he heard such a strange flapping sound that he had to open his eyes to see what it was. Instantly he began to fall dangerously fast and the flapping stopped. The Bat Woman quickly struck him with her stick and told him to close his eyes. He did so, and they began again to descend slowly, while the flapping recommenced. Three times more he disobeyed her, but the last time they were so near the bottom of the cliff that they both fell to the ground unhurt. There on the ground they found the bodies of the two winged monsters the hero had slain. They plucked the feathers of these monsters and put them in the Bat Woman's basket. Then the hero thanked her and bade her farewell, warning her not to pass through two particular regions, one of which was overgrown with weeds and the other with sunflowers. The Bat Woman forgot the warning, and as she walked through the sunflowers she heard a rustling in her carrying basket. She looked to see what it was and found all her feathers changing into birds, birds of every appearance and every colour. She tried to stop them flying away, she tried to catch them, but all in vain. She put down her basket and helplessly watched all her feathers change into little birds—wrens, robins, titmice, sparrows, blackbirds, warblers, etc.—until her basket was empty. Thus it was that little birds were created.

Some of the above stories are told in G. W. James's *Indian Basketry*. In this same book will be found also a description of the first baby baskets ever made. For pictures of babies' baskets or cradles see Figs. 284, 287, 288, and 289.

This is a legend of the Navahos.

Their gods of war were born of two women, one fathered by the sun, the other by a waterfall, and when they were born they were placed in baby baskets both alike as follows: the foot-rests and the backboards were made of sunbeam, the hoods of rainbow, the side strings of sheet lightning, and the lacing strings of zigzag lightning. One child they covered with the black cloud, and the other with the female rain.

Indian Cradles. *An Indian Cradle of Northern California, showing Twined Weaving* (Fig. 284). (For twined weaving see Chapter XVI.) In twined weaving the basket-maker takes two weft-strands round at a time and gives them a half-twist or half-twine between each pair of warp-spokes, pushing the twine down as she goes on. Not only

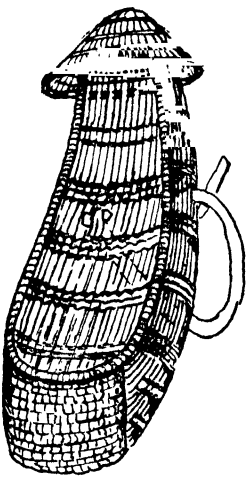


FIG. 284

FIG. 285

FIG. 287

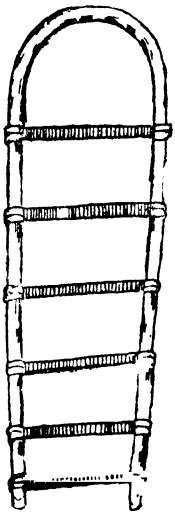


FIG. 286

cradles but watertight vessels are made in this way. By using two colours in the twine each row will be spotted, and all sorts of patterns can be made.

Fig. 285 shows a piece of the hood of the cradle (Fig. 284) entwined with black and white weft-strands. This twined style of weaving is very old, and it is an interesting fact that specimens found in East Africa and Alaska are almost identical.

Mohave Cradle. (Arizona.) Fig. 286 shows the framework of the cradle. On this is tied a bed of shredded bark for the baby to lie on. A woven blanket of some material is wrapped round the cradle (Fig. 287).

Californian Cradle (Fig. 288). Chrysalis pattern.

Hopi Wicker Cradle (Fig. 289). The Hopi Indians live in Northern California.

Children love to try to make these cradles and to hear about the strange materials used for babies' cradles in other lands—the soft fur hood of the Eskimo, the Canadian cradle of birch-bark with bed of the softest fur. In British Columbia

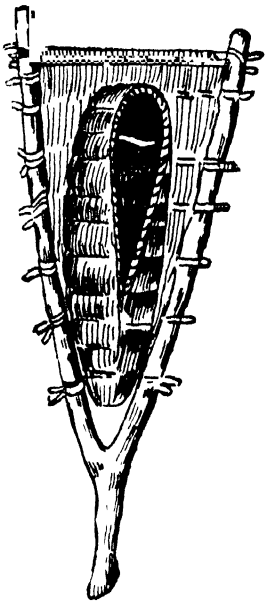


FIG. 288

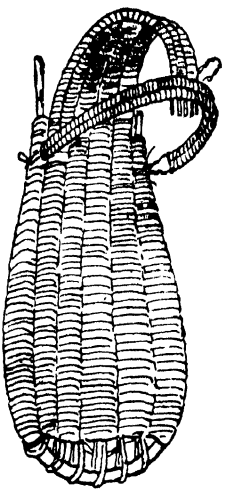


FIG. 289

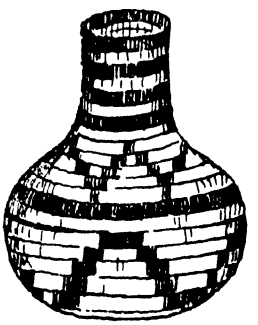


FIG 290

little arklike troughs were excavated out of wood, and pillows and wrappings were made of the finest cedar bark. Further south, in warmer climates, the ark gave place to a little rack of osier, sumac, or reed as in the illustrations, and the face of the child was shaded from the sun by an awning. Across the Rocky Mountains in the land of the buffalo, the cradle looks like a great shoe lashed to an inverted trellis or ladder.

Fig. 290 shows a basket water-bottle.

CHAPTER XVI

ENGLISH OR WOVEN BASKETRY

> Steady labour with the hands, which engrosses the attention also, is unquestionably the best method of removing palaver and sentimentality out of one's style, both of speaking and writing.
>
> THOREA

The Web Weave, or 'Upright' Weave. The 'upright' weave is so called in contrast to the coiled varieties already described, in which the foundation canes are carried round and round in one continuous coil instead of standing straight up. The foundations for upright weaving are generally cane, willow, or some tough, strong substance. These foundations are called the spokes or stakes.

Odd and Even Numbers of Spokes. It must not be forgotten that proper web-weaving can never be done with an even number of spokes and a *single* weaver. The odd spoke can be used in starting or inserted later, as we shall see. Where it is essential to use an even number of spokes for the warp, the effect of a single weaver can be obtained by using

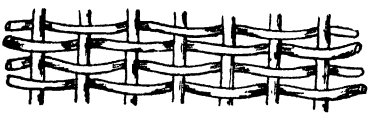


FIG. 291

FIG. 292

two weavers, both starting together, one before and the other behind the same spoke (Fig. 291).

Strokes used in Basketry. Randing is the simplest form of weaving. A single cane is passed alternately in front of and behind the spokes (Fig. 291).

When two or more weavers are used in this manner the stroke is called *slewing* (Fig. 292).

Pairing is a very useful method of weaving when an even number of spokes have to be used. If the weaver is of

raffia or thin cane it is doubled and slipped over the first spoke (Fig. 293). Carry weaver No. 1 across weaver No. 2 and behind spoke 2. Take weaver No. 2, carry it over weaver No. 1 and behind spoke 3, and so on. Fig. 294

FIG. 293

FIG. 294

FIG. 295

shows a continuation of this stroke. If thick cane or willow is used then two separate weavers are necessary (Fig. 295). This method is called twined weaving by American writers on Indian basketry.

Triple-twist, or *Three-ply Twined Weaving* (Fig. 296). Three weavers are placed behind three consecutive spokes, then each weaver is brought in succession in front of two spokes and behind one, being laid at the same time on top of the weavers that preceded it (Fig. 296). In English basketry this stroke is known as *waling*. It may be varied

FIG. 296

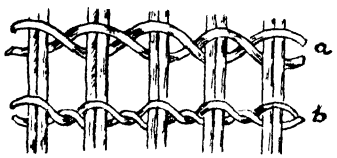


FIG. 297

by using four, five, or even six weavers. It is a very useful stroke, especially where a break or dividing line in a basket is necessary either for strength or beauty. It can also be used as a border for finishing.

Fitching is a stroke used in open work. Fig. 297, *a*, shows how it is done and how it differs from pairing; *b* shows a variation of it.

Mat or Bottom for Round Basket. Take eight spokes of No. 4 cane (about 14 inches long) and a weaver of raffia. Hold the eight spokes as shown in Fig. 298, then weave under the four to the right, over the four at the bottom, under the four at the left, and so on, making two complete rounds. Then separate the spokes (Fig. 299), and begin to

weave behind and before each spoke. This separation must be done with great care as the strength and beauty of the mat or basket depend on it.

When one row has been woven it will be found that the weaver comes behind the same spoke again, so an odd spoke, A, is now inserted, as shown in Fig. 300. Sharpen

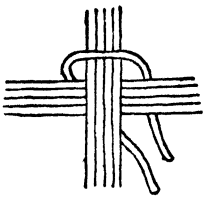


FIG. 298

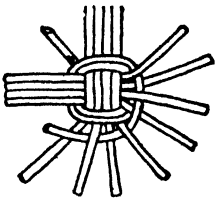


FIG. 299

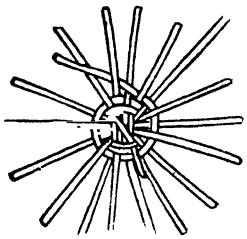


FIG. 300

one end and thrust it into the centre underneath. Then turn over and continue the weave until the mat or base is the size required. If a mat is desired finish the last row by binding it as overcasting is done—*i.e.* the weaver must go over one spoke, then under the last row of weaving just before it reaches the next spoke, then pass round that spoke in front of the next, etc. Now cut the spokes to an even length and to a point. Soak the ends for some minutes, then push spoke No. 1 down beside No. 2, leaving an open curve. Ram the spoke down as far as possible, the farther the better for strength. Figs. 301 and 302 show details of

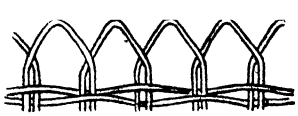


FIG. 301

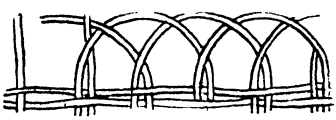


FIG. 302

simple open borders. Various patterns can be thought out. Where it is necessary to run one spoke down beside another an awl or knitting-needle must be first inserted to open a passage.

Instead of a raffia weaver a cane weaver can be used (No. 2 cane). Indeed, the cane weaver gives the better result,

but raffia is easier for children to begin with. String or macramé twine makes good weavers. Baskets, etc., are made by bending the spokes up in the desired direction. Tight weaving generally turns what is meant to be a mat into a bowl.

A Toy Hamper. Take seven pieces of No. 4 cane about 16 inches long. These will make a basket about 8 inches high. Arrange them as shown in Fig. 303, the three spokes being in front. For a weaver take a piece of fine cane (No. 1). Place the end of the weaver half-way between spokes D and A; pass it under the four spokes at A, over the three spokes at B, under at C and over at D. Draw this weaver as tightly

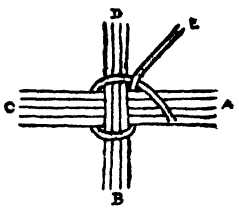


FIG. 303

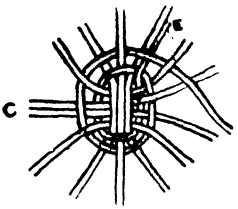


FIG. 304

as possible and pass the cane under the short end E to form a tie. Fig. 304 shows how the weaving proceeds. The two spokes at C are taken together (in order to obtain the odd number of spokes) and treated as one. Continue the weaving until the bottom of the hamper is about 2 inches in diameter. Now cut off one of the two spokes at C and what is left of the end E of the weaving cane. Now bend away from you the alternate spokes that are on top of the weaving cane. Weave round again so that the other spokes are on top and bend these away in the same manner. Continue weaving, taking care to keep the spokes nearly at right angles to the bottom of the basket. As the weaving proceeds draw each spoke back gently as the weaving cane goes behind it, so that the sides of the basket slant outward. When the basket is about 2½ inches high, the remaining ½ inch can be woven with a thicker cane (No. 4). To finish the basket cut an inch off each spoke except two that will form the handle. Each spoke is then turned back the opposite way to the direction

of the weaving and pressed down the far side of the next spoke until it is level with the last line of weaving at the top of the basket. Cross the two spokes that form the handle and push the ends down so that one end goes in where the other starts.

The lid is made exactly like the bottom, using seven spokes about 6 inches long. When the lid fits the top of the hamper, push the ends of each spoke down the sides of the spokes on the left. The lid can be fastened to the basket with loops of raffia for hinges, or it can be left quite free.

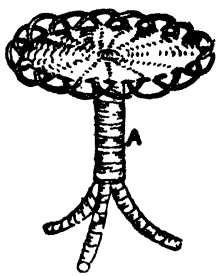


FIG. 305

A Table. Weave a mat (diameter about 4 inches) according to above directions with spokes of cane about 12 inches long and a weaver of string. When the mat is the desired size push each spoke down by the side of the next spoke as far as the cane centre, and draw it down on the under side to form the pedestal of the table. When every spoke has been treated in this way, take all the spokes and bind them together, as A in Fig. 305, to within an inch of the bottom, then divide the spokes equally into three sets and wind each set with string (Fig. 305).

In a very similar way a chair can be made.

A mat showing the working out of an Indian method of starting a centre and increasing its size by inserted corners. Ten or fourteen spokes of cane about 8 inches long are required and some raffia. Place five of the spokes side by side. Weave them together, first using the weave known as pairing, then the ordinary weave, until a square space is covered, as in Fig. 306. Weave another batch of five together and place them in the position shown in Fig. 307. Then place one batch on the top of the other so that the weavers are at the top left-hand corner. Hold both together in this position in the left hand, and


FIG. 306

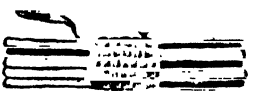


FIG. 307

with the right use first one weaver and then the other—that is, weave by pairing. After a few rows the square becomes a round.

The spokes tend to open a little after the first few rows, but they must be kept closely together. More spokes must now be added. Fig. 308 shows how this is done. A piece of cane nearly as long as those first used is bent in half. Shave the bend for about ¼ inch, leaving just sufficient to hold the two halves together. Count spokes A, C as one, do the same with B, D, and weave round two rows. Now treat each half as a separate spoke and weave two more rows. Add another bent spoke and treat it in the same way. It is better now to weave three or four rows between each increase, but no definite rule as to the number can be given, as it depends upon the thickness of the cane.

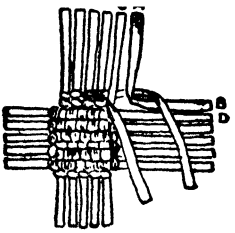


FIG. 308

Another Way of Beginning a Round Mat. Take eight spokes of fairly thick cane (No. 6). Split four in the middle for about ¾ inch, as in Fig. 309. Pass the other four through the slits (Fig. 310). Keep them flat and let them cross exactly in the centre. Take a piece of No. 1 cane for a weaver. Double it, leaving one end 3 or 4 inches longer than the other. Slip the loop of the weaver over four of the split

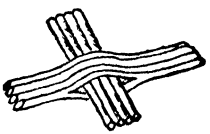


FIG. 309

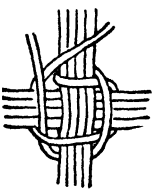


FIG. 310

FIG. 311

spokes, and bring the under part of the weaver over, and the top part under, the next four spokes, as in Fig. 311. Repeat this until three rounds have been made. The under weaver must always be brought to the top before the top weaver is taken under, as the weavers might otherwise become twisted.

Open out the spokes into sets of two, pulling them well apart so that the weavers may be well pushed down. Pair round the double spokes two or three times, then separate each spoke and continue weaving.

How to Make an Oval Base. An oval base is more difficult to make than a round base.

The number of cross stakes used depends upon the size of the base. The distance between the stakes (A and B, Fig. 312) is called the spread. If the size of the base is given subtract the width from the length and this will give the spread. The cross stakes must be arranged two at each end, and the others as required, about $\frac{5}{8}$ inch apart. The cross stakes must be split as already described. Fig. 312 shows how the weaving is begun. Double the weaver (No. 1 cane) and put the loop round the double spokes at A. Take the under part of the weaver and weave as shown in Fig. 312. Now take the upper part and weave beside it, counting the double spokes as one. Lay the base flat on the table for weaving and always work from left to right. To weave the end hold the base in the left hand and with the right bring the weavers tightly across as shown in the diagram, one over and one under the five spokes. Then put the base flat on the table and weave down the side, first with the weaver that goes in front of the five spokes, and then with the weaver that is behind them. Continue doing this until there are two weavers crossing the five spokes top and bottom. Now divide the five spokes into two, one, two, and pair round them, but still weave down the sides. Do the same at the other end. Then take each spoke singly, beginning with the double side spokes, and pair round them, but continue weaving down the sides. When both ends are done weave straight round with first one weaver and then the other. When weaving the ends pull the weaver firmly down between the spokes, which must be drawn far apart for this purpose—

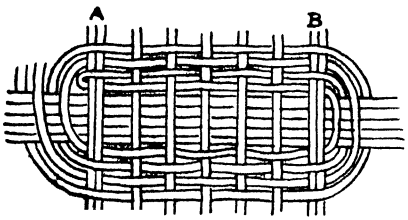


FIG. 312

in fact the weaver should be drawn down so firmly that the spokes cannot be seen in between.

