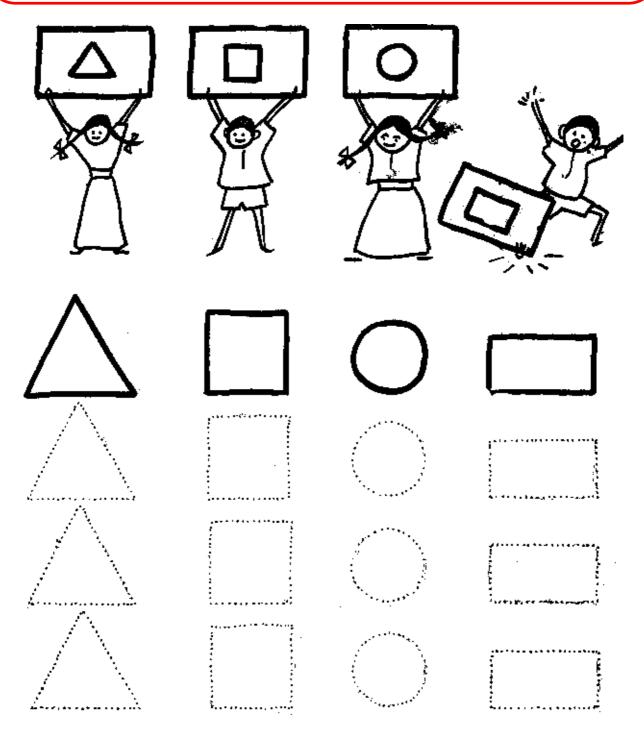
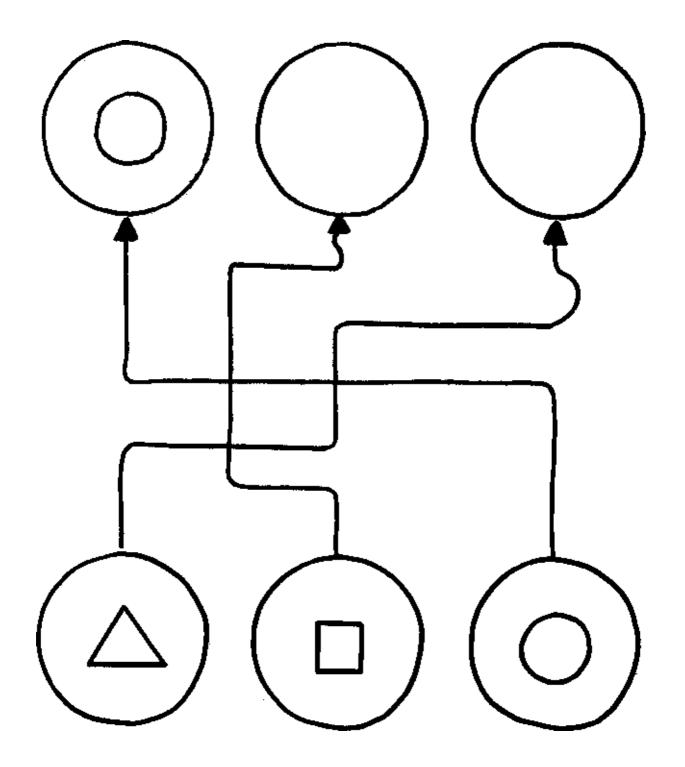
THINKING AND DOING

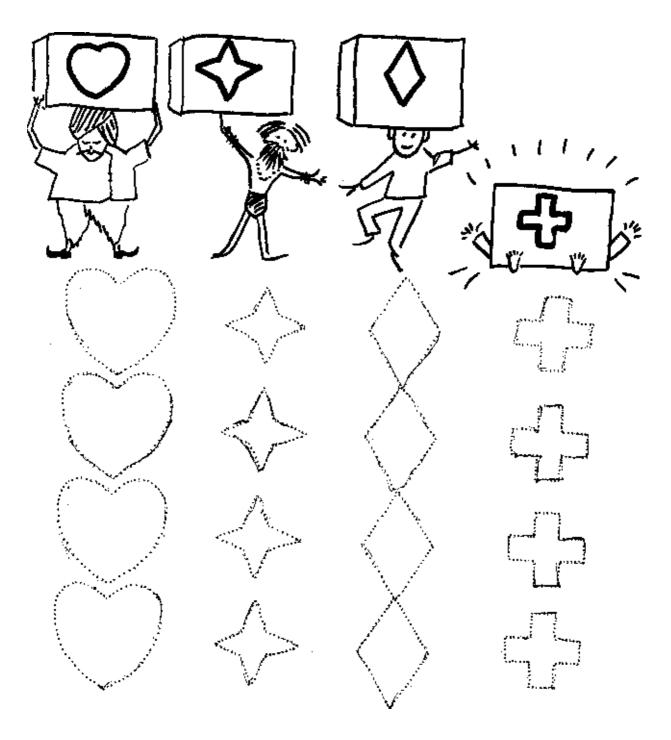
David Horsburgh



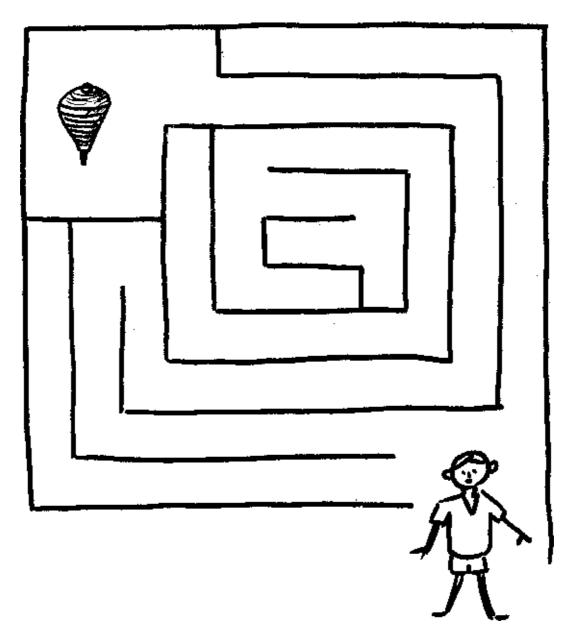
1. Draw these four shapes on the board. Teach the children the names of the shapes, too. Then get them to trace over the dotted lines in the book. Help them if necessary.