Another Method of Making an Oval Base (Fig. 313). Place the end of the weaver, *a*, behind the vertical spokes and lying alongside the first horizontal spoke. Bring it round in front of the vertical spokes and then behind, and diagonally to the left, so that it comes out at *b*. Bring it round to the front, then behind and then to the front again at *c*, just above the first horizontal spoke. Now take it diagonally in front of the spokes down to the right, behind and out at *d*, below horizontal spoke No. 2, then round the spokes, across at the back and out again at *e*. Fig. 314 shows the cross effect on the inside of the basket. When the horizontal spokes have been bound in this way they are separated and the weaving begins.

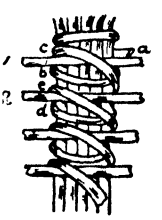


FIG. 313

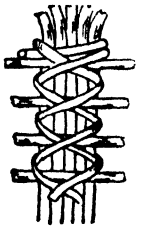


FIG. 314

Borders. *Open Borders.* These have already been described in the earlier part of this chapter.

Track Borders. These are simple and very suitable for small articles. They can be varied in many ways. Fig. 315


FIG. 315

FIG. 316

shows how this border is made. The first cane must not be bent too near the edge of the basket or it will not leave


FIG. 317


FIG. 318

sufficient space for the finishing strokes to pass underneath. Figs. 316, 317, and 318 show another variety.

Vale Borders. Figs. 319, 320, 321 show how this border is made.

FIG. 319

FIG. 320

FIG. 321

Three-pair Plait Border. Push three extra spokes into the basket (1, 2, 3, Fig. 322) to a depth of about 1½ inches. Bend over pair No. 1 to the outside of the basket and place a piece of cane, as a wedge, over them and between pairs Nos. 2 and 3 (Fig. 323). Now bend down pair No. 2 and bring No. 1 over them and up between Nos. 3 and 4 (Fig. 324)

FIG. 322

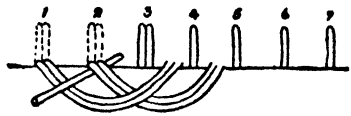


FIG 323

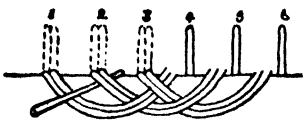


FIG. 324

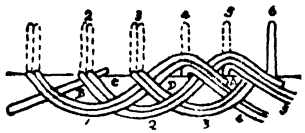


FIG. 325

to the inside of the basket. Bend down No. 3 and take No. 2 over them and up between Nos. 4 and 5 (Fig. 325). Bend down spoke No. 4 and place No. 1 pair alongside it (Fig. 325). Now continue taking up the left-hand pair to the inside of the basket. No. 3 will go over 4 and up between spokes 5 and 6. No. 2 must now be brought from inside to outside between 5 and 6, spoke 5 being bent down. There are now three spokes in each group on the outside, but the short one

on the right (A in Fig. 325) is dropped. Continue thus until the last spoke has been bent down. There is now one group on the inside and two groups on the outside of the basket. To finish the border take the two outside pairs to the inside, passing the left-hand outside pair over the other and under the loop of pair No. 1 (Fig. 325), between 1 and 2 to the inside. The last pair is brought over No. 1, and under No. 2 to the inside in place of the wedge, which is now removed. The three pairs are now on the inside. Bring out the left-hand pair, through the space B to the outside of the border, then the next pair through the space C, and the last through the space D.

If the distance between the spokes is about $\frac{5}{8}$ inch the length of spoke required for this border is 7 inches above the top of the basket.

The Five-pair Plait Border is begun in a similar manner. Five extra stakes are inserted. Bend down No. 1 and place a wedge between 2 and 3; bend down No. 2 and place another wedge between 3 and 4. Bend down No. 3; take No. 1 to the inside; bend down No. 4; take No. 2 to the inside, and then bend down No. 5. To finish off, take all the pairs to the inside and then bring them out as described in the last border. The length of the stake should be 11 inches. Pair borders may consist of 2, 3, 4, 5, or more pairs to suit the style and size of the basket.

Four-pair Plait Border. Fig. 326 shows the beginning of a four-pair border. Take stake No. 1 behind No. 2 and bring it to the front (Fig. 326). Do the same with Nos. 2, 3, and 4, as in Fig. 327. Now take No. 1 in front of 3, 4, 5, behind

FIG. 326

FIG. 327

stake 6 (Fig. 327) and to the front. Bring No. 5 behind No. 6 and to the front beside No. 1. Do the same with Nos. 2, 3, and 4. There are now four pairs. Continue with No. 5 and drop No. 1, which is now finished with, and so on until

only one stake, A, remains standing (Fig. 328). To finish the border take No. 12 (Fig. 329) in front of A and under the loop of No. 1 to the outside; bring down A out through

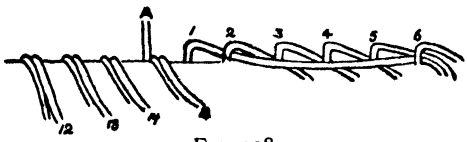


FIG. 328

loop of No. 1 and alongside No. 12. No. 13 is taken through under No. 1 to the inside and brought out between 2 and 3. No. 14 goes under No. 2 to the inside and out between 3 and 4. No. 15 goes under No. 3 and out between 4 and 5, and the

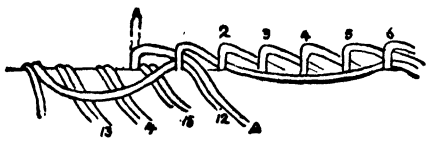


FIG. 329

last stake, A, under No. 4 and out between 5 and 6. When finishing all pair borders, the stakes that are carried to the inside must be taken under one cane only and brought out below *all* the stakes which comprise the border.

Raising. Sometimes it is necessary to raise the sides of baskets—*e.g.*, a clothes-basket (Fig. 331). Fig. 330 shows

FIG. 330

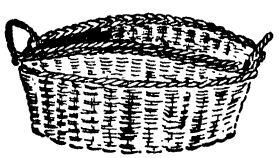


FIG. 331

how this is done. Begin on the two middle spokes and work as far as required. If the height is not sufficient cut off the cane and start again immediately above the first beginning. The hood of a cradle is made in this way and several repetitions are necessary to get a good curve.

Willow Basketry. This work is more suitable for older children, as the willow is somewhat difficult to handle, being less pliable than the cane. The willow is either white or brown, the former being peeled, while the latter retains the bark. The white willow is the more expensive.

Willow is not so uniform in thickness as cane, as it gets smaller from butt to top.

The making of willow baskets differs in several ways from the making of cane baskets.

(1) The bottom strands are made long enough for the bottom only. The side spokes are inserted when the bottom is finished.

(2) The weaving is done with several weavers at once, generally three, because the willow is so much shorter in length than the cane.

How to Add a New Weaver. If the old weaver comes to an end at its top, then the top of the new weaver is inserted and overlaps the top of the old. The new weaver will now end at its butt, and the butt of a third weaver is inserted, overlapping the butt of the second weaver.

The willow must be kept damp. The best way to do this is to wrap the bundles in damp cloths.

A Willow Basket. Cut six spokes of willow an inch longer than the diameter of the bottom of the basket. Cross them as shown in Fig. 332. There must always be an odd number of spokes for weaving. This odd number is obtained by the addition of the weaver, W (Fig. 332). Place the butt of the weaver by the side of the top spokes as in Fig. 332, the long end pointing to C. Bend this end back under spokes B, over A, under D, over C, under spokes 1 and 2 in B, and up between 2 and 3.

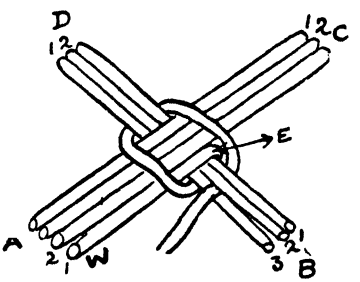


FIG. 332

Sharpen the end of a second weaver and put it in at E (Fig. 332) from above, take it under A, over D, under C, over spokes 1 and 2 in B, and down between 2 and 3, thus

bringing the two weavers together. This double weaving is stronger than single weaving.

Fig. 333 shows how to proceed. W_1 goes under 1 and 2 in A, up between 2 and 3, over 3, 4, and so on. W_2 goes over 1 and 2, down between 2 and 3, under 3 and 4, etc. When the weavers have been taken round once in this manner separate the spokes and weave through between each until the bottom is the required size.

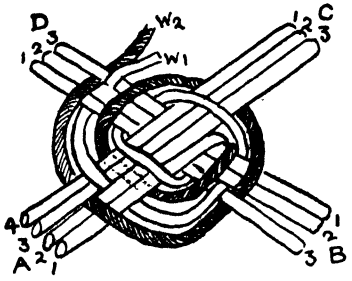


FIG. 333

The two weavers should be drawn round fairly tightly, and come one above and one below the other. In the diagram they are purposely left far apart so that the method of weaving is clearly seen.

The bottom should be kept slightly concave, as the basket will then stand better. It is important to keep the spokes at equal distances from each other, and to bend the weaver only when the position of the spoke is correct, as when the weaver is once bent it remains so. The weavers must be kept damp. Cut off the projecting ends of the bottom.

The Upright Spokes for the Sides of the Basket. There should be two for each bottom spoke, except one, to keep the odd number. The end of each must be trimmed to a long point with a sharp knife. Damp them and insert them one on each side of each bottom spoke, except the single spoke needed to keep the odd number. Press on each pair of spokes with a knife, and with the left hand bend them upright (Figs. 334, 335). To fix the upright spokes *at the bend*, take three weavers and insert them one by one, taking each over two spokes and then under one, all the way round, using the stroke shown in Fig. 294. Take another row of weavers in the same way, but now *on the upright* part of the spokes. This fixes them firmly, and their direction, sloping outward or inward according to the shape of the basket. The sides of the basket must now be woven. Take four weavers of varying lengths, so that new weavers can be

added in different places, and begin them at their butt ends. Weave alternately in and out, holding the spokes carefully while the weavers are going round them, to get the shape

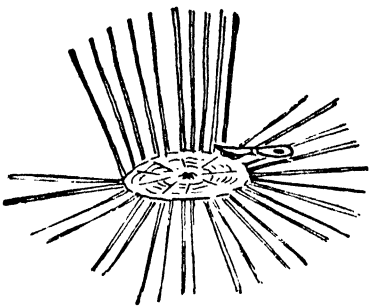


FIG. 334

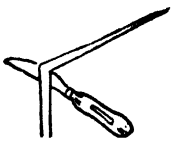


FIG. 335

right. To finish take three weavers, insert one at a time and weave in front of two spokes and behind the third (see Fig. 296).

A second row of three weavers can be taken if desired. These strengthen the basket and make a good finish. The spokes now project some inches above the last row. Bend them as already described about 1¼ inches above this row, and afterward use them as weavers. Weave with them any of the borders already described. All ends (which should project on the outside) are cut off and turned downward.

The Handle. Sharpen both ends of a fairly thick piece of willow and push them in as far as possible between the weavers. Take a piece of fine cane (about ⅛ inch thick), thread it through the weavers to a depth of three inches, and wind it spirally round the handle to the other side; thread it through the weavers and then wind round the handle again, laying the cane by the side of the first spiral. Do this from side to side until the handle is filled. Insert the end of the cane in the weaving and tuck it away.

Wood Bases. By using wood bases many more varied shapes are possible. Three-ply wood can be used for small articles. For trays the best wood is well-seasoned oak or canary-wood. Fig. 336 shows how the cane is doubled and inserted. It must be well soaked in the middle in order to

get a good flat bend. Each length of cane forms two spokes. The bottom of the base must be raised slightly, as shown in Fig. 336, to prevent the cane from wearing.

FIG. 336

For a tea-tray a suitable size is 22 inches by 13 inches. The spokes are cut from fairly thick cane 24 inches long. The sides can be woven as shown in Figs. 291–297, with thinner cane (No. 3), and any of the borders already described used as a finish.

Wooden bases for small baskets can be made from the lids or sides of tobacco-boxes. For larger baskets or for trays the wood must be well seasoned and not less than ⅛ inch in thickness. Such bases can be obtained from any cabinetmaker or joiner.

CHAPTER XVII

RAFFIA-TWISTING, TASSEL-MAKING, BOTTLE-CASING, ETC.

A heart to resolve, a head to contrive, and a hand to execute.
GIBBON

Raffia-twisting. Raffia rope handles are useful for many purposes—to mend broken baskets, to make handles for the various baskets described in this book, etc. Before beginning to make the handle, something or some one must be found to hold the raffia. A strong pin will do to pin it to the clothing that covers the knee, or a large hook can be tied to a chair.

Take about six strands of raffia (more if the basket is a large one). Hold these strands in the middle, and with the left hand twist *outwardly* the half on the left until about 2 inches are twisted. This twisted portion must then be placed behind the head of the pin (or over the hook, or held in some hand, as the case may be) and the two ends drawn forward one in each hand (Fig. 337). Now continue to twist these ends to the left, but at the same time bring the end in the left hand *over* the one in the right, changing each into the other hand, twist each end separately and repeat the change of hands until the handle is long enough (Fig. 338). If only two twists are used, it is well to keep the hands as far away from each other as possible, while twisting not more than 2 inches of raffia in each. This will tighten the rope and the prettier will be the result. If three twists are required, the two hands, while twisting each end tightly, should be kept as close together as possible; this will help to allow the necessary

FIG. 337

FIG. 338

room for the third twist to be pressed into its place as it goes back along the path it came. Fig. 339 shows the method of arranging the work and bringing back one end

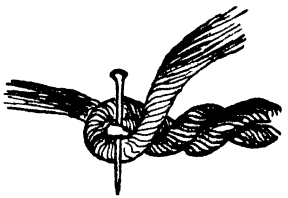


FIG. 339

FIG. 340

to form a third twist. Children love making these raffia handles and are always much mystified by the fact that the twist does not unwind.

To Finish off a Handle made of Two Twists (Fig. 340). In making handles it must be remembered that the raffia used should be somewhat longer (say 4 or 5 inches) than twice the length of the handle required. To finish the handle, tie the two ends firmly together (as at A, Fig. 340), twist both separately for about 1½ inches or more, then tie each and turn them up so as to form a loop which can be sewn to the inside of the basket. If the short ends left (B in Fig. 340) are spread out and turned back down between the loop and the basket they can be cut off when the handle is finished.

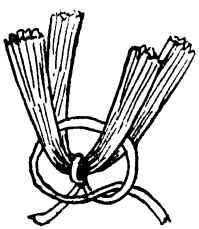


FIG. 341

Tassels. These are useful to decorate hats, bags, etc., and the ends of girdles and cords. They are easy to make. Wind the raffia loosely round two fingers and tie it. Cut the ring, and divide the strands in each half thus formed, bring through the strand of raffia used to tie the ring, and tie a knot (Fig. 341). Fray out the raffia with a needle and trim it to shape.

Bottle-casing. The warp is formed of raffia plaits (a three-plait is best). Measure the bottle to be covered, and find how long a plait is required to go from the top of the bottle, down one side, along the bottom, and up the other

side to the rim. Allow about 2 inches longer than this. Now suppose we find a plait 12 inches long is required. Make five plaits 12 inches long and one 6 inches long. Arrange these strands for the centre of the base as shown in Fig. 342, stitching them together with a thin strand of raffia if necessary. Double a strand and commence weaving the weave

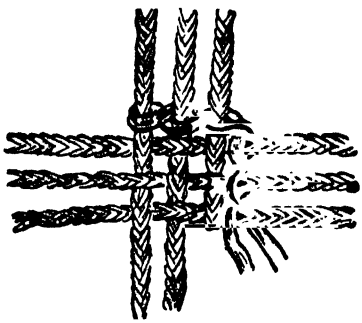


FIG. 342

known as 'pairing' (see Chapter XVI). Continue pairing until the base is the size of the bottom of the bottle, opening out the plaited strands so that the angles between them are all equal. Bend up the plaited warp-strands at right angles to the base and fix them with three or four rows of pairing. Place the bottle in position on the base and continue with ordinary weaving until the bend is reached, then use pairing again. Weave again with one strand up the neck of the bottle. Finally, put on three rows of very tight pairing and finish off the two ends by knotting them and stitching the ends under the weaving. Cut off the ends of the warp-strands.

To Make a Cord for Hanging the Bottle. Select two good strands of raffia, and thread them through behind a warp-strand about half-way down the bottle; take a pair in each hand and begin to twist a cord in the manner already described. Twist for the required length, then bring the cord over and tie it to a warp-strand on the opposite side. Bind the ends together and fray out to form a tassel.

Another method of bottle-casing is to work the base as already described, then place the bottle in position, and fix it

by turning up the warp-strands and tying them to the bottle neck with a piece of raffia. Thread a small curved packing-needle with a strand of raffia and weave tightly from right to left.

Various other warps are used for casing, such as plain raffia, round or flat cane, rush, thick string. The woof may be a thin raffia plait or fine cane or a mixture of both. Raffia of different colours gives pleasing results.

Besides bottles, tins and jars of all kinds can be covered in this way and used for various purposes, such as pot-pourri jars, etc.

CHAPTER XVIII

KNOTTING WITH RAFFIA, ETC.—STRING-WORK

It is the instinct of genius to find beauty and holiness in new and necessary facts, in the field and roadside, in the workshop and mill.

EMERSON

Buttonholing. This loop or knot can be worked in two ways as shown in Figs. 343 and 344. Particularly effective and useful are the letters of the alphabet and the numerals, when cut out of cardboard and thus covered. The raffia can be

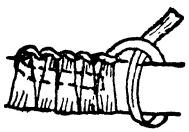


FIG. 343

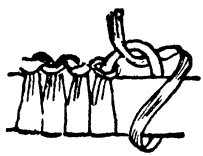


FIG. 344

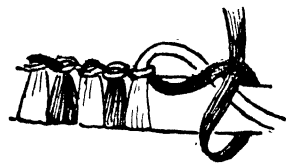


FIG. 345

used as it is, without any damping. To finish off, stitch the strand back under the work. Pretty effects can be obtained by using two or more coloured strands, each strand being knotted in turn (Fig. 345). Buttonholing is a particularly easy method of covering great varieties of shapes, and as it is all (or practically all) done by the fingers it is an excellent exercise for young children. All the articles made by winding exercises, mentioned in Chapter IV, can be covered in this way.

FIG. 346

Single Buttonhole Right and Left, or Genoese Bar (Figs. 346 and 347). This exercise comprises one buttonhole stitch to the right and one to the left alternately, thus making both hands work equally. It is pretty when worked with two coloured

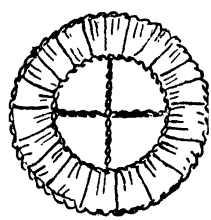


FIG. 347

strings. Tie the two coloured strings right and left at the top of the foundation cords (Fig. 346), then work first with one, then with the other. *A wheel* can be made as in Fig. 347 and a very pretty toy *racquet* (Fig. 348) by using the right and left buttonhole stitch. Take a piece of stout weaving-cane or ribbon wire 16 inches long. Begin about 4 inches from one end and knot right and left buttonhole stitch until about 4 inches from the other end, then bend the cane round into shape, and bring the two unknotted ends together for the handle. Tie them temporarily together and knot over both at once to form the handle. The centre of the racquet is filled with crossings and interlacings of fine macramé thread. For this use a tapestry needle and a long length of yellow twine. Begin near the handle and cross from side to side at about every fourth stitch of the knotting. When the top is reached, return downward by weaving the needle over and under the cross strands, leaving equal distances to form squares. Balls can be made to go with the racquet, as described at the end of the chapter.

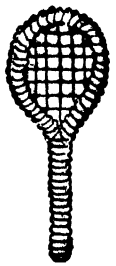


FIG. 348

Reef Knot. This is the most useful of all knots. It can be used for joining strands or for forming good strong netting. To join strands with this knot place the right-hand strand over the left and tie a simple knot (Fig. 349). Place the left strand over the right, and tie again (Fig. 350). It makes it easier if at first different coloured strings or pieces of raffia are used. To give practice in this knot pass a string over a hook fastened to a desk and let the children tie round a short stick each time until perfect. This open gimp is useful for ornamentation and can be made any length by putting the loops over the hook from time to time. Ribbon can be threaded through the loops and drawn up to make serviette rings, etc. (Fig. 351). The reef knot is in any case a valuable

FIG. 349

FIG. 350

FIG. 351

knot to know, and useful for tying up parcels if for nothing else.

Weaver's Knot. This is generally used by weavers for joining broken strands. Children find it a difficult knot, but it is neat and strong. Cross the ends of the strands as in

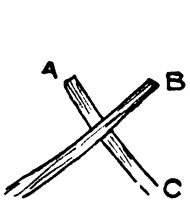


FIG. 352

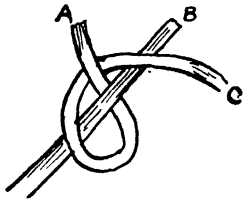


FIG. 353

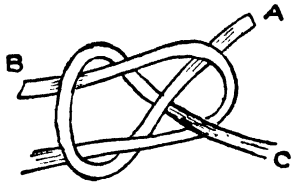


FIG. 354

Fig. 352, and hold them together between the left thumb and forefinger. Bring the lower right-hand strand, C, over the thumb, round to the back of the short end A, and out to the front again, between the ends A and B as in Fig. 353. Bring the short end B over the strand A, thread it through the loop and pull tight. Fig. 354 shows clearly the last operation.

Solomon's Knot. Knotted bags or mats in which a number of strands require fixing firmly can be worked with this knot. Figs. 355 and 356 show how the knot is tied when a number of strands have to be united by one strand.

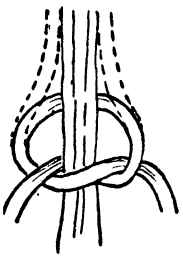


FIG. 355

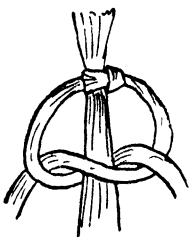


FIG. 356

Sometimes it is convenient to take the two outer strands, as shown by the dotted lines in Fig. 355, to tie the knot with.

Articles Worked with Knots. *A String Bag.* Obtain a piece of stiff cardboard about 6½ inches by 4 inches (the cover of an old exercise book or a box lid will do). Double a strand of raffia and tie it firmly round the cardboard, allowing the ends to hang down (A in Fig. 357). Double ten more strands and fix them at equal distances round the top one by means of slip knots. Take the adjoining strands from each of the eleven pairs, and with them tie reef knots

about half an inch below the top. Tie eleven or twelve more rows of knots in this way until the bottom of the cardboard is reached, making the diamond pattern shown in the sketch (Fig. 357). Bind all

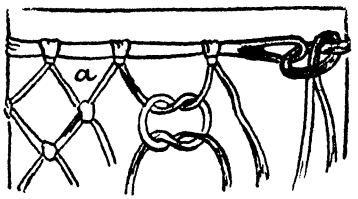


FIG. 357 A

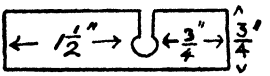


FIG 358

the loose ends together, cut them off, and fray out. A handle can be made by twisting two thin cords as explained in Chapter XVII.

A gauge for size of mesh can be made, if desired, from a piece of cardboard. Fig. 358 shows a suitable size for this. The $\frac{3}{4}$-inch side is used for the first row of knots, giving the triangular places as at *a* in Fig. 357; then the long end, $1\frac{1}{2}$ inches, is used.

For young children beginning knotting or netting it is simplest to tie a short piece of rod, knitting-needle, pencil, etc., to a chair back or other support. Then loop on eleven or twelve strands of raffia as described above. The knots need not at first be reef knots, but two single knots of ordinary method.

Many different objects can be made in this manner. From string, hammocks large enough for practical use, bird-nets, cricket- and tennis-nets, bags, fishing-nets, etc.; from silk and wool, scarves, wraps, sashes, fancy curtains, fringes for mats, etc.

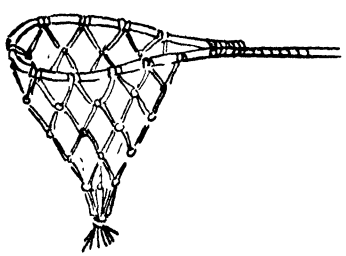


FIG. 359

Fig. 359 shows how a little *fishing-net* can be made from a piece of cane bent round as in the diagram. Strands of raffia are looped round the bend in the manner already described.

A Flower-pot Holder. Make a thin raffia ring (see Chapter IV) rather larger than the hole in the base of the pot.

Double twelve strands, and fasten them to this ring, using slip knots (the number of strands will vary according to the size of the pot, but should always, when doubled, give a multiple of eight). Invert the flower-pot and fix the ring in position on the base by threading a strand through it and the hole, the strand being drawn right through the pot and tied on the outside. Separate the strands into six groups of four, and with the two outer strands in each group tie a Solomon's knot about ½ inch from the ring. Make a second

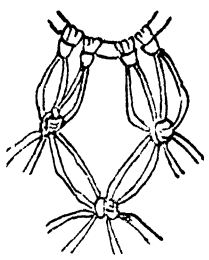


FIG. 360

FIG 361

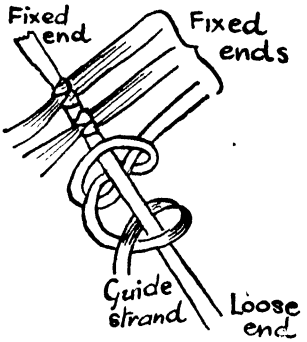


FIG. 362

row of Solomon's knots, taking two strands from each side (Fig. 360). Continue knotting until the edge of the pot is nearly reached, making the work fit closely to the sides Then collect up the strands into groups of eight and work Solomon's knots for a few inches, using four of the strands for guides and a double one on each side to knot with. To finish off, make a tight twist of all the ends, bend the twist to form a loop, and fasten it by binding very tightly, stitching the end of the binding strand two or three times through the twist. Fig. 361 shows finished holder.

By rearranging the knots many different patterns can be worked; various shapes, too, can be covered, so that there is plenty of scope for originality. Knotted mats, fringes, and ladies' hats, etc., can be worked by a combination of the knots given and by using the following knot, which is a varia tion of Solomon's knot. When a number of strands, fixed at one end, require knotting on to a guiding strand, the

following method is adopted. The loose end of the guide strand is held in the left hand, and the knotting-strands are tied as shown in Fig. 362, the first part of the knot being pulled tight before the loop is made.

A Spiral Cord of Two Colours. This is a very pretty and simple cord, and has a spiral effect. It may be worked in the hands at first, but as the work increases in length it is better to have some support to hold it; the cord may, for example, be fixed in the hole of a reel, or the end may be attached to a hook in the desk or have a weight hung to it.

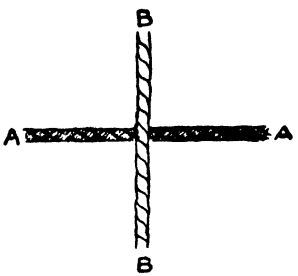


FIG. 363

FIG. 364

To begin the cord, give each child two strings of different colours about 1 yard in length. Place the two strings at right angles to each other. Now take the bottom string (A A in Fig. 363), say a red one, and tie it across B B (a single tie knot only is used); pull both ends back to the same position as before. Next take B B and tie across the knot just tied by the red string. In the progress of working the cord twists itself, and when finished will appear as a spiral of red and white (Fig. 364). The advantage of having two colours is obvious: the children know which two strings to tie, as they would not do if all were alike. Watch-guards in silk cord or Russia braid can be made in this way.

A Square Knotted Cord of Four Strings. For beginners it is best to have the four strings of different colours. The cord when finished is square or four-sided, and is made by crossing every string at right angles to the last. A large reel or ribbon-roller with a hole in the centre is useful to put

the strings in to begin with. Suppose the four strings are red, white, blue, and yellow—A, B, C, D in Fig. 365. Knot them together and insert the knot in the hole of the reel; place the strings outward opposite each other like a Greek cross. Take A and carry it across B to lie parallel with C (Fig. 366). Take B and carry it across A and C to lie parallel with D. Bring C across B to take position of A. Bring D over C and thread it through the loop formed by A at starting (Fig. 366). It will be noticed now that the starting position of each string is shifted from left to right. To regain

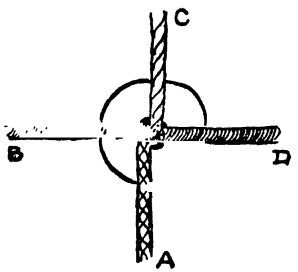


FIG. 305

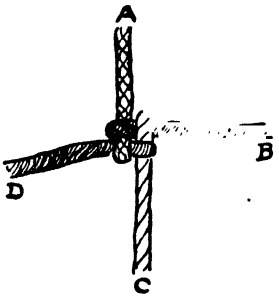


FIG. 366

the first position the strings are again crossed as before, only they start from the right-hand side, as it were, working backward. Children soon learn that each string goes straight across to the opposite side in turn, and the last one is threaded through the loop of the first. The children must hold the strings down between the fingers of the left hand while working, but at first the reel can be rested upon a desk and both hands left free to work.

Single Loop-chain of One String. This is simply the ordinary loop-chain made in crochet-work, but made with the fingers without the aid of a needle. Take a piece of string about 1 yard in length. Turn down about 1 inch and tie a knot in the double strings to form a loop. Hold the knot between the thumb and finger of the left hand, with the loop standing up, and the string hanging loosely across the fingers, pull this string through the loop to form another loop, pull the new loop until the previous one is tight and so on.

Double Loop-chain or Knotted Cord of Two Strings. This is useful for making girdles. Choose two contrasting colours, say blue and brown, for learning. Cut the strings four times the desired length of cord and knot them together at one end. Hold the knot between the second finger and the thumb of the right hand, and twist the brown strand round the first finger as in Fig. 367, pass it through the third and fourth fingers, which are curled up. The blue

FIG. 367

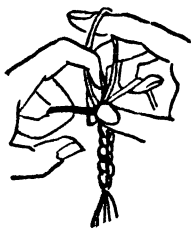


FIG. 368

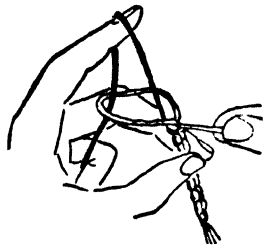


FIG. 369

strand is held as in Fig. 368. With the first finger of the left hand lift up the blue string through the brown loop, pass the knot across to the left second finger and thumb and then pull the brown strand tight as in Fig. 369. Now pick up the brown strand in exactly the same way as the blue, only with the right hand. The children will notice that the loop is always of one colour and the string to be pulled through another. This exercise may be worked by both hands, looping alternately, but the best and most regular work is obtained by using the right hand throughout as described above.

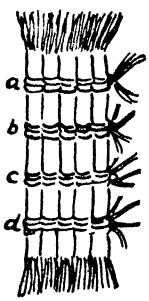


FIG. 370

Rope Door-mats. Large mats are too difficult for children, though some boys might find them interesting. But quite little ones will enjoy making a door-mat for a doll's house. Both big and little mats are made on the same principle. Cut some thick string into 6-inch lengths. On the first string (or rope, if a big mat is being made) tie four pieces of macramé cord or thin coloured string at equal distances from each other, as *a*, *b*, *c*, *d* in Fig. 370. The two long ends

of each piece of macramé cord are used for tying on the other ropes. Place the second piece of rope between the strings of all four sets and tie this rope to the first one. A single tie knot is all that is necessary until the last rope is tied on, and then the knot must be doubled. More ropes should be added until the mat measures a square or oblong as desired. The knotting should be kept quite straight across the mat, and should have the appearance of four narrow red (or whatever colour is used) stripes running across it. The ends on either side are now ravelled or frayed out, as in Fig. 370, and cut quite even. If the rope used is stout, double strings must be used as in Fig. 370.

In this same way whole straws may be knotted together to make photo-frames, table-mats, wash-stand splashers, etc. Straws are always a little larger at one end than the other; therefore when joining always insert the small end of one straw into the large end of the other, and continue tying as if all in one piece.

Cord Dinner-mats. These mats are knotted upon the same principle as those described above, but are worked round instead of straight across. All the strings must be knotted to the end of the cord which will form the centre of the mat (Fig. 371). Stiff blind-cord or small rope is best for the work and No. 4 macramé string. Arrange the strings so that they radiate pretty evenly, but a little closer together at the ends. The cord is laid flat between the strings and knotted round and round until the mat is the size required.

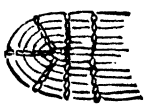


FIG. 371

String Buttons. Buttons can be made of string or leather bootlaces. The method of doing so is shown in Figs.

FIG. 372

FIG. 373

FIG. 374

FIG. 375

372, 373, 374, and 375. Notice that it is more or less a continuous plait and one string follows the other round until

the button is the right size. The two natural ends left when the button is completed are a convenient means of fastening it on. This button makes a very good top for a lady's hatpin when worked with a tan leather bootlace round the knob of an ordinary glass-headed hatpin.