2. Draw on the blackboard a cross, a circle and two lines. Get the children to draw these figures on their slates or notebooks two or three times. Then ask the children to open their books at page 2. Show them how the circle has been done for them. Ask them to fill in the other two shapes in their correct circles. Those who finish quickly can copy the whole page on to their slates or notebooks.



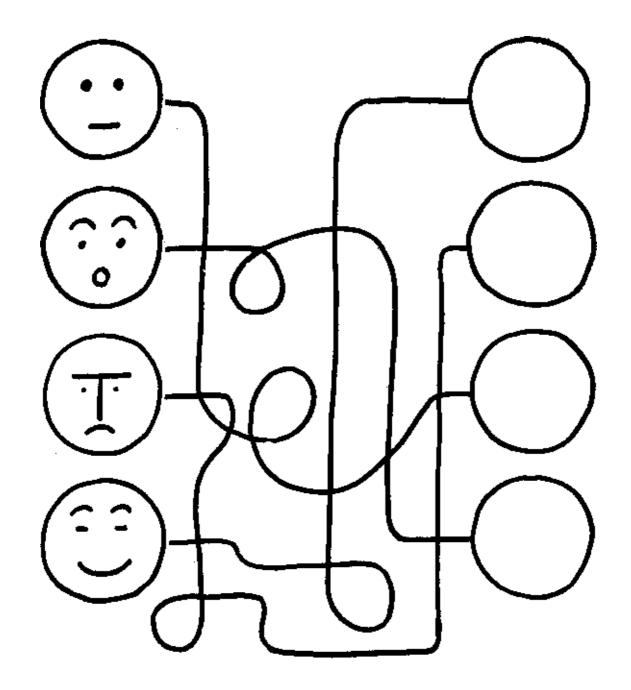
3. Follow the same procedure as on page 1 and get the children to draw over the dotted lines.



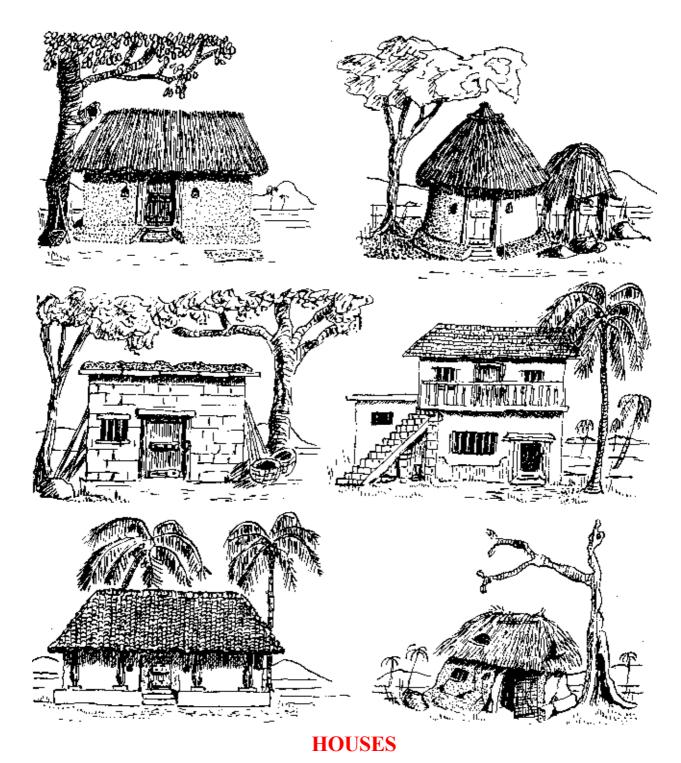
4. Tell the children that the boy in the corner wants to get the top, but that he must go along the correct path. Tell them that the red lines are high walls and that he cannot climb over them. Then ask them to see if they can find a path without going over the walls. If they find this first maze difficult, you can draw it on the blackboard and explain the process to them; but let them try first without your help.



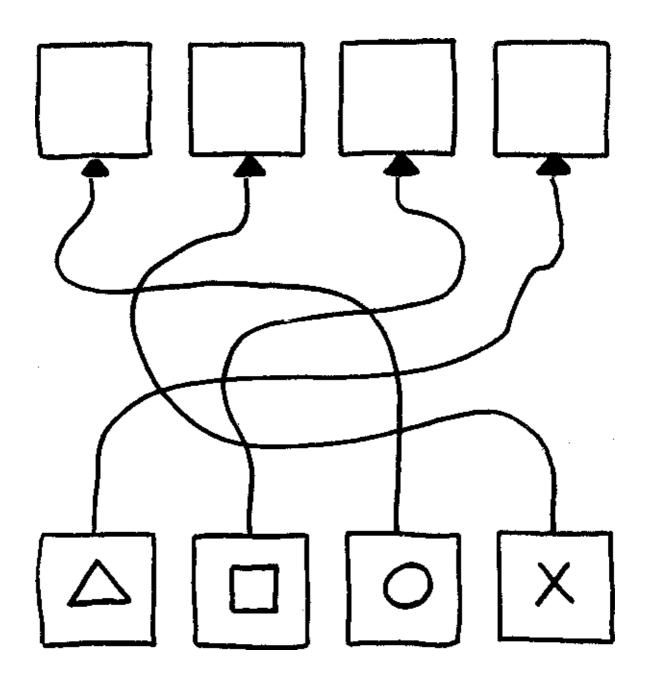
5. Ask the children to tell you what the things are in the pictures. Then get them to tell you what they are used for and what they are made of. Lots of discussion is possible.