Covering Balls. String makes a good covering for home-made balls. A good foundation for a ball of this kind is a lump of cork roughly rounded and covered with rag, or several small pieces of cork, or newspaper, etc. To secure a good shape it is well to wind the foundation tightly over with

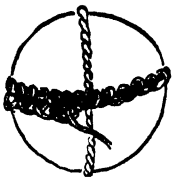


FIG. 376

FIG. 377

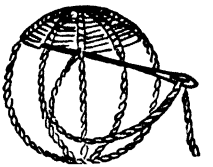


FIG. 378

wool. Now to cover this ball with string it is necessary to tie at least two (better three) circles of string round the ball and then proceed as shown in Fig. 376. Fig. 377 shows the stitch in more detail. It will be necessary to lessen the number of stitches at regular intervals as the circles get smaller. An ordinary packing-needle is the best implement to use for this work.

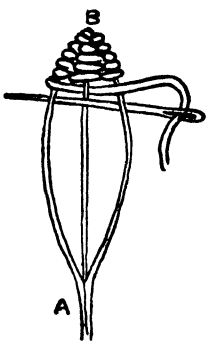


FIG. 379

Softer balls for young children can be covered by fastening about eight strands of string right round the ball like meridians. These should be sewn with a few stitches where the strands cross. They can then be worked with twine by putting the needle under each strand, and then back and under again. Work round and round, as in Fig. 378, until the whole is covered. Cardboard disks and cylinders, etc., can be covered in the same way. For more about this kind of weaving see Chapter XII.

The petals and leaves of flowers can be imitated by knotting or twining (as described above) string over ribbon

wire. Fig. 879 shows a leaf in progress. A tapestry needle is best for this kind of work. The wire is bent in half at B, the sides are curved and the two ends brought together at A. Twist the twine round the ends at A and carry it across the middle of the leaf to the apex at B, there sew it over and over to the point, letting the needle pass through the stitches to keep it in place. The leaf is filled in by weaving to and fro a long length of green twine. If the leaf is large and the string will not keep tight let the children buttonhole the string each time to the wires in preference to weaving. Cane can be used instead of wire, but it is harder to get the correct shape with this.

CHAPTER XIX

DOLL'S FURNITURE—SOME OLD-FASHIONED WORK

Life is the putting things together, the 'making' of things.
RUSKIN

Furniture made from Cork. Children love to make doll's furniture with corks, pins, matchsticks, and silk or fine twine.

A Table. A thin disk of cork with pins stuck round it (Fig. 380) forms the table top. Silk is woven round the pins; four matchsticks are pushed into the cork for legs. Chairs, sofas, waste-paper baskets, stools, etc., can be made

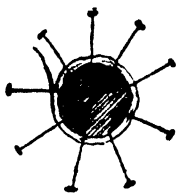


FIG. 380

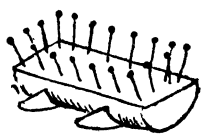


FIG. 381

in this way. A piece of cork cut in half lengthways makes a little *cradle*. Pins are put round the flat side and cardboard rockers placed in slits on the rounded side (Fig. 381).

If larger corks are used matchsticks can take the place of pins. By using pins of two different sizes *armchairs* can be made. The pins must not be placed too close together as it is then difficult to wind the silk in and out.

Pretty little *chairs* can be made in the same way from chestnuts.

Furniture made from Cardboard. Another method of making furniture is by using cardboard, sticks or pieces of cane and raffia or narrow tape or ribbon. Fig. 382 shows a *chair*. Duplicate shapes are cut out of cardboard and an

uneven number of holes made in each. Cut pieces of cane the required length and put them through the holes. If raffia is used it can be tied to one stick and woven over and

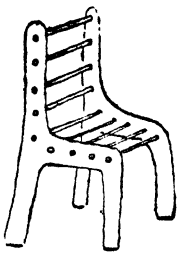


FIG. 382

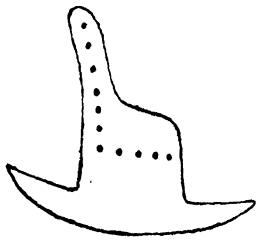


FIG. 383

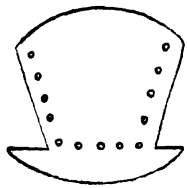


FIG. 384

under, all knots coming at the back or under part of the chair. If the weave known as 'pairing' (see Chapter XVI) is used the strands come closer together and there is no necessity for having an uneven number of pieces of cane.

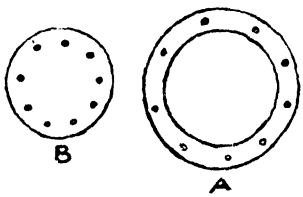


FIG. 385

FIG. 386

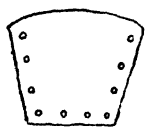


FIG. 387

If ribbon or tape is used it must be cut into pieces of suitable length, and each piece woven between the sticks, the ends being fastened by a little seccotine. Fig. 383 shows the shape for a *rocking-chair*. Fig. 384 a *cradle*. Fig. 385 shows the top, A, and the bottom, B, of a *waste-paper basket*. Cots, beds, settees, garden seats, etc., can be made in this way, and children delight in making their own designs.

A *wheelbarrow* can be made in the following way. Figs. 386 and 387 show the pieces of cardboard for each end. Cut two pieces of cane (A A, Fig. 388) long enough to project and form handles, and two pieces (C C, Fig. 388) to project in the other direction. To these a cross-piece is tied on which the wheel, a raffia ring, revolves. If a large wheel-

barrow is made two or four short pieces of cane can be fitted into extra holes between A and C. Two small pieces of cane, B, are tied to A, A to form the legs (Fig. 389).

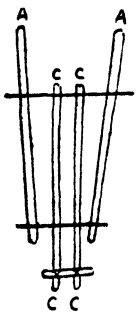


FIG. 388

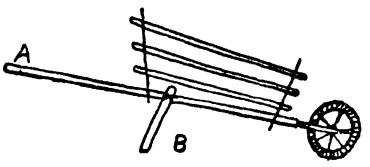


FIG. 389

Daisy Mats. These are very simple to make and are both pretty and useful when made. Make a square wooden frame of four lengths of wood, about 1½ inches wide by ½ inch thick. The size of the frame will depend upon the size of the mat required. In each of the four sides hammer about twelve French nails, about 1½ inches to 2 inches long and 1½ inches apart, taking care to have an even number. It is best to use thick wool, as if the wool is thin twice the number of 'rounds' is necessary.

Fig. 390 shows how the frame is threaded. Begin at A. When B is reached turn the frame so that the right-hand bottom corner becomes the left-hand bottom corner, and thread as before. Keep turning until enough wool is on the frame. To make 'daisies' composed of crimson, scarlet, pink, and white on a dark green ground, thread the frame with green wool until there are three strands each way of the frame. Finish off with a knot round the last nail. Now thread with the crimson until there are four strands each way; then scarlet for three, pink for two, and white for one each way. The mat is now ready for tying. This must be done at the back with very thin twine.

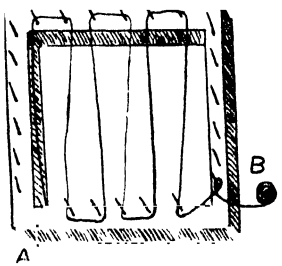


FIG. 390

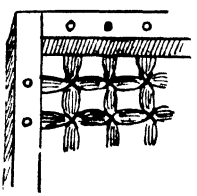


FIG.

Fig. 391 shows the method of tying. Now turn the frame over and with a pair of scissors cut through the wool,

except the three strands of green, exactly half-way between the parts where the strands cross.

Fig. 392 shows the mat partly cut. When each division has been cut through, the surface will be composed of a series of round, fluffy balls. These balls can be made softer by passing a comb backward and forward through the top to tease out the wool. If the mat, while still on the frame, is held in front of the spout of a kettle of steaming water, the balls will look like plush. Now take the mat off the frame and it will be complete.

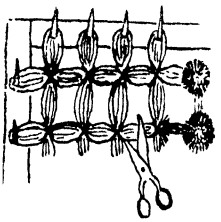


FIG 392

Mat- or Rug-making. Useful mats or rugs can be made on a foundation of firm canvas with pieces of wool or strips of cloth. Fig. 393 shows the size of mesh. Double one of the lengths of wool or cloth and with a crochet-needle pull the loop under and through the canvas threads, as in Fig. 393, and crochet the two ends through the loop. Pull the two ends firmly, and so secure and complete the stitch. It is sufficient if the wool is put through alternate meshes, one row alternating with the next, *a a* in Fig. 393. Two rows all round the edge should be tufted in every mesh to give the mat greater firmness.

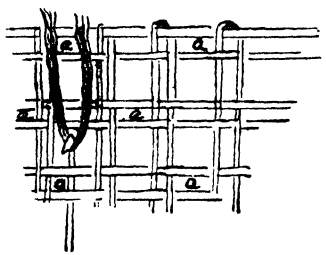


FIG. 393

Simple geometrical patterns (see Chapter II) may be marked on the canvas and filled in with different coloured rags or wool. As the children become more capable they can attempt more difficult designs, such as the figures of animals with angular outlines, and objects such as boats, windmills, etc.

Birds made from Woollen Balls. *A Robin Redbreast.* Cut two rings of cardboard 1¼ inches in diameter. Make a hole in the centre ½ inch in diameter. Wind in brown wool to make a small ball. When finished cut to shape and add

two short black-headed pins on either side for eyes, or sew on two black beads (Fig. 394). The rings for the body are 2½ inches in diameter, with a hole 1 inch. The circumference is divided into three parts and a little more than one-third must be wound in red to represent the breast, and the remainder in brown. The body is much rounder on the lower portion than on the upper and should not be cut to shape until the legs have been attached. Fig. 395 shows roughly the shape of the body. Take a length of wire and thrust it through the head and body to join the two together. Bend round the end which projects from the head, to form the beak, and wind it with yellow wool (Fig. 394).

FIG. 394

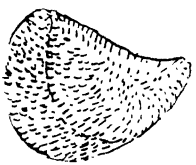


FIG. 395

For the legs a piece of wire 4 inches long is passed through the body and the ends bent downward. The wire should be stout and well pressed in at the sides so that the legs are about one inch apart. Two pieces of fine wire an inch long are needed for each claw. Double in half and twist each piece. When the four toes are thus made for each foot, fasten them to the leg with wire and wind claws and legs with dark wool.

The tail and wings are made of a looped fringe, which is buttonholed upon a ruler. When the fringe is long enough sew a wire to the buttonhole edge and slip the loops off (Fig. 396). The ends of the wire, A A, are pressed into the body and the whole kept well in between the strands at the side so that the fringe hangs out like wings. The end B is pressed together and bent up to form the tail. If the wool is fluffed with a large pin the bird has a much softer and more feathery appearance.

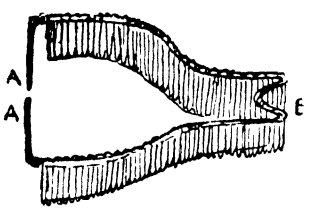


FIG. 396

A Parrot. The rings for the body should be 6 inches in diameter, the opening in the centre 2 inches in diameter.

For the head the rings should be 3 inches and the opening 1 inch. If the parrot is to be green with the breast and lower part of the head and neck red, then one-third of each ring must be wound in red wool and two-thirds in green. Two black boot buttons sewn securely through from side to side form the eyes. For the beak cut two small pieces of grey lining the right shape, and sew them together. Insert the wire that joins the head and body together into the

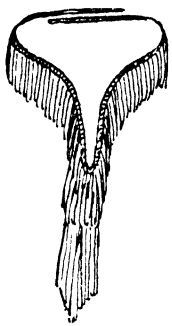


FIG. 397

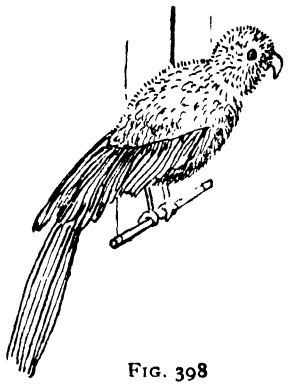


FIG. 398

point of the beak and secure it with a few stitches. Stuff the beak with wool and bend the wire to the correct shape. Pass the other end of the wire through the head and body to keep both together, and double the end back into the wool of the body. Slip stitch the grey beak into the wool and fluff out to hide the stitches. The tail is made from a piece of wire 8 inches long and many lengths of green wool 3 inches long. Double the wool in half, pass the ends over the wire and pull them through the loop. When 6 inches of the wire have been covered bend it in half and leave a part at each end uncovered. Bend the wire into shape as shown in Fig. 397, and push the uncovered ends through the body on each side. The long feathers are made of loops of green and red wool 6 or 8 inches long sewn underneath to the double wires which form the tail (Fig. 398).

The legs are short and have four claws. Take two pieces of wire, 6 inches long, and pass them up through the under

portion of the body, through the back and down again so that they come out about 1 inch from the first ends. Wind these double wires with grey wool for about 1½ inches, and then separate the wires. Twist one wire twice round a stick, Fig. 399, and the other twice round in the opposite direction, to represent the four claws.

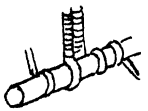


FIG. 399

A piece of wool or elastic, by which the bird can be hung, can be fastened to the middle of the back.

Almost any bird can be represented in this way. Perhaps the easiest of all are baby chickens. The balls for these can be the same size as those for the robin. They require hardly any shaping.

Another method of fastening the two balls together is by sewing them with strong threads and a long needle.

Contrivances for Knitting. (1) Most children know how to make a round cord with the help of a cotton-reel and pins. Fix four pins or short headless nails into the reel. Fasten the thread loosely to one pin and twist it round each pin, as in Fig. 400. Hold the thread above each loop, and with a large pin lift up the lower loop over the thread, which now

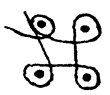


FIG. 400

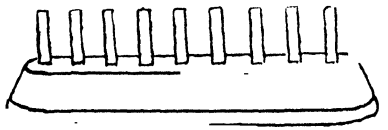


FIG. 401

forms a new loop. Each loop is worked in turn and the cord increases and passes down through the hole in the reel.

(2) *The Frame Method of Knitting.* This is easy and suitable for raffia. It has the appearance of ordinary stocking knitting, and is worked on a pegged wooden frame (Fig. 401) with the fingers only, and thus the sense of touch is developed. It is a suitable occupation for those whose sight is defective. There are two kinds of pegged frames, circular and straight. Upon the former round pieces of work such as bags can be made, while on the latter strips of various widths can be produced. The work on these pegged

frames is done as described above for the reel work, only fingers are used for lifting the loops, not pins.

Simple frames like that shown in Fig. 401 can be made by hammering nails into a long thin piece of wood.

Hairpin crochet-work is done with a bent wire or hairpin and a crochet-hook (Fig. 402). Make an ordinary loop with the crochet-hook on the end of the string and put it on the left prong of the hairpin. Hold the hairpin with the bend at the top and the thread in front. Put the thread round the right prong and across the fingers of the left hand as in ordinary crochet. Put the hook through the first loop (on the left prong) and pull the thread across the fingers through it. Then through this loop pull the thread again. Take the hook out of the loop, turn the hairpin gently over to the left, put the hook into the loop and pull the thread through to make the new stitch on the right prong. Now put the hook (with the loop on it) into the stitch on the left prong and pull the thread through. There are now two loops on the crochet-hook; draw the thread through both loops at once. Turn the hairpin and repeat for every new stitch. As the work increases in length it will slide off at the bottom.

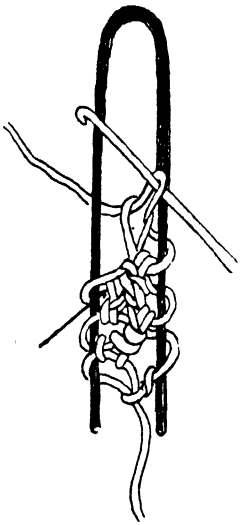


FIG. 402

In the diagram the stitch has been made on the right prong. The hook now goes through loop *a*, and draws up the thread, making two loops on the hook as described. Long strips made in this way can be joined together with the fingers or with a crochet-hook by pulling the first loop of one strip through the first loop of the second strip, and then the second loop of first strip through that one, and so on. The last loop must be tied to keep it from coming undone.

Double Loop Knotting. Double loop knotting has all the appearance of hairpin crochet and is worked upon a pegged frame (Fig. 403). The frame consists of a flat piece

of wood with four round removable pegs. The inside pair are about 2 inches apart and the outside pair 4 inches. The pegs used depend upon the width of the strips required. To begin take a strand of red raffia, tie one end round the two centre pegs, and bring the knot and long end to the front, midway between the pegs. Then take a strand of natural

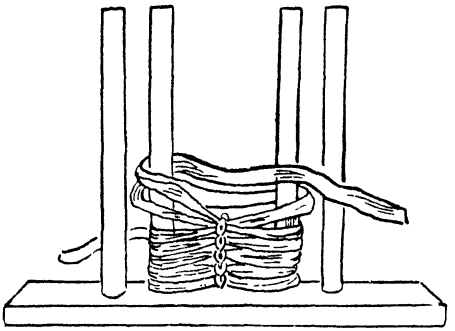


FIG. 403

coloured raffia, damp it, to tie more easily, and tie the end across the middle of the loop now on the pegs. The long end of this strand must fall away at the back of the frame, as it will be the working thread for the crochet chain or knots which will hold the loops together. Now with the red raffia wind round the pegs to make the form of a figure eight lying down. Each wind is kept in place by a chain stitch or a knot. A bone crochet-hook or the fingers may be used to pick up the loops for the chain, which should be tightened each time by pulling the front part of the loop. The work can be made any length by removing the loops when the pegs are full and continuing the strip by replacing the last two loops upon the pegs. As the work is removed from the pegs it should be rolled up and kept at the back till the length required is finished. The strips can be joined like ordinary hairpin work, either by being interlaced, or crocheted up in groups. Bags can easily be made by joining strips.

Excellent wool *boas* can be made for children. For these the wool should be wound six or eight times round the pegs, and the loops kept in place by tying across with silk twist or

narrow silk ribbon. A long lady's boa, shaped wide at the neck, and narrow at the ends, can also be made in this way.

A Fan (Fig. 404). Make a strip of about forty loops. Slip off the pegs. Thread a strand of raffia through all the loops on one side of the strip. Gather up these loops together and tie the thread tightly. Arrange the loops evenly

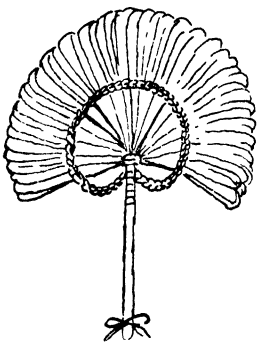


FIG. 404

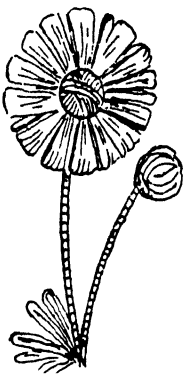


FIG. 405

on the side to form a half circle. Take a piece of thick cane or a fine wood knitting-needle and thrust the end up through the tie and as far as the chain knotting. Next continue this centre chain to reach the cane handle or needle, and wind the raffia down the handle to the knob and finish with a bow (Fig. 404). Small brooms and brushes can be made upon a similar principle, round mats for plants, etc.

Raffia Flowers (Fig. 405). These are easy to make. The centre can be a wooden button wound round with raffia, or better still a ball of cloth covered with raffia. The petals are loops of raffia sewn round as in Fig. 405. With a little ingenuity really beautiful flowers can be made, suitable for trimming hats.

CHAPTER XX

TABLET WEAVING

Down ancient trails of traffic
The shaggy camels swing,
As in the days of Tamerlane,
Their wandering bell-songs ring.

MAY F. LABAREE

TABLET weaving is not only one of the oldest methods of weaving, but is considered by some to be the origin of all weaving. It is still practised in many remote districts in Northern and Eastern Europe. The tablets used in early times were made of different materials, such as thin polished wood or tortoiseshell.

They can be made quite easily by children from pieces of fairly stiff cardboard, about 2 inches square. Holes are bored or punched about ¼ inch diagonally from each corner. Their edges must be smoothed so that the threads passing through them do not fray. The corners of the tablets are slightly rounded and rubbed with sandpaper to make them turn more easily and to prevent the threads from becoming tangled.

Tablet weaving is only suitable for making braids and bands.

Threading the Tablets. Four threads are required for each tablet, one being passed through each hole as in Fig. 406. Notice the difference in the arrangement of the threads.

FIG. 406

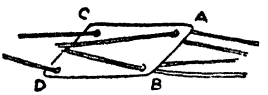


FIG. 407

Fig. 406 shows the tablet threaded left; here the warp is said to be drawn to the left. If the tablet is turned over so

that left side, A B, is on the right, then the threads are arranged as in Fig. 407, and the tablet is threaded right, and the warp is said to be drawn to the right. It is best for beginners to thread the tablets all one way and to weave a narrow braid requiring only six or eight tablets or even only four tablets.

The length of the thread depends upon the length of the object to be made. The threads are all tied together at one end.

Method of Turning the Tablets. Let the children experiment with one tablet first. They can tie the threads together at one end and pass the knot over the knob of a chair, and hold the other end in one hand. Now take hold of the tablet

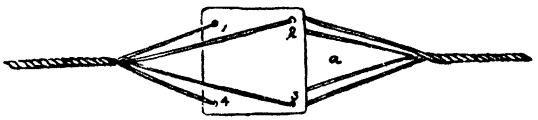


FIG. 408

(Fig. 408) and turn it so that hole No. 1 is in the position of hole No. 2, and hole No. 2 in the position of hole No. 3, and so on. Notice that the thread passing through hole No. 2 is lowered and that passing through No. 4 is raised. Turn the tablet continuously in this direction and it will be seen that a twist of four-ply is made at both ends. If four tablets are placed together and turned as described the four threads of each become four strong twists side by side. The weft which is passed through the sheds, *a* in Fig. 408, caused by turning the tablets, binds these twists together into a firm, ribbed band.

The weaving can be done without a loom or apparatus of any kind, and was so done in early times. One end of the warp is fastened over a hook, door-handle, or the end of a chair. The other end is looped round the waist (if a very long braid is required) or fastened to the belt by a pin. This method is used to-day in the northern parts of Europe. It is very simple and has this advantage, that by bending backward and forward the weaver can regulate the tension of the warp.

Fig. 409 shows a simple apparatus that can be made for weaving. A B is a piece of flat board. C and D are round

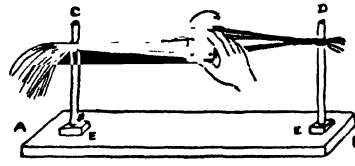


FIG. 409

rods which are inserted in holes in A B. To these rods the warp is tied. E E are blocks to strengthen rods C and D.

How the Weaving is Done. Thread six tablets all one way and place them on top of each other. Tie the threads all together at one end and slip them over rod D (Fig. 410). Knot the other long ends loosely so that they will slip over rod C. The weft is wound round a small stick about as long

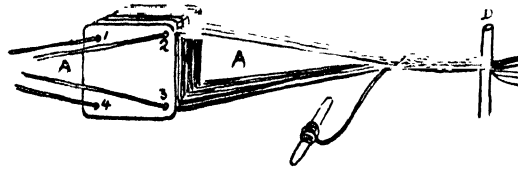


FIG. 410

as a pencil. This forms the shuttle. Fasten the end of the weft to the rod D and pass the shuttle through the shed and pull tight. Now turn the tablets to the right so that hole No. 1 is in position of hole No. 2 (this is called a quarter turn) and threads through 2 are lowered while threads through 4 are raised. Pass the shuttle through the new shed thus formed. Make another quarter turn with the tablets and pass the shuttle through again, pulling the weft tight. It is necessary to have a beater for beating up the threads. This consists of a thin, flat piece of wood like a paper-knife; indeed, a paper-knife would do very well. After each quarter-turn the shuttle is passed through the shed (Fig. 410), the weft is pulled tight, and the threads are beaten up. The weft is seen only as a tiny stitch at the end of the braid and has no effect on the pattern.

If the tablets are all threaded the same way the braid will have a twisted or spiral form with the twists all running the same way (Fig. 411); but if they are threaded in pairs, two left and two right, or one right, one left, etc., then the twists or spirals alternate with each other. Figs. 412 and 413 show the effect of such alternate threading.

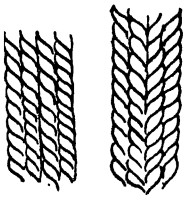


FIG. 411 FIG. 412 FIG. 413

By turning the tablets constantly in the same direction—*e.g.*, from left to right—the working space, A in Fig. 410, becomes so small that it is impossible to turn them any farther. In early times this difficulty was overcome by the weavers turning their tablets in the opposite direction from right to left; thus the threads that were tightened up on the left became untwisted. For beginners it is simpler to untie the threads at C, untwist them, and tie again.

Weaving Coloured Patterns. *A Braid White on One Side and Green on the Other.* To weave this braid thread the tablets as in Fig. 414 with two green and two white threads. Arrange the tablets used so that all the green threads are above and the white below. For the weaving turn the tablets round completely each time so that the green threads are always on top and the white below.

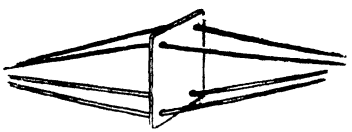


FIG. 414

A Striped Braid (Fig. 415). This is made with eight tablets. Nos. 1, 2, 7, and 8 are threaded with dark threads, Nos. 3, 4, 5, and 6 with light.

FIG. 415

The children will soon see that the patterns made depend (1) on the colours used in threading the tablets, (2) on how far we turn the tablets when there are different colours on each tablet. A quarter-turn, a half-turn, or a whole turn will make a new shed and bring a different colour to the top.

A Striped and Chequered Braid with Twenty Tablets. (Fig. 416). Tablets 1, 2, 19, and 20 have four white threads each, Nos. 3, 4, 10, 11, 17, and 18 have four red threads, Nos. 5, 6, 7, 8, 9, 12, 13, 14, 15, and 16 have two white and two red threads.

Tablets 5, 6, 7, 8, 9, 12, 13, 14, 15, and 16 give the white and red oblongs. These are obtained by seeing that the red threads are up for two weaves, then the white for two weaves. For such a wide braid as this it is best to knot each pair of warp-threads round a rod for the beginning and fasten the rod to the back of a chair, etc. The tablets need not be turned all together; so many tablets may have a quarter-turn and so many a half-turn, according to the colour needed for the pattern.

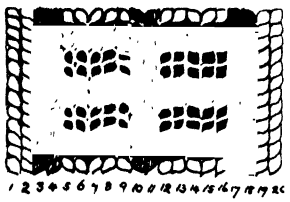


FIG. 416

For beginners it is best to get some one to hold one end. Better still if both ends can be held for the little worker, and she can concentrate her mind on turning the tablets.

Camel harness in the olden days (and even to-day) was woven in this way, and bridles for Eastern animals generally. That is why the chapter begins with a quotation about camels.

CHAPTER XXI

SIMPLE BEAD-WORK

And with the ruby's vivid blaze,
Mingled the emerald's lucid rays
With halcyon blue.

A. SMITH

ALL little children love beads; their varied colours satisfy the child's craving for brightness. Here we will describe some of the pleasant things that can be done with beads, leaving out all that is tedious, trying to the eyes, and ugly, for a great deal of beadwork is ugly.

First of all large-sized beads must be used and, if possible, fine macramé twine. Curtain-chains can be made very simply with this material, in two contrasting colours. For smaller beads linen thread or silk should be used. The threading should be done with a fine straw needle.

A Curtain-chain. Fig. 417 shows how the beads are threaded on fine macramé twine to make this chain.

A Daisy Necklace. A pretty necklace can be made to imitate daisies, white with yellow centres, to which may be added some green beads to represent grass. Fig. 418 shows how it is made, the beads being separated to

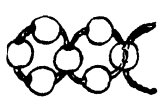


FIG. 417

FIG. 418

FIG 419

show the mode of threading. Three threads (fine linen thread or silk must be used to admit of the threaded needle passing through a bead that has already two or three threads running through it) knotted together are required for this design. If green leaves are introduced four threads knotted together must be used, as in Fig. 419. Children will readily

think of other patterns and other flowers that can be made in this way.

A Serviette-ring. Fig. 420 shows a design that can be used for a napkin-ring. Fine wire may be substituted for thread if greater firmness is required.

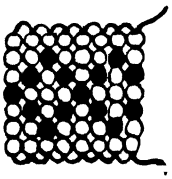


FIG. 420

Many patterns can be worked in this easy way with coloured beads. Some of the patterns in Chapter II may be copied.

A Simple Bead Bag. First decide on the length of the bag. The threads used must be about three times as long. Cut seven pieces of thread the desired length. Tie a bead in the middle of each piece of thread. Take one of the threads and thread five beads on either side of the centre one as in Fig. 421. Do the same with the other six threads.

FIG. 421

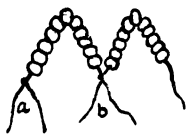


FIG. 422

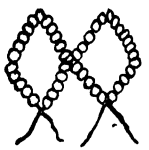


FIG. 423

FIG. 424

Now take two threads and tie them together as in Fig. 422; do the same with the other five, making them into a circle. Now take two of the threads left hanging, *a* and *b* Fig. 422, thread each with five beads and tie. Then you have a diamond shape as in Fig. 423. Do this all the way round and continue to make rows of diamonds until the bag is large enough. Then tie all the threads together. Thread five beads on each of the five ends to form a tassel (Fig. 424) securely fastening the bottom one. Line the bag and make a suitable handle.

A Pendant Necklace (Fig. 425). Thread on about twenty blue beads, then one green, four blue, one large bead (to form the bob), and then one green. This last green bead has to be fixed by passing the thread through again and drawing it tightly. When this bead is fixed return the needle through the big bead and also through the four blue

ones; then thread on one more green bead and ten more blue beads. We have now made a piece of the chain with one little pendant hanging from it. After the ten blue beads we must add one more green and make another pendant in the same way, then ten more blue, and so on to the end of the necklace. It makes the necklace look better if we add one more blue bead to the pendant each time until we get to the middle; then we must have one less each time to make the other side match.

FIG. 425

A Bead Loom (Fig. 426). Bead looms are very useful for making many bead patterns. They can be bought at most fancy needlework shops or made from a suitable box. Fig. 426 shows one made from an oblong wooden cigar-box. The two long sides are cut down to about 1 inch from the bottom. Along the tops of the end pieces little notches are cut to hold the warp-threads. If large beads are used the notches should be $\frac{1}{4}$ inch or $\frac{1}{5}$ inch apart; if small beads $\frac{1}{8}$ or $\frac{1}{16}$ inch. The warp-threads are stretched across the open box and are fastened round five or six small screw-eyes placed in the end pieces of the box (Fig. 426). There is always one more warp-thread than the number of beads. The needle is threaded and the end of the thread is tied on to the outside warp on the left hand. Beads are strung in order to form the first line of the pattern. Now carry the needle with the string of beads *under* the warp-threads, where they must be held in place, one bead being pressed up between each space between the threads. The needle is passed back through the whole line of beads from right to left *over* the warp-threads this time. Thus the row of beads is quite secure. The other rows are formed in a similar manner. The woof-thread is fastened off by passing it through two or three rows of beads. When the article is finished gather the warp-threads into bundles of three and four according to the number used,

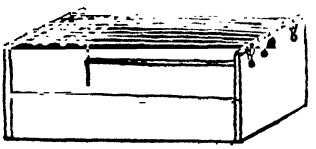


FIG. 426

and tie these up close to the beads. Belts or napkin-rings can be made on this loom. Children will readily think of other ways of making a loom.

Paper Beads. Pretty beads of different shapes can be made out of wall-paper. Cut the paper into narrow strips and roll each strip over a knitting needle, securing the end with a little seccotine to prevent the bead unrolling. The size of the bead will depend upon the width of the strip. Pointed beads are more effective and are made in the following way. Divide the paper into long narrow triangles and cut them out. Begin rolling from the base. The ends of the beads are sharp or blunt according to the width of the base.

As substitutes for beads children can thread seeds, such as those of the melon, sycamore, ash, marrow, or non-poisonous berries. They should be allowed to thread them as they choose, as this exercise forms a good introduction to design.

CHAPTER XXII

RAFFIA AND CANVAS-WORK—VARIOUS STITCHES—SEWING WITH RAFFIA

Flowers, Plants and Fishes, Beasts, Birds, Flyes and Bees,
Hils, Dales, Plaines, Pastures, Skies, Seas, Rivers, Trees,
There's nothing neere at hand, or farthest sought,
But with the Needle may be shap'd or wrought.

JOHN TAYLOR

RAFFIA AND CANVAS-WORK

THIS work is very suitable for little children, and can be begun with children as young as four or five. The canvas used should have fairly wide meshes, about ¼ inch, and be

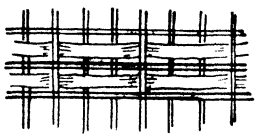


FIG. 427

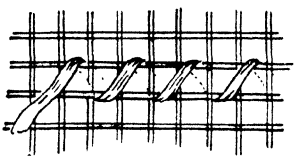


FIG. 428

strong and stiff, as if it is very pliable it is apt to get distorted. The needles should be blunt pointed with large eyes. Almost all the ordinary needlework stitches can be

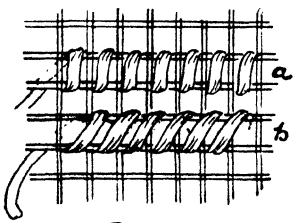


FIG. 429

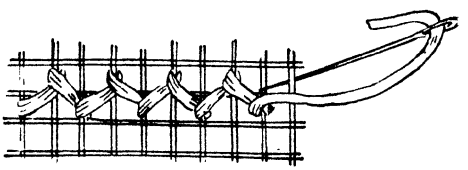


FIG. 430

worked on the canvas, hence this occupation is a very good introduction to needlework. The bright coloured strands of

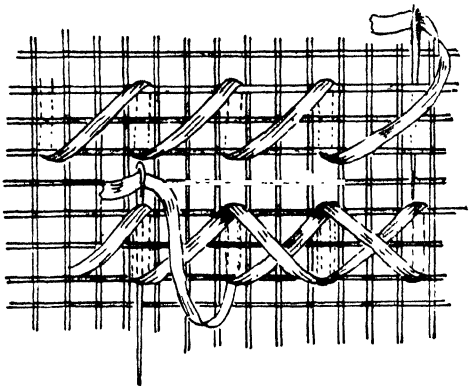


FIG. 431

raffia and the open mesh of the canvas enable children to learn the stitches very easily. They can also learn to mount

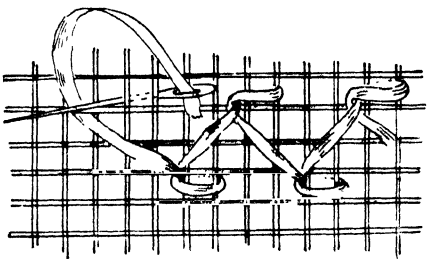


FIG. 432

and finish the articles which they make. The following diagrams show the stitches used in needlework: Running (Fig.