6. Copy the faces from the left-hand side of the page on to the blackboard. Perhaps you can get one or two children to draw them on the black board, too. Then get the children to follow the lines and draw the correct faces in the spaces provided.



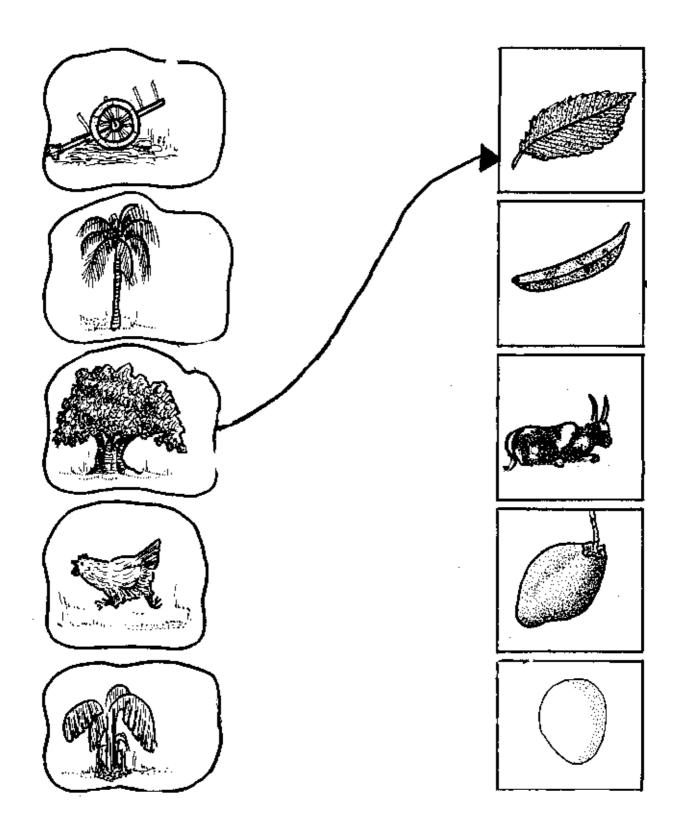
7. Talk to the children about the different houses illustrated on this page. Then get the children to talk about their own houses and what they are made of.



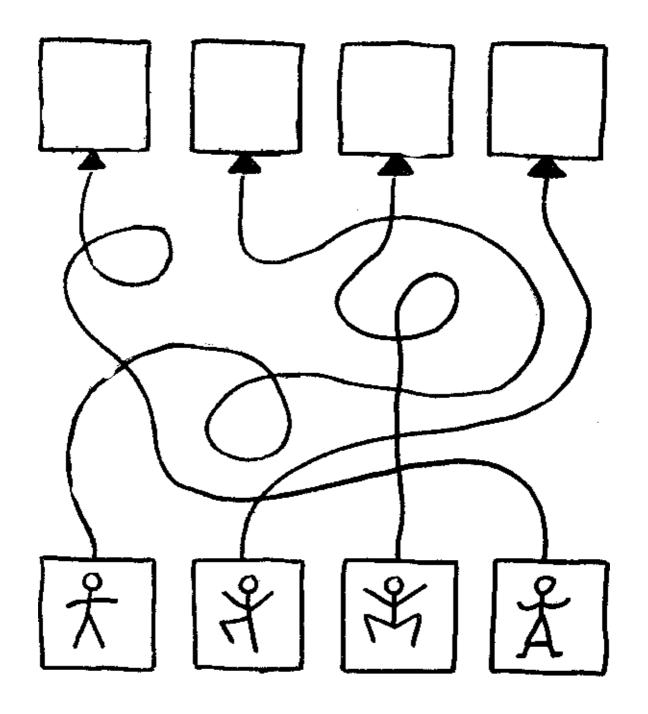
8. Ask the children to follow the lines and draw the correct shapes in the spaces provided.



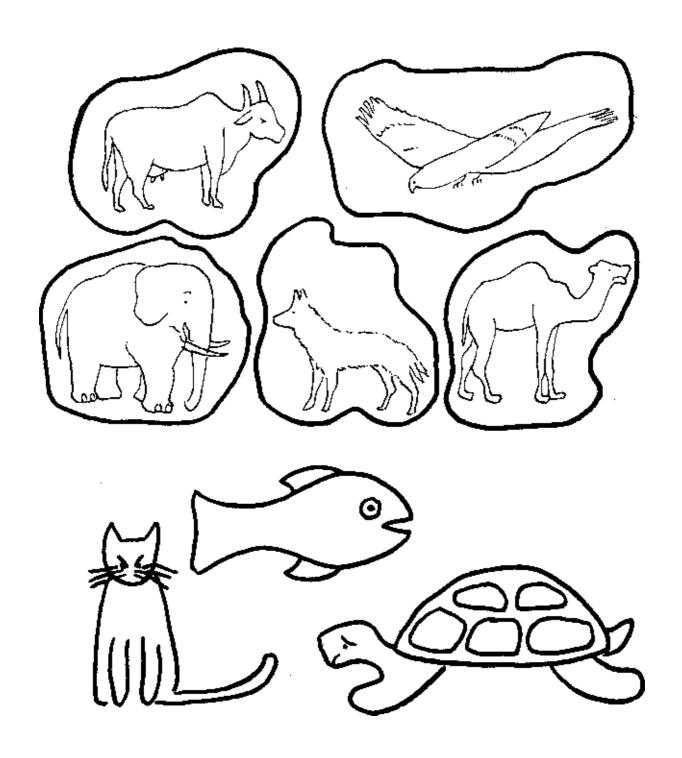
9. Get the children to make balls of clay. When they have mixed the clay they can roll it into balls between their hands, as one does before making chapattis. Set up sticks as shown, in an open flat place outside the school and get the children to roll the balls at the sticks and try to knock them down.