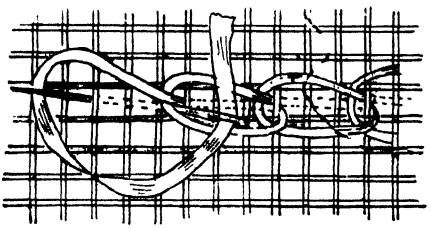


FIG. 433

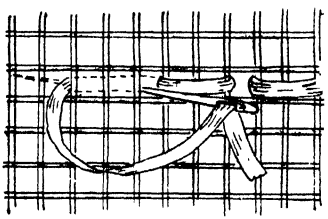


FIG. 434

427); hemming (Fig. 428); oversewing (Fig. 429, *a*); slanting stitch (Fig. 429, *b*); herringbone stitch (Fig. 430); cross

stitch (Fig. 481); feather stitch (Fig. 482); chain stitch (Fig. 483); back stitch (Fig. 484). For the buttonhole stitch see Chapter XVIII. When starting or finishing off

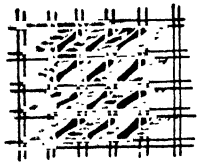


FIG. 435

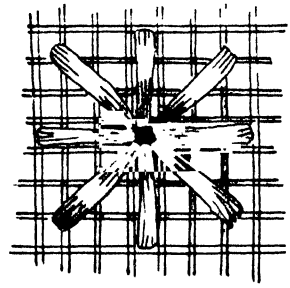


FIG. 436

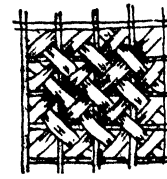


FIG. 437

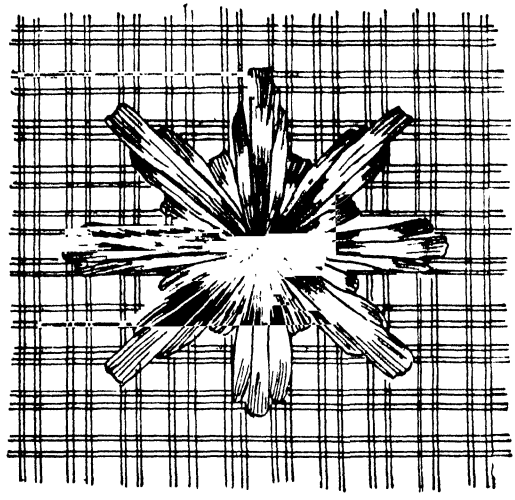


FIG. 438

the stitching tie a neat knot or stitch the loose ends into the canvas. The same methods can be used for joining a new strand.

Figs. 435, 436, 437, 438 show some easy stitches.

A great variety of objects can be made with this canvas-work, such as needlebooks, mats, pincushions, handkerchief satchets, blotters, bags, etc.

A Mat. The size and shape will depend upon the purpose for which it is used. The edges must be turned down and tacked all round to prevent the material from fraying, as it is apt to do when the raffia is being pulled through. It also makes a much stronger edge. Any of the patterns given can be used for ornamenting the mat.

Handkerchief Satchet. Cut a square of canvas, sides 15 or 16 inches. Turn in the edges as directed for the mat. Buttonhole the edges with a deep stitch. Line it with some thin material of the same shade as the raffia. Fold the four corners to the centre, and tie with a bow of ribbon.

A Fancy Bag. Cut a piece of canvas about 18 by 12 inches. Prepare the edges as already described. Work a pattern on the canvas. Fold it in half. The edges may be joined by sewing them closely together with raffia. Another method of joining the edges is as follows. Sew loosely through the same holes, *a* and *b* Fig. 439, two or three times, keeping the edges about ½ inch apart. Bind the raffia lightly round the middle. Then take the thread under the buttonholing for about ¾ inch and do the same again, and so on until the edges are caught together. Make handles of plaited raffia.

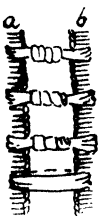


FIG. 439

More Tapestry Stitches. *Plain Cross Stitch* (Fig. 440). This stitch is very useful and is the foundation of all tapestry stitches. It is worked in two lines, one going and one returning. In the first line the thread is carried diagonally left to right across the meeting-place of two single threads, as in Fig. 440. When returning the stitches are carried diagonally across in the other direction. A similar stitch to this is the *oblong cross stitch* taken diagonally over two double threads.

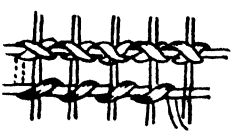


FIG. 440

Half-cross Stitch (Fig. 441). In this stitch the thread is taken from right to left along the whole line and the half stitches across it from left to right. This stitch is used when the cotton is very coarse in comparison with the canvas.

Parisian Stitch (Fig. 442). Here the stitches are made over two single threads, then over six alternately—that is, a short stitch and then a long one.

Star Stitch (Fig. 443). Each little star consists of eight stitches which meet in one centre. Begin by a slanting

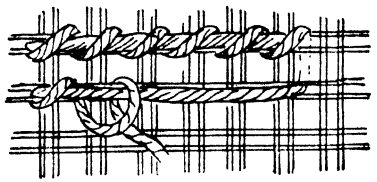


FIG. 441

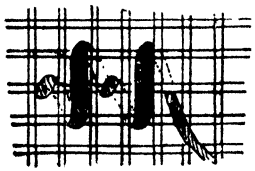


FIG. 442

stitch from *a* to *b*, carry thread behind to *c*, over threads to *d*, and so on until the star is complete. To keep the stars regular work them in horizontal rows and begin each in the same direction.

Stem Stitch (Fig. 444). Make a row of slanting stitches as in diagram, then a second row slanting in an opposite

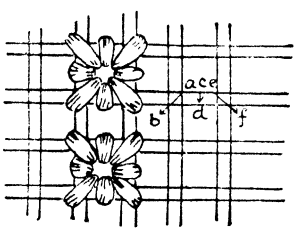


FIG. 443

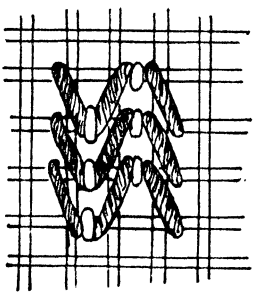


FIG. 444

direction. When all the rows are finished back stitch down the middle of each with a different colour.

Fish-bone Stitch (Fig. 445). Take a slanting stitch from *a* to *b*, carry thread behind to *c* and over to *d*, thus securing the long stitch, then behind to *e*, and so on. These stitches are worked according to the direction of the long stitch, now from left to right, now from right to left.

Fern Stitch (Fig. 446). This stitch is worked in two rows beginning at *a* and passing diagonally over two double

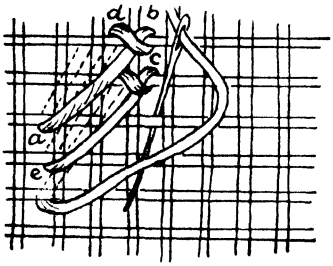


FIG. 445

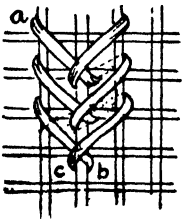


FIG. 446

threads. At the end, *b*, it passes behind the threads from *b* to *c* and then upward, slanting over two double threads.

Byzantine Stitch (Fig. 447). Work six slanting stitches

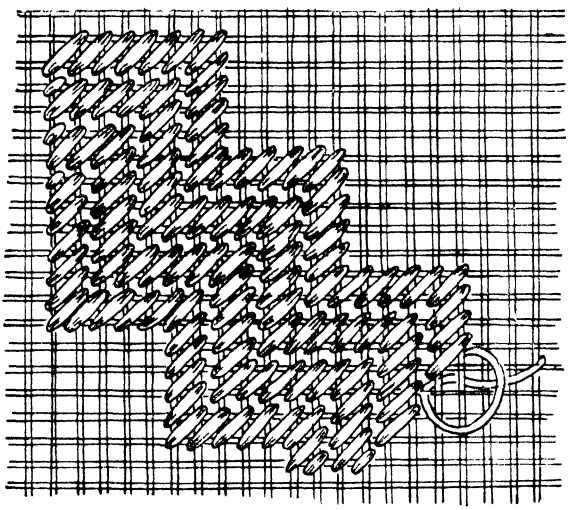


FIG. 447

underneath one another over two double threads, and six beside one another from left to right. Work the other rows in a similar manner with the same number of stitches.

Rice Stitch (Fig. 448). Begin by filling in the whole ground with big square cross stitches, over four threads each

way, then over these the so-called 'rice' stitches. These cross the four points of the big cross stitches and meet in

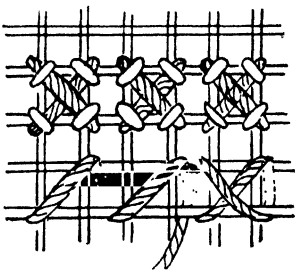


FIG 448

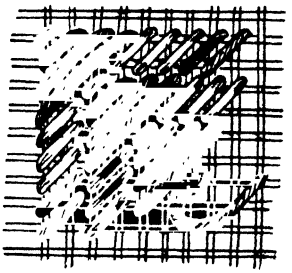


FIG. 449

the spaces between, where they form another cross. This stitch looks very effective if the big crosses are worked in coarse cotton and the 'rice' in finer cotton of a different colour.

Oriental Stitch (Fig. 449). Begin with four diagonal stitches, over one, two, three, and four crossings of the canvas. These stitches form triangles one above the other. The empty spaces between the rows are filled with slanting stitches covering two threads. This is a very useful stitch for covering surfaces of bags, blotters, etc.

Velvet Stitch (Fig. 450). This is also called Astrakhan stitch, and consists of loops, each secured by a cross stitch.

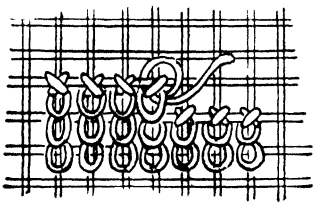


FIG. 450

To keep the loops even and regular the children can make them over a penholder or wooden knitting-needle. The diagram shows how this stitch is made. The loops can be cut or left as they are. This stitch produces a very good imitation of the Oriental carpets.

Double Stitch Set Two Ways (Fig. 451). This consists of diagonal and upright cross stitches alternately. Begin by working from left to right as diagram shows. Use a different coloured thread for the second stitch and take them the opposite direction to the first.

Scotch Stitch (Fig. 452). This consists of squares made of slanting stitches over one, two, three, two, one double

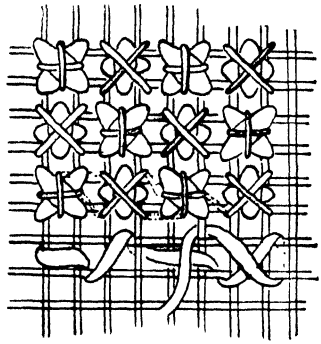


FIG. 451

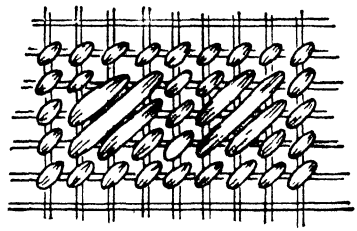


FIG. 452

threads. Each square is separated by a row of slanting stitches over one double thread. These stitches are called gobelin.

Sewing with Raffia. For this any strong material, such as linen, cloth, or serge, is suitable. The work is very effective and is not difficult. A round frame is used over which

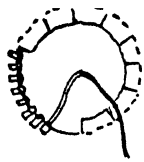


FIG. 453

to stretch the material. Draw a circle on the linen, stretch it over the frame, cut out the circle about ½ inch inside the drawn line, and cut round the edge to the line so that the

edge can be turned under (Fig. 453). Buttonhole the edge all round and then continue this stitch loosely for two or three rounds. Now carry the raffia strands across the centre like the spokes of a wheel. Fasten the strands together in the centre and weave under and over the spokes or round each until a disk is formed.

Other simple shapes, such as squares, triangles, trefoils, etc., can be cut and filled in in many different ways. The edge must always be worked round first in buttonhole stitch. Many of the patterns used in drawn-thread work are suitable for the filling in. In this way bags, cushion-covers, table-centres, etc., may be ornamented.

CHAPTER XXIII

POTTERY—CLAY-MODELLING

This clay, well mixed with marl and sand,
Follows the motion of my hand;
For some must follow, and some command,
Though all are made of clay!

LONGFELLOW

THE acquisition of any new art means acquiring a new way of seeing; it also means increasing one's vocabulary. This is one reason why children should know a little of every art —to widen their outlook on life.

There are various forms of clay-modelling, which we will consider in turn.

(1) *Pottery.* Pottery demands accuracy and care in the manipulation of material not to be looked for in very young children. But in those somewhat older it arouses a real interest in the history of civilization. It can be correlated closely with the work in history, nature study, commercial geography, and chemistry.

(2) *Modelling in the Round.* Suitable for very little children. They can make groups of farm animals, villages, the things they see around them, figures, etc., all very crudely but meaning something to them and teaching them to see.

(3) *Modelling in Relief.* Relief modelling affords opportunity to represent subjects which are difficult to execute in the round—flying birds, trees, flowers, ships, etc. It affords an opportunity for the study of decorative design—designs for panels and walls. Some of the patterns in Chapter II might be attempted in clay.

We shall say more about these various kinds of modelling, beginning with pottery.

POTTERY

The history of pottery gives children many ideas about things they can make. This industry may still be seen in

America in its primitive simplicity, in two widely separated areas and for two very different purposes, viz., in the extreme north among the Eskimos, and in the south-west among the Pueblo Indians.

Pottery among the Eskimos. The Eskimos use pottery not only for the cooking-vessel to set on the fire, but for the stove or fireplace.

As they have neither coal nor wood to burn they fashion their combination *stove-lamps* of soapstone. Soapstone is a white, reddish white, or yellow stone, soft and greasy to the touch. It is easily cut, and hardened by fire. The Eskimo hollows out a block of soapstone, about 2 inches thick, to receive the oil of the seal, walrus, or narwhal. The hollow is cut with one straight and one curved side, and in outline the shallow dish is like a 'turnover pie' (Fig. 454).

FIG. 454

Moss or other available material answers for the wick, which is distributed along the straight side. The lamps vary in size from the small lamps with the straight side 10 inches in length to larger ones where it may be 15 inches long. If well cared for the light from the lamp is fair and gives out considerable heat with little smoke, but if not carefully watched it smokes badly and becomes very offensive.

In Greenland, Labrador, all about Hudson Bay, and along the Arctic and Alaskan coast, wherever soapstone can be found, these lamps are hung up or set up in the snow-covered home. A small cooking-pot of the same material is often suspended over the lamp.

At Bristol Bay, Alaska, no soapstone is to be found, and vessels of clay are used instead. The clay is said to be mixed with dogs' hair and blood. The soapstone lamp is copied in the softer clay but the form is changed. The Bristol Bay woman's lamps are made in the form of bowls or saucers, though she never saw one. In all essentials this Eskimo woman's lamp is similar to those tended long ago in the temples in Greece, and in the temple of Vesta at Rome.

Among the Indians of New Mexico and Arizona or the Indians of the South-west. Throughout this book, in the

chapters on basket-making, clay-modelling, etc., we are dealing mainly with the Indians of the south-west of North America, not the Indians of the Plains—the buffalo-hunting tribes; these and their occupations have been described in *The World Outside*. The Indians of the south-west can be divided into two classes:

(1) The sedentary Indians who occupy *pueblos* (*pueblo*, Spanish for village) on the banks of the Rio Grande, and

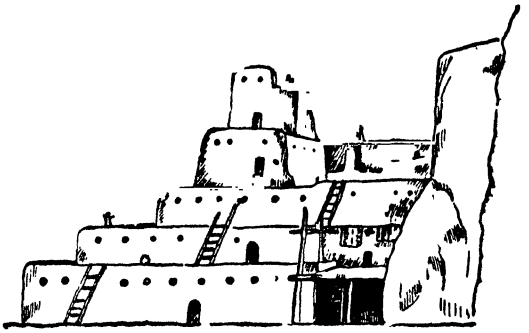


FIG. 455

on river-banks and plains in New Mexico, Arizona, and California. These sedentary Indians live in large community-houses, often with several receding stories built of

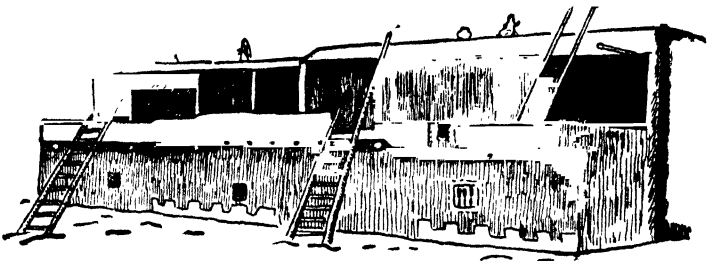


FIG. 456

stone or adobe (sun-dried bricks). The houses have flat-topped roofs, and the clay they are built of is brown or red brown in colour. Ladders lead to the flat roof and the different stories. Children like to model these pueblos in clay, and

the pictures shown in Figs. 455 and 456 will help them. Fig. 457 shows a clay oven used by the Pueblo Indians, who often cook out of doors. The children can make one to go in their village.

FIG. 457

The houses are set in an irregular row, bordering a crooked street of sun-baked, red, sandy earth. To the south-east flows the Rio Grande through orchards and fields. Across the river lies a desert plain and the grey-green *mesa* (*i.e.*, tableland), and beyond, far away, the lofty, snow-capped mountains. The children should paint this latter scene as a background to their clay-modelling.

(2) The nomadic Indians—the Eastern and Western Apache, the Navaho, the Pima, and Papajo. These live in *tipis* (tents), or small brush and thatched houses, which are moved or deserted when they go to seek fresh game. They make baskets for household purposes, which are more easily transported than vessels of clay, so they do not belong rightly to this chapter.

The Pottery of the Pueblo Indians. We will now consider the primitive way the Indians make their pots—a way that we can imitate. We will imagine we are among the Hopi Indians who live in the tablelands of Arizona and New Mexico. Their houses, like the houses we have already described, are built like steps, and each step is called a terrace; ladders reach from the ground to the first terrace, and so on. Each house is practically a village, for all the people live together in the one house. Sometimes each family has a room, and sometimes, if they are well-to-do, several rooms (Fig. 456).

Their farms are down by the rivers, and some build houses down there to save the long walk up to the *mesa* or tableland. The reason why they live on the *mesa* is because it is high and steep, and in early days there were savage

Indians around them. Another curious thing about the Hopi Indians is that the men go out and gather the stones to build the house, but the women do the building. The women too are the potters. They go forth to the *mesa*, where the proper layers of clay are exposed, and quarry out the raw material. They also gather from the sediment of the streams most "excellent clay for their paste." In a certain sense "the fine pottery of the Pueblos may be said to have been created by the floods in the cañons." If they are not fortunate enough to find "excellent clay for their paste," they take the clay quarried from the *mesa*, wash it, let the gravel and worthless material sink or float, pour off the liquid, and allow the fine earth to settle. Now this fine paste will not make pottery, as it will crack badly in drying and firing. But these potters of long ago had discovered, what every archæologist knows, that sand or some other tempering material must be added. The oldest fragments of pottery yet discovered reveal in their texture grains of sand, put there by Nature or the potter. The exact way in which these little foreign bodies prevent cracking in the clay is not known. Now the children will understand why the Israelites could not make bricks from the Nile mud without straw, and what takes the place of straw in our bricks.

Having prepared the clay as described above, and kneaded it with fine sand, the Indian women have to mould it into shape. Abundant evidence proves that the primitive potter shaped masses of prepared clay on the outside and on the inside of gourds, baskets, nets, and other shapely objects. The ancient potter also imitated the maker of coiled baskets by rolling out a fillet or slender cylinder of prepared paste, and then coiling it round and round in an orderly manner, as in Fig. 458, pinching as she went. Sometimes this work was done on the outside of a basket or another bowl, but more frequently it was built up by the hands, guided by the eye. Children will delight in trying this kind of pottery. The ancient potter often stood while working and leaned over

FIG. 458

her work. She centred it under her eye, and in turning it round in the base upon which she built it she was forestalling, as it were, the potter's wheel. When the bowl was finished and dry, before firing it was scraped with a piece of gourd to smooth it, and polished with very smooth stones.

Decoration of the Pottery. Variety of colour in Pueblo earthenware is produced by the ingredients of the native clay. From the "painted desert" of Arizona and New Mexico the Hopi women get to-day, as they got in the past, red and yellow clay, for a good deal of the earth there is so coloured with iron. In addition to these body colours, they use coloured clays and mineral and vegetable paints, which they put on with brushes made from the shredded fibre of tough plants. These colours would be oxidized or carbonized in the burning.

Further decorations were obtained by the indentations and reliefs produced by the fingers when the clay was soft

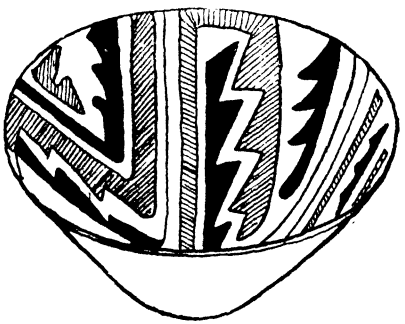


FIG. 459

by tools, by cord, etc. Potters' stamps of cardboard and string can be made by the children for stamping designs on their models.

All the first forms of expression in plastic art are mainly geometric. The elements are checkers, zigzags, chevrons, meanders, fretted figures, and scrolls, etc. (see Chapter II). At a later stage we get the introduction of pictures, mythic symbols, etc. Figs. 459, 460, 461 are examples of the first forms of expression.

When the Hopi women have a number of pots all finished and waiting, they pile the pieces together and put the fuel over them. They used to use lignite (which is coal in the process of making) for fuel, but now they cannot get it, so they go to the sheep enclosures, where the earth is packed

FIG. 460

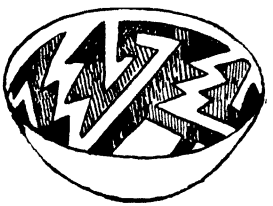


FIG. 461

down hard, and dig up pieces of the down-trodden dung to burn. They do not use wood for firing pottery because it does not last long enough. The fire has to smoulder for thirty-six hours. No doubt the strength of the pottery depends upon the careful mixture of the clay and the sand or powdered shell, etc., as well as upon the firing.

Other parts of the world, besides the land of the Eskimos and south-western Indians, where pottery is still carried on in its primitive simplicity are South America, Africa, and New Guinea.

Africa. *The Bantu tribes of the Congo* are clever potters. Some of their pots are plain and some partly decorated. Cooking-pots and porridge-pots are straight-sided. Beer-pots are shaped like an egg with a hole in the top. Water-jars are made oval with a spreading top, and there are round pots of different sizes to hold the fat, salt, and spices, etc., used in cooking. All these pots are made by hand without any potter's wheel, dried in the sun, and burned in a wood fire. Some of their pots are coloured red with oxide of iron and some are covered with a black glaze. Children will like

to make some of these pots when setting up an African village (Fig. 462).

Having considered some of the primitive pottery being made to-day, we will turn to the past and examine some of the work of the clever potters of olden days.

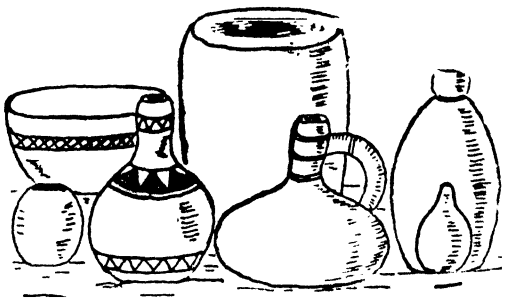


FIG. 462

Egyptian Pottery. The Indians in America and the Africans, etc., are still making pots as we have described above, but the Egyptians about three thousand years before the birth of Christ had learned to use the potter's wheel. The Egyptian potter's wheel consisted of a flat circular or hexagonal table fixed on a revolving pivot, and appears to have been turned with the left hand, while the vase was shaped with the right. The potter either sat on the ground or on a low stool to turn the spindle, which continued to revolve some time without a fresh impulse. Fig. 463, from a tomb-painting at Thebes, shows its simplest form. This form of wheel, used by the Egyptians about 3000 B.C., is still employed without any alteration by the potters of many parts of India. Fig. 464 shows a potter at work. This picture is from a painting on a tomb at Thebes, period about 1800 B.C. A later improvement, introduced in Egypt under the Ptolemies, was to have a larger circular table fixed

FIG. 463

FIG. 464

lower down on the same axis, which the potter set in movement with his feet, and thus was able to keep up a regular speed and leave his hands free for the manipulation of the clay (Fig. 465). Figs. 466 and 467 show Italian potters' wheels,

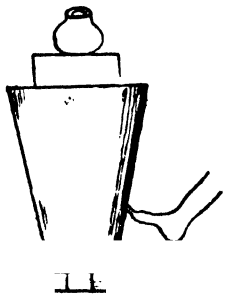


FIG. 465

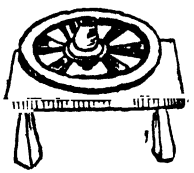


FIG. 466

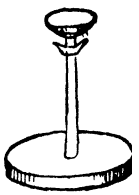


FIG. 467

period about 1540. The first wheel is worked by the hand, the second by the foot. The children might try to make a potter's wheel for themselves.

Kilns for Firing Pottery. The earliest form of kiln as represented in Egyptian wall-painting is a tall circular chamber of brick with a perforated floor near the bottom. The fuel was introduced from an opening on one side and raked in under the brick floor. Fig. 468 shows an early

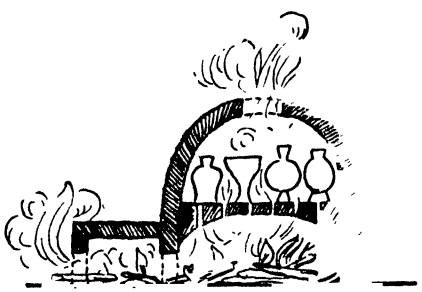


FIG. 468

Greek kiln (from a potter's votive tablet near Corinth). There was a door in the side of the upper chamber through which the pottery could be put in and drawn out. The Corinthian kiln differs from the Egyptian one in being

domed over, but it is the same in principle. Even at the present day kilns shaped almost exactly like this early Greek one are still largely used.

Egyptian pots were used for many purposes. Conical jars were employed to raise water out of wells. The water-carrier used wide-mouthed jars slung at each end of a pole by a palm-fibre cord. The poulterer deposited his plucked and salted geese in tall open-mouthed amphoræ, which were fixed upright by their pointed ends in the floor of his house or cellar. The butcher and cook used jars in the same way. The weaver used terracotta vessels to hold his flax and reeled it out of them. Figs were gathered into bottles. Wine was squeezed into a pan with low, square handles and poured into amphoræ. Various pots and pans of clay (the 'flesh pots' of Egypt) were used by cooks in the same manner as

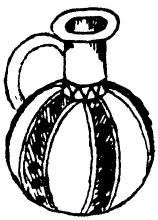


FIG. 469

FIG. 470

FIG. 471

we use iron pots. Cups of clay were used for drinking wine. Children will like to make some of these pots. Figs. 469, 470, and 471 show some. Fig. 470 shows the kind of amphora that can be stuck in the ground. Fig. 471 shows a blue glazed drinking-cup. (Notice the pattern of the lotus.)

A few hints about the colours used by the Egyptians will help the children if they want to paint their pots. The colours used were pale yellow and red (the natural colours of the clay). The simplest decorations were annular bands of a black or purple colour round the body or neck. In some cases a wreath was painted round the neck. Some jars and bottles have the representation of a collar pendant from the shoulder of the vase, painted in blue, black, and

red. Occasionally the annular bands are united by hatched lines. Some vases are coloured white and marbled with white and black lines, or else a warm red colour, marbled with crimson or brown lines.

Greek Pottery. For perfection of quality in crude pottery no ware has ever surpassed that of Greece. Greek pottery may be divided into two main groups. In the first the background of the decoration was supplied by the tint of the bare clay; in the second this tint served for the colour of the decoration itself, the background being covered with a black pigment. In a word the two groups are known as black on red and red on black respectively, or black-figured and red-figured wares.

The wheel was early adopted by the Grecian potters as a means of producing form, although moulds were sometimes used. Greek pottery is once fired. The black pigment forms a glaze when fired; the uncoloured part of the clay (the red or yellow) is not glazed, but polished with a hard tool. The range of the art was from about 850 to 200 B.C. The first patterns were geometric designs. These were succeeded by rhythmic friezes of beasts and birds done in black. When the human figure made its appearance the faces were all in profile. Details of drapery and feature were expressed with great care by the brush.

In those early days in Greece the great desire seemed for black ware. Homer wrote:

> Pay me my price, potters, and I will sing.
> Attend, O Pallas, and with lifted hands protect their ovens.
> Let all their cups and sacred vessels *blacken well*,
> And baked with fair success yield them
> Both fair re own and profit.

The Greeks accomplished this blackening by means of a pigment. The Romans secured a similar result by manipulation of the fire.

A second type of pottery is called Castor ware, and consists of a dark clay upon which the decoration is traced in clay of a lighter colour. One of the commonest scenes depicted on this class of ware is the hunting of hare or stag, the animals and trees being woven into an almost conventional

frieze. It would be interesting to pursue the history of pottery further, but it is hardly within the scope of this book. Fig. 473 shows the shape of the Bacchic amphora, the type of vase that has black figures on it. Fig. 474, a stamnos, or

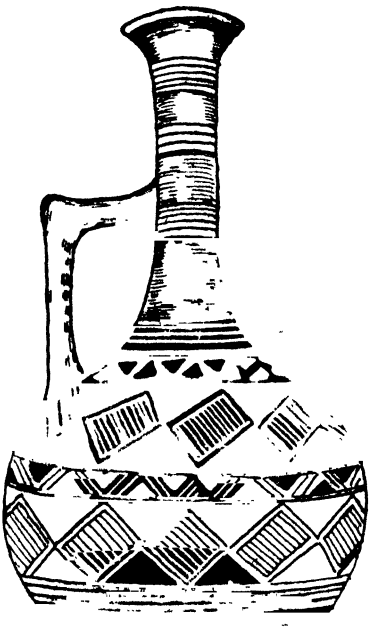


FIG. 472

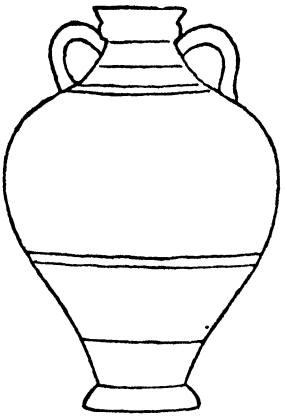


FIG. 473

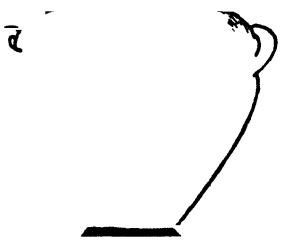


FIG. 474

vase to hold wine and oil, was decorated with red figures on a black background. Figs. 472 (geometric pattern) and 475 show other examples of Greek vases. Children will delight in trying to make some, even if they have no potter's wheel, though a revolving disk of some kind is not difficult to obtain. Greek jars should be made of red clay. Where good natural red clay is not available a substitute can be made as follows: 100 parts common grey clay, thoroughly dried, 10 parts burnt sienna (dry powder), 10 parts yellow

ochre (dry powder), 8 parts barium carbonate (powder). Grind up with water. The mixture must then be dried to a consistency fit for modelling. The designs on the jars should

FIG. 475

be painted with metallic black (copper and iron oxides), and the vessel fired once. If the children's skill is not equal to using this heavy pigment on fine details, the jar may be fired first and then painted with black waterproof ink.

Figs. 476 and 477 show Roman ware. Fig. 476 is a cup. Fig. 477 shows Roman black ware decorated with groups of

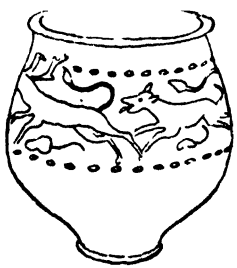


FIG. 476

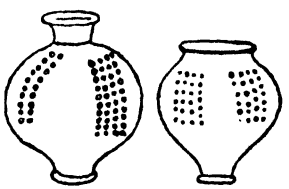


FIG. 477

dots in relief; the pattern is not beautiful, but the dots prevented the cup from slipping from the grasp.