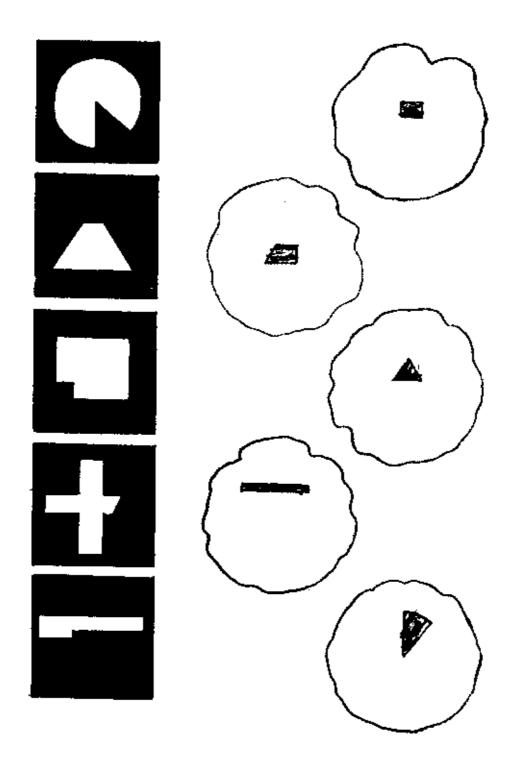
10. Talk to the children about the things which are connected with each other. On the page they should draw a line between each shape and a square. One has been done for them. The drawing in each shape has some connection with a drawing in one of the squares.



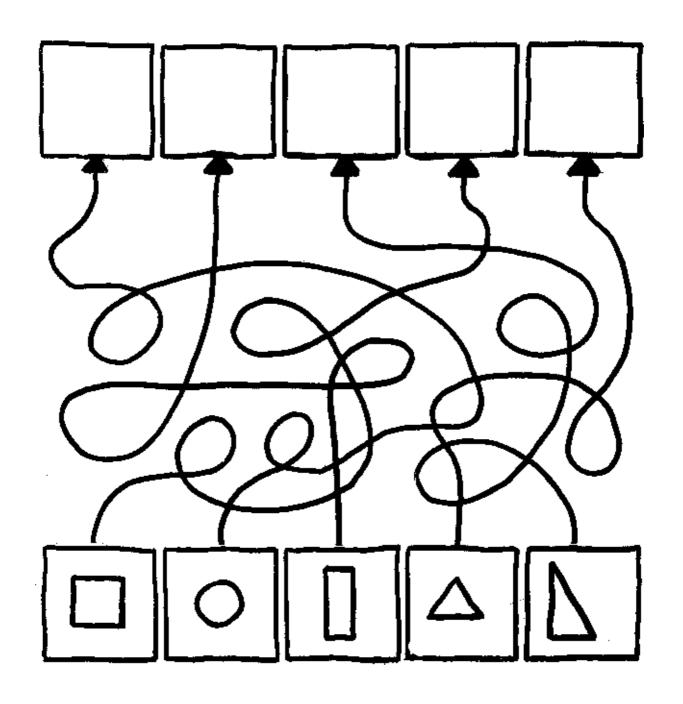
11. Get the children to draw the shapes at the bottom of the page. It would be better if you drew them on the blackboard first and then get the children to copy them on their slates or notebooks. Then get the children to complete the page by putting the figures in the correct boxes. Check their work. Those who finish early can copy more figures on to their slates or notebooks.



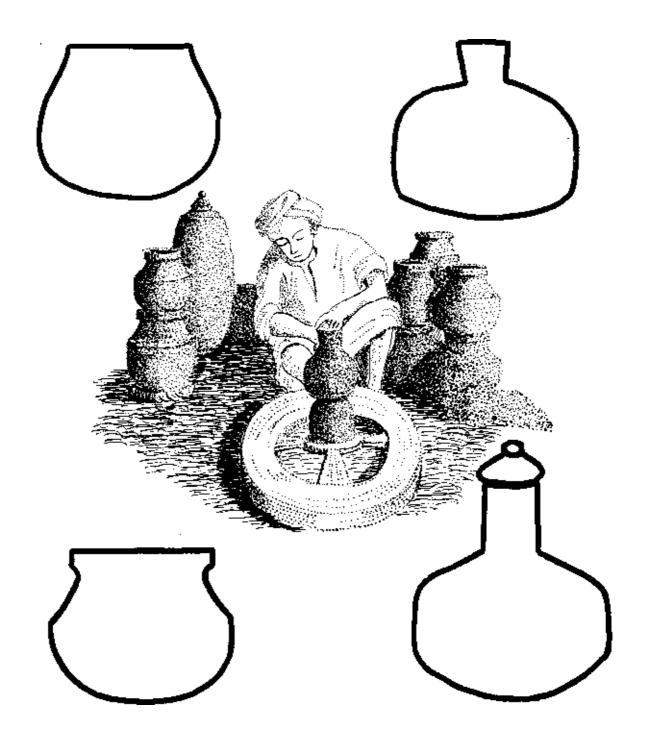
12. This is a page of pictures for you to talk about. Ask the children to look at the page while you are talking. They may not have seen some of the animals such as an elephant or a camel. Tell them something about these animals, and then get them to copy the pictures at the; bottom of the page on to their slates or notebooks. Make sure they know the names of the animals in their mother-tongue.



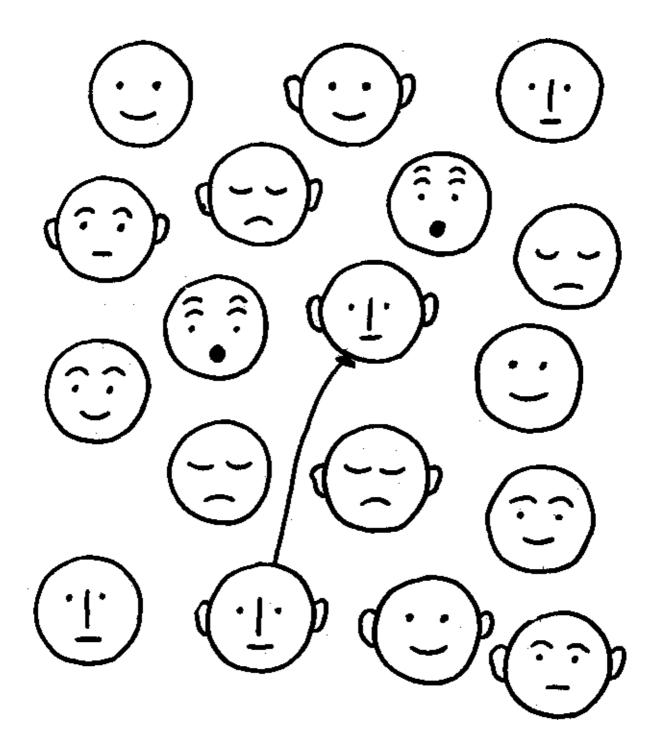
13. Ask the children to join shapes to squares as they have done previously. In this case a piece belonging to the drawing in each square has been left out and can be found in a shape. They should join corresponding squares to shapes



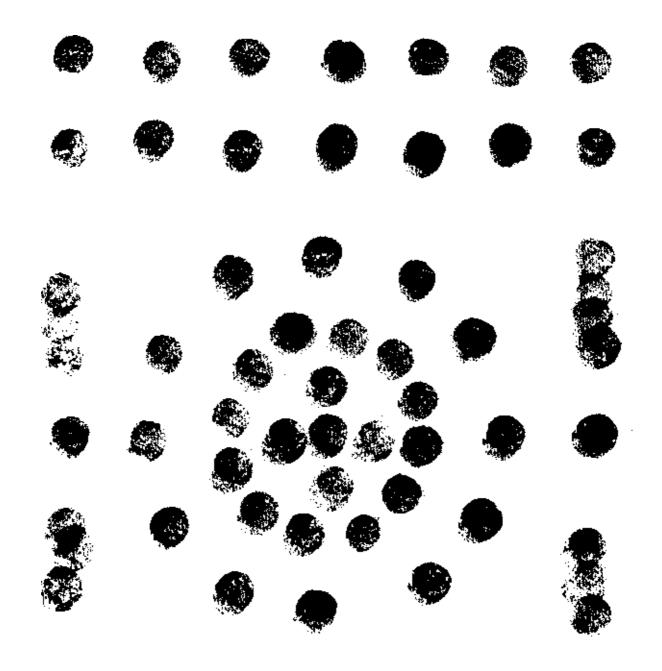
14. Note that there are two different kinds of triangle and a new shape. Draw these figures on the blackboard make sure the children know the names of the figures. Then get the children to complete the exercise on this page. Children who finish early can perhaps make a similar exercise on their own, and give it to their friends to do.



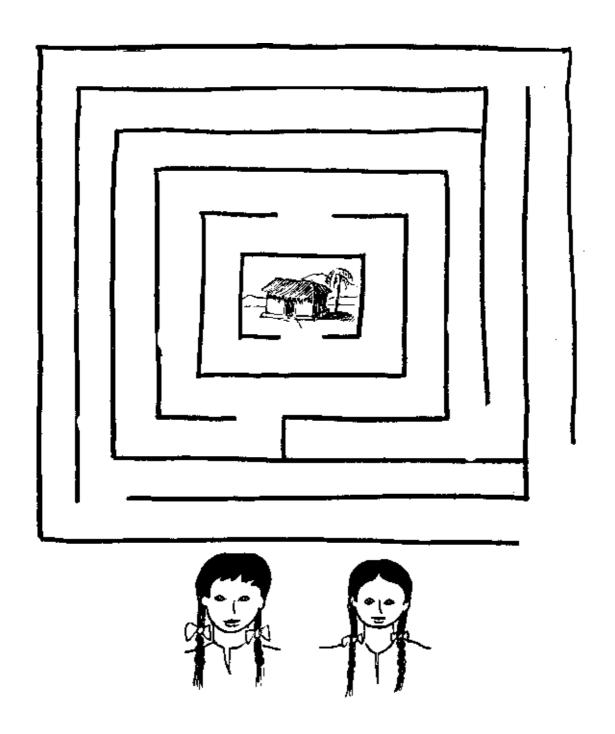
15. Talk to the children about a potter. If there is a potter near your school take the children to visit him. Tell them about the potter's wheel. Let the children copy some of the pots shown on this page on their slates or notebooks. Mix some clay (see Appendix I) and get the children to mix some. Let the children make whatever things they want to with the clay.