Pottery in Ancient Britain. *The Stone Men.* The clay for making the pots was dug out of the river-bed, and worked

up with sand to a proper consistency, as we have described before. The smaller vessels were built up with the fingers; a smooth stone or piece of wood may have been used as a tool. All the larger jars were made of coiled pottery. The decorating of small pots was carried out by small pieces of bone; the larger pots were decorated with the imprints of the baskets they were made in. Some of the largest pots were simply made by smearing the inside of a rough reed basket thickly with a mixture of clay and sand, and then placing the whole in red-hot ashes. The rushes quickly burnt away and the pot was left.

The Early Iron Age of Britain. The making of the pots was chiefly carried out by women, but the potter's wheel was now occasionally used. The pots were decorated with numbers of lines and dots, often forming complicated geometrical patterns. Sometimes they were decorated by the finger-nails, and it is from the shape and size of these impressions of nails that we know the making of pots was the work of women.

Fig. 478 is a food vessel, Fig. 479 a drinking-cup. Fig. 480 shows an urn in which the ashes of the dead were put.

FIG. 478

FIG. 479

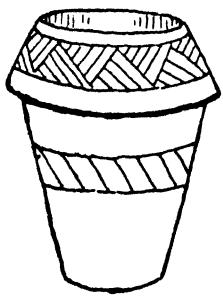


FIG. 480

Figs. 481, 482, 483 show other urns used to hold the ashes of the dead. They are made on the wheel, and are generally black and slightly burnished. The tallest vase is about 9 inches high. All these vases are in the British Museum. Fig. 484 shows a vase of brown ware, made on the wheel, with three cordons.

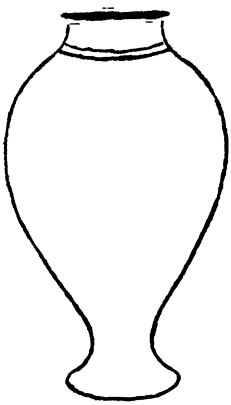


FIG. 481

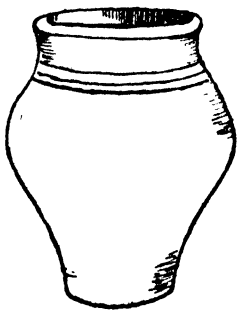


FIG. 482

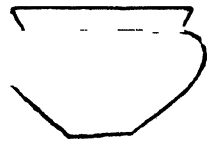


FIG. 483

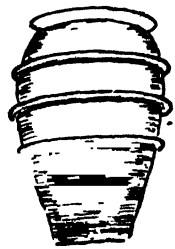


FIG. 484

China. For the simplest machinery for making pottery to-day (simpler even than the potter's wheel) one must go to China, where men can be seen kicking the spindle round with their naked feet, without the aid of wheels to increase the speed. They produce in this way cylinders of clay which they cut into two or three segments lengthways for making tiles for roofs of houses.

MODELLING IN THE ROUND

Care of the Clay. The best way to keep clay is in a zinc-lined box with a lid, or in an earthenware pan with a lid, or, failing these, it may be kept in a pail covered with wet woollen cloths with a piece of mackintosh over the top. It should be well kneaded or beaten with a pestle when put away, and sprinkled with water from time to time. The grey modelling clay generally supplied to schools is free from sand, and although it is a good medium for the expression of the child's ideas it cannot be fired. But if carefully treated the models last well when simply allowed to dry. They can, too, when thoroughly dry, be baked in an ordinary oven, which should be cool when the models are put in. If prepared pottery clay can be obtained, or, better still, if we can mix sand or grit with ordinary clay in the right proportion

our children will have the joy of taking home pottery that can really be used.

Suitable Work for Little Ones. For little ones of three, four, or five the clay-modelling should be free. They should be allowed to make more or less what they like. This free modelling might well be done side by side with their stories. As soon as seems advisable each child can be provided with a model to copy. A valuable course of fruit and vegetables may be modelled. A piece of clay about large enough for making the desired object should be given to each child, and a board to work on. The shape of each object should be discussed with the children before they begin to work. The suitable type form (ball, cylinder, cube, pyramid) is then made, and the object shaped from this form. This includes a great many exercises, such as pressing the clay with the tips of the fingers, rolling it into shape, hollowing it out, etc. All models (except those which might be actually used for the purpose for which they are intended, such as plant-pots, dishes, etc.) should be done on a slab of clay which the pupil must first make. The fewer the tools and the less they are used the better; indeed, in the beginning the children should have no tools but their fingers.

The modelling of acorns, sycamore-seeds, chestnut-burrs, and other seeds forms interesting work for children in connexion with their nature lessons. Leaves and flowers also may occasionally be modelled, such as ivy-leaves, the wild arum, oak-leaves, plane-tree leaf, etc. Many flowers, however, are obviously unsuitable for the clay-modelling lesson.

In the case of all the models referred to above, the fruits, seeds, leaves, etc., are usually first shaped by the children in their fingers and then arranged on their board or clay. This, however, is not true modelling, for it is against all the principles of the art for the student to hold the clay model in his hand while he is working on it. By doing so the work which has been done is constantly being spoilt; the model is pressed out of shape, the clay is dried by too much handling, and, moreover, the use of one hand is lost. True modelling is *modelling by building up*, and children should be gradually introduced to this. The work of the previous stage should

not be dropped entirely, however, but an effort made to evolve gradually and to combine the two stages.

For true modelling the clay, when the first rough shape has been obtained, is fixed on to an *armature* (an iron upright $1\frac{3}{4}$ inches high, or higher if need be, screwed on to the modelling-board). Where the object does not need support it is worked on the slab without the armature. In schools the armature may be dispensed with quite well. The method to follow in working all models is to get first the general shape or mass; then the details may be put in, the most prominent first, and lastly the minor ones. The mass should be built up of rather stiff clay, so that a *solid foundation* is made, especially where the object is tall; but the modelling of the form must be done by putting on pieces of softer clay. For this reason the model at first should be made somewhat smaller than the object, to allow for the increase of size caused by putting on more clay.

We now give directions for the modelling of a leaf which needs neither the support of the armature nor a stiff clay foundation. The leaf, say a laurel-leaf, must be copied in the position in which it lies on the table. First make a slab which will hold the leaf, allowing a margin of about half an inch all round. Sketch the outline of the leaf on the slab with the tool. Do not lay the leaf on the slab and draw round it. Build up the model inside the outline quite solid, beginning with the highest point, and make this stand up as high above the slab as the leaf does above the table. Now work from the highest to the lowest point, carefully noting irregularities of surface and edge. Smooth the surface with the wet thumb. The mid-rib looks lighter than the leaf itself. To produce this effect it must be raised, therefore depress the clay slightly along each side of the rib with a tool, thus leaving a narrow ridge down the middle. Veining on small leaves like the laurel-leaf means work with a tool, but the tool must not be used like a drawing instrument to scratch the lines on the surface of the modelled leaf. If the vein is raised, then raise it as described above, if it is the bottom of a groove with gently sloping sides, again draw and model each one truthfully by depressing the clay with

the modelling tool. This delicate work, of course, means care and patience.

To finish, slightly cut out the clay underneath the model, to give it the appearance of being thin at the edges, being careful not to spoil the shape. If now set aside to dry it will shrink a little and turn almost pure white.

In selecting leaves for modelling choose specimens which do not grow *too flat*, but twist a little. Also they should not be too cut up at the margin. Here are some more good leaves to copy: the lilac, plantain, coltsfoot, apple, dock, and the water-lily leaf if it can be obtained. With leaves flower-buds may be included, such as the tulip and rose.

The children must not be allowed to cut or carve their models out of a larger mass, as if they were working in wood or stone. In addition to the models mentioned above, other interesting models are: shells (cockle-shell, oyster, mussel, snail-shell, etc.), nuts (walnut, almond-nut, etc.), pine-cones, loaves of different shapes, bulbs, mushrooms, etc.

Colour should not be used in connexion with modelling, except when pottery is being taken, and we have dealt with this under pottery. The one exception to the above rule is when little children of four or so are allowed to make beads. They love to have the privilege of colouring them and arranging them according to the colours.

Modelling in Low Relief

Modelling in low relief is a method of work which lies between drawing on a flat surface and true modelling. This system of decoration is often applied to pottery, as well as to the numerous curved surfaces of architectural and other constructions. It is more difficult than work in the round, but not beyond the power of school children. It is easiest for the children to begin with flat things, such as a coin, a tile, a shield, or small panel. The forms are sunk into the clay surface or only slightly raised above it. Let the children draw on the surface of their clay slab with moist fingers, indenting lines and dots in some orderly repetition to form a pattern. Notice the clean depression which the moist

finger leaves. Now let the children do the same with the modelling tools, reminding them that they are not to *cut* the surface, but to make neat, clean depressions. They may space off a border on their tile and a series of dots radiating from the centre. They can reverse the process and raise the lines and dots by laying on thin rolls and balls of clay along the previous indentations. They must remember that the first essential in relief work is to give a sense of enrichment to what would otherwise be a flat surface. The measure of relief—that is, high or low relief—depends on the purpose for which the work is required. On floor-tiles the amount of relief for the decoration should be reduced to a minimum; on wall-tiles, panels, etc., the relief can be increased. When the relief is to be slight the result may be obtained by adding thin layers of clay upon the slab surface, working the forms with a modelling-tool and depressing the surplus into the slab. If the relief is required bolder it may be built up with the slab, or work may be begun on a slab thick enough to enable one to cut away the clay which is not wanted and leave the desired form standing. This latter way is not the best way, though we may have to have recourse to it sometimes.

When doing relief work plenty of good examples should be shown to the children. They might try some of the patterns described in Chapter II. They will examine with more interest now the beautiful friezes of the Parthenon, pictures of which can be obtained from the British Museum. They will like to try to model some.

Equipment Necessary for Clay-modelling

(1) Zinc-lined box for keeping clay, as we have mentioned before. (2) Modelling-knives for the older children. Fig. 485 shows some useful ones. The last ones in the row, the rods with a wire loop at both ends, are especially useful for those models which require hollowing out, like the sabot. (3) Sponges, for the fingers and tools must be constantly wiped on a damp sponge to keep them clean and free from clay, otherwise the dry clay off the fingers is worked into the

model and the surface spoilt. (4) Small boards or slates to model on. (5) American cloth or paper to protect the top

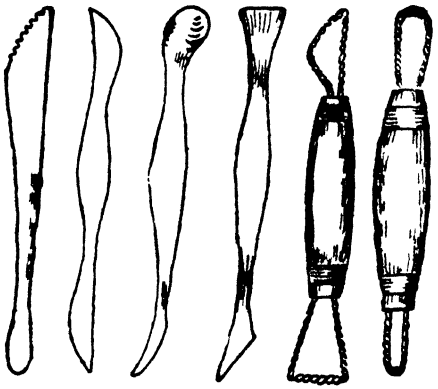


FIG. 485

of the desks or tables. (6) A wire bow for cutting the clay may be included if desired. It is not an expensive equipment. The modelling-tools are not much more than 3d. each. Home-made tools, such as pointed matchsticks, etc., can, of course, always be used.

OTHER PLASTIC MATERIALS BESIDES CLAY

(1) *Sand.* Suitable for very little children.

(2) *Paper Pulp.* This may be prepared by tearing up newspaper into tiny bits, soaking in water for several hours, pouring off superfluous water, and kneading up to the required consistency. A little size, starch, or whitening may be mixed with the pulp to make it more adhesive. This is an excellent material for making relief maps.

(3) *Dough.* Another excellent material for map-modelling is a mixture of six parts of flour to one of salt.

(4) *Plasticine.*

(5) *Modelling-wax* of various kinds.

FURTHER SUGGESTIONS FOR CLAY-WORK

(1) *Animal life.* Children love modelling animals, though the results are very crude. The easiest animals for them are perhaps swans, ducks, and other birds, mice, snakes, etc.

(2) The flat-topped houses in Egypt and Palestine, with their outside staircase, jars, mills, ovens, etc.

(3) Houses of the Pueblo Indians, as suggested at the beginning of the chapter.

(4) *The Home of the Eskimo.* Children love to build up, with blocks of clay cut to resemble blocks of ice, the round house and its entrance passage, the Eskimo lamp, etc. They will not find the seal too difficult.

(5) In connexion with Egypt they can model the Sphinx, the pyramids, and obelisks.

(6) Models can be made of the dwellings of the cave-men, the Britons, and their stone circles, Stonehenge, the Roman Wall, etc.

(7) Simple, characteristic examples of Roman, Saxon, Norman, and Gothic architecture may be made. Children

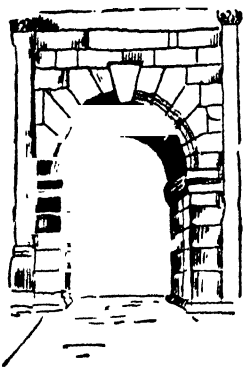


FIG. 486

love to make a Roman arch, as in Fig. 486, by making first a number of small bricks of clay. They realize the importance of the keystone, that locks, as it were, all the other stones together.

APPENDIX

BOOKS OF REFERENCE

Basketry

Woman's Share in Primitive Culture. By O. T. Mason. Appleton.

Indian Basketry and How to Make Baskets. By G. Wharton James. Dryad Works.

Weaving

Hand-loom Weaving. By L. Hooper. John Hogg.

Yarn and Cloth Making. By M. L. Kissell. Macmillan.

Pottery

History of Ancient Pottery. By H. B. Walters. 2 vols. John Murray.

The Potter's Craft. By C. F. Binns. Constable.

Pottery, for Artists, Craftsmen, and Teachers. By G. J. Cox Macmillan.

Pattern Design

Modern Practical Design. By G. W. Rhead. Batsford.

Everyday Art. By L. F. Day. Batsford.

Pattern Design. By L. F. Day. Batsford.

Architecture. By W. R. Lethaby. "Home University Library." Williams and Norgate.

Pattern Designing. By A. H. Christie. Oxford University Press.

Embroidery

Embroidery and Tapestry Weaving. By A. H. Christie. John Hogg.

SONGS, STORIES, AND GAMES ABOUT SPINNING AND WEAVING

Songs and Poems

Southdown Shepherds and their Songs at Sheep-shearing Time. By R. W. Blencowe.

The Spirit of the Downs. By A. Beckett. Methuen.

Old-time Songs and Ballads of Ireland. By M. O'Conor. New York: Popular Publishing Co.

Songs of the Child World. By J. L. Gaynor. New York: The John Church Co. $1.00.

Nursery Stories and Rhymes for the Kindergarten and Home. Springfield, Mass.: Milton Bradley Co. $1.00.

First Book in Vocal Music. By Eleanor Smith. Chicago and New York: Silver, Burdett and Co. 30 cents. Contains "Oriole's Nest Song," "Spinning Song."

A Primer of Vocal Music. By E. Smith. Silver, Burdett and Co. 25 cents. Contains "The Lazy Sheep," "The Spider," "The Silkworm."

"The Wonderful Weaver" (poem), in *The Children's Treasure House*, vol. ii, *The Great Poetry Book.*

Stories

The Story of the Evolution of the Spinning Machine. By B. P. Dobson. Marsden and Co.

In the Child's World. By E. Poulsson. G. Philip and Son.

Nests and Eggs of North American Birds. Columbus, Ohio: The Landon Press.

Curiosities in Bird Life. By Charles Dixon. G. Redway and Son, London.

Curious Nests. By Charles Dixon. G. Redway and Son.

Bird Homes. New York and London: Doubleday, Page and Co.

The Story Hour. By K. Douglas Wiggin and Nora A. Smith. Boston: Houghton Mifflin Co.

Kindergarten Stories and Morning Talks. By S. E. Wiltse. Ginn and Co.

Stories in Song. By E. Emerson. Boston: Oliver Ditson Co. $1.00.

More Nature Myths. By F. V. Farmer. Harrap.

Games

Plaiting the Maypole, Maypoles and Braids. Music for a maypole dance may be obtained from J. Curwen and Sons, Ltd., 24 Berners Street, W.1.

The Republic of Childhood. By K. Douglas Wiggin and Nora A. Smith. Boston: Houghton Mifflin Co.

Songs and Games for Little Ones. By G. Walker and H. Jenks. Boston: Oliver Ditson Co. $1.50.

A Weaving Game. By K. Beebe. Chicago: Thomas Charles and Co. 25 cents.

Sangspill, published by J. Curwen and Sons, Ltd., 7s. 6d., contains a weaving game and a weaving dance.

MATERIALS AND TOOLS

Weaving, etc. Raffia, cane, rushes, willows, can be obtained from the Dryad Works, St Nicholas Street, Leicester.

Spinning. Fleece, cards, spindles, etc., can be obtained from: (*a*) The Peasants' Arts Society, 17 Duke Street, Manchester Square, London, W.; (*b*) The Spinning School, Hall of St George, Haslemere, Surrey.

Dyes. Vegetable and foreign dyes can be obtained from Messrs Hurst, Brook and Hurst, Mullgarth Works, Leeds, and from the Dryad Works.

Looms. Hand looms, tablet weaving boards, tablets, beaters etc., from the Dryad Works.