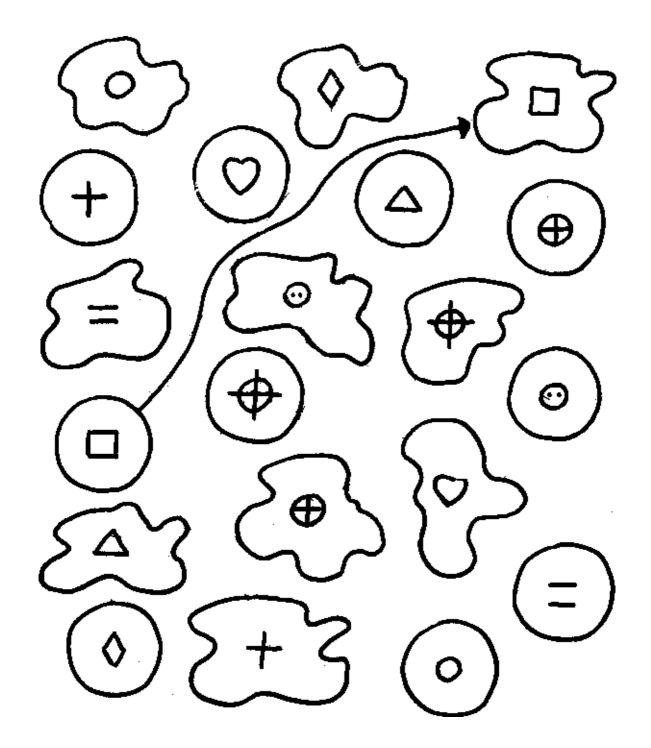
16. Draw some of these faces on the blackboard and get the children to draw them on the blackboard too. Then ask them to connect faces which are similar. One pair has been done for them.



17. Get the children to look at the page and then get them to do some of the printing shown. If you have a stock of colours and paste (see Appendix I) they can use them, ff not, they can use coloured earth on paper, or on the slates which have first been covered with chalk or any other white powder. Help them to make patterns and figures on their own. Don't try and get them all to make the same patterns.



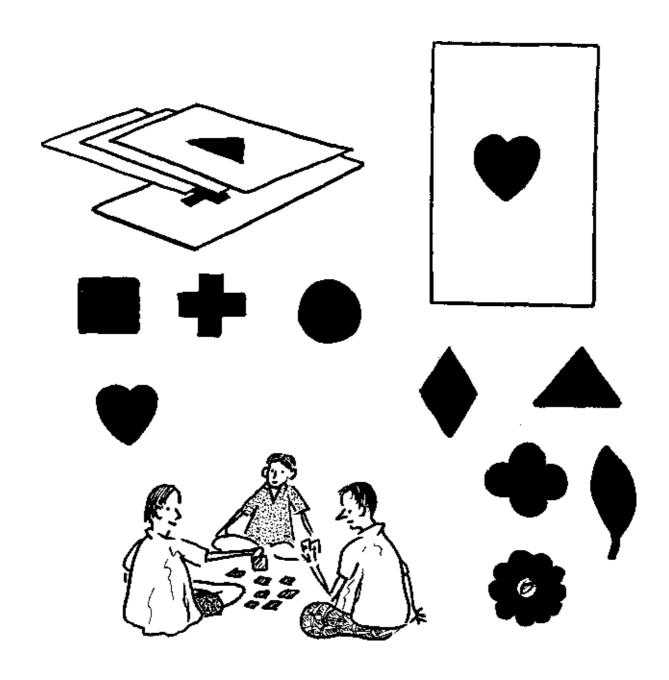
18. A slightly more difficult maze than the one on page 4. If children find it difficult at first, ask them to look at page 4 and see how they did that one. Those who finish early can try to copy the maze into their books; this is quite difficult.



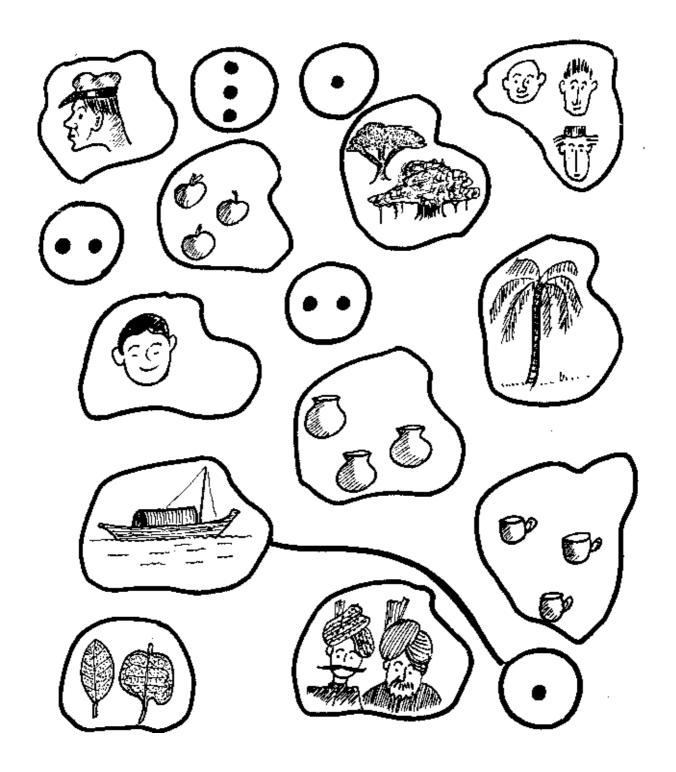
19. Connections as before. Tell children to look carefully at the, symbols before they complete the page.



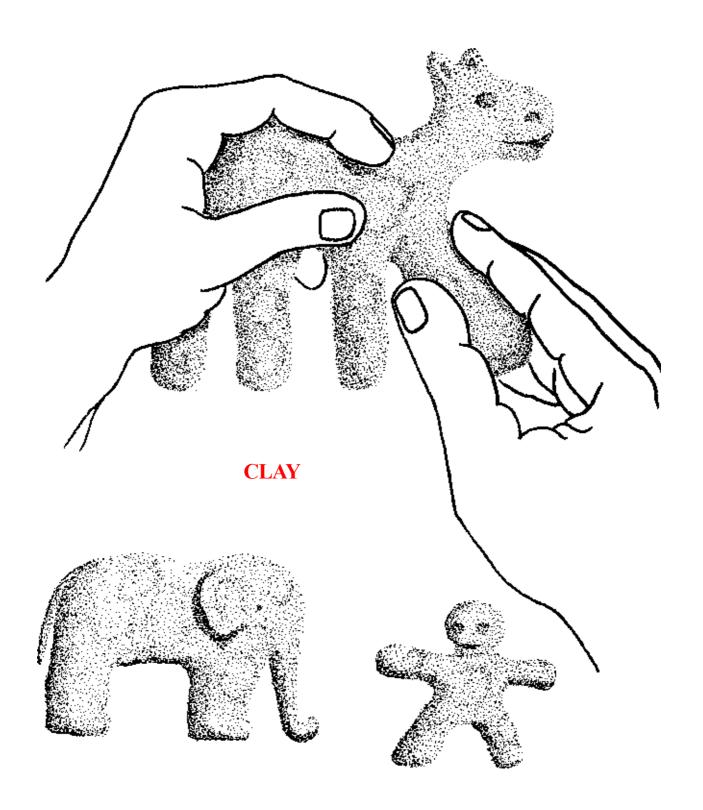
20. Talk to the children about things which are alive and things which are not alive. Ask them to put a small cross in the circles next to things which are not alive.



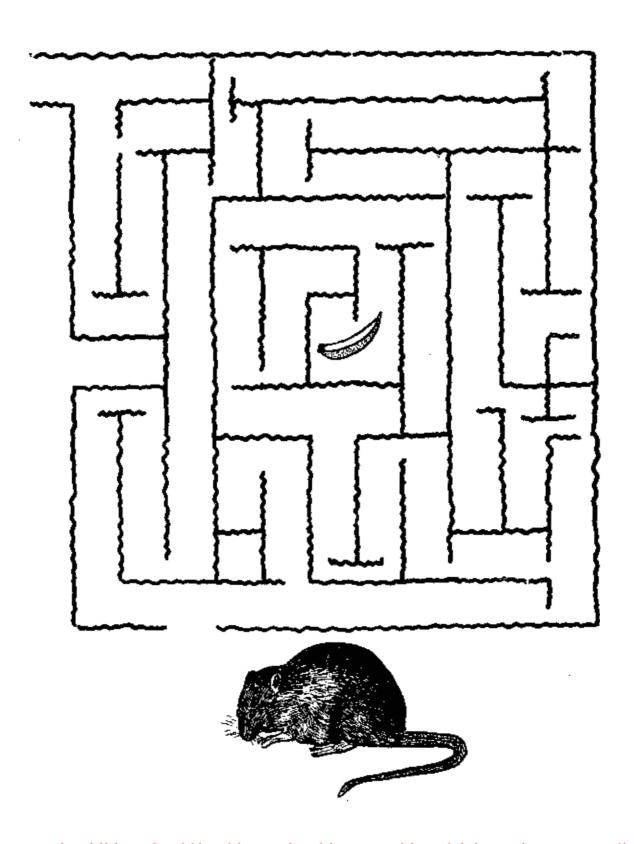
21. If you have card, cut it into small pieces as shown on this page. If you have no cards try to get children to bring some empty cigarette packets to the class. These can be used instead of the card. Get the children to make a set of snap cards using different shapes for the rules of this game, see Appendix II.



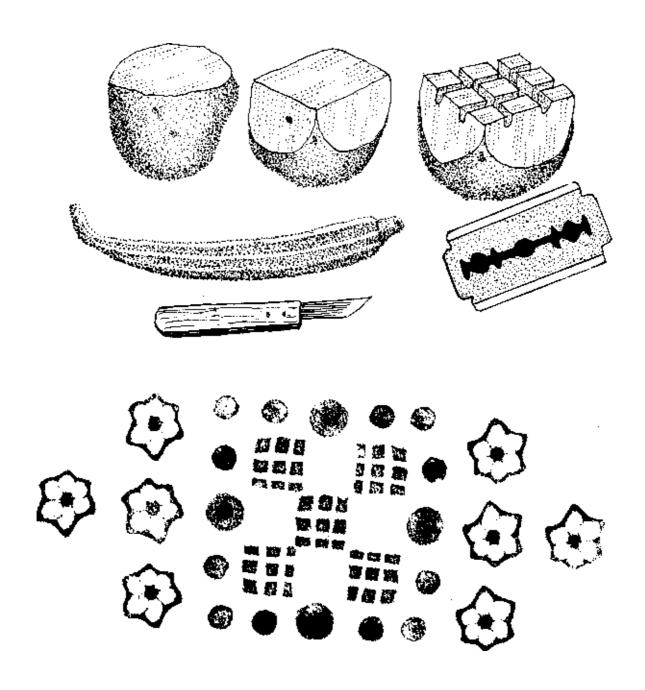
22. A first introduction to the idea of numbers. You might have introduced these concepts already, Note that the idea of a number is not at first to be connected with the symbols. The symbols for the numbers (1, 2, 3, etc) will come later.



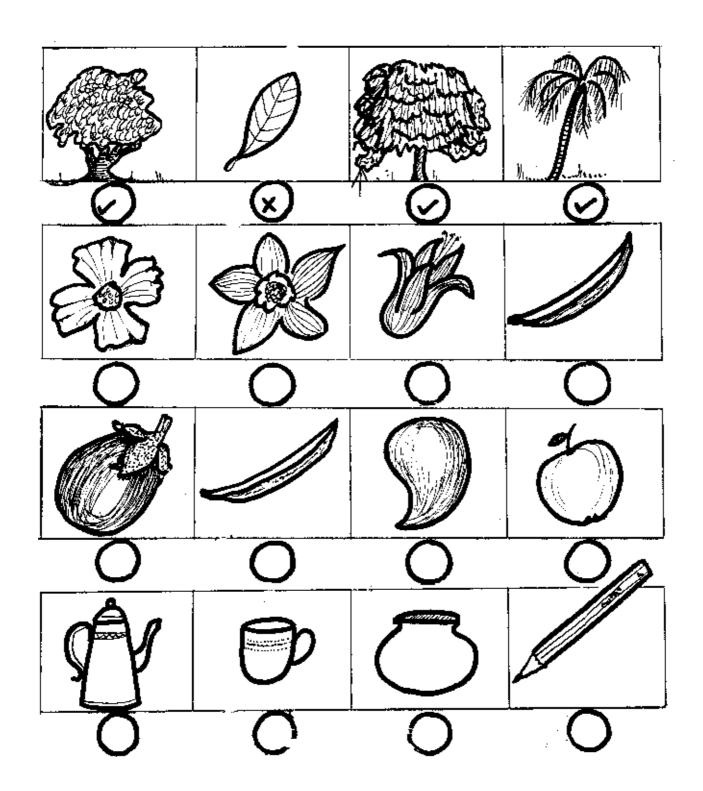
23. Get the children to make whatever they like, animals, birds, household utensils, fruit, vegetables, etc. out of clay. Do not help them too much.



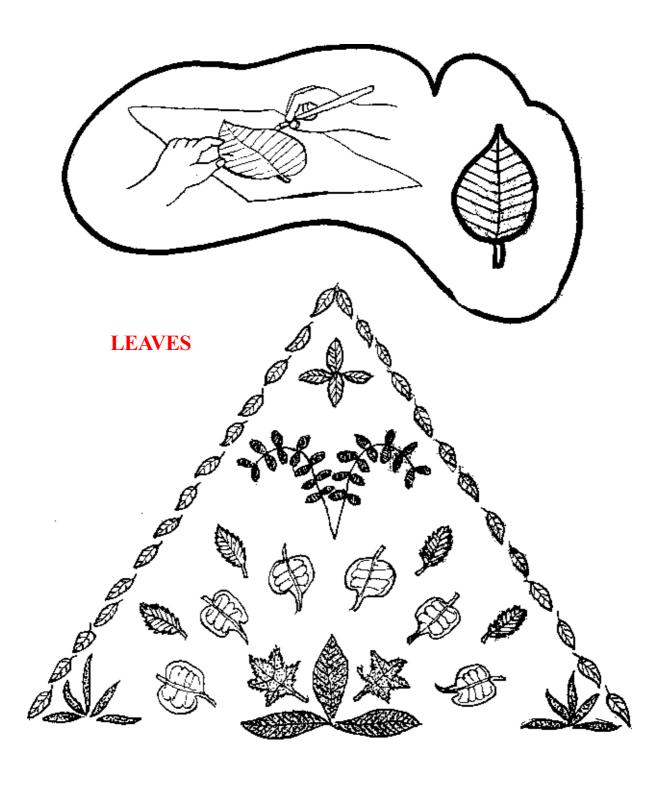
24. By now the children should be able to solve this maze, although it is much more complicated than the ones they have had before. Let them try it with the blunt end of their pencils or their fingers before they draw pencil lines along the correct path.



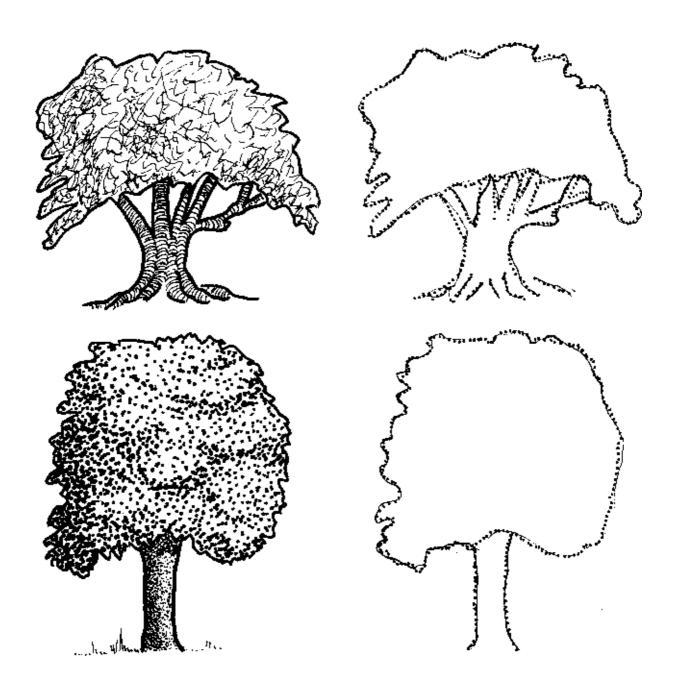
25. Ask the children to look at the page and see if they can tell you how the printing has been done. Even at This early stage it is important to persuade the children to get their own information from the page before you tell them. Have ready one or two ladies fingers, or other vegetables. Cut sections of the vegetables and get the children to make their own prints, as they did on page 17. (For colours see Appendix I)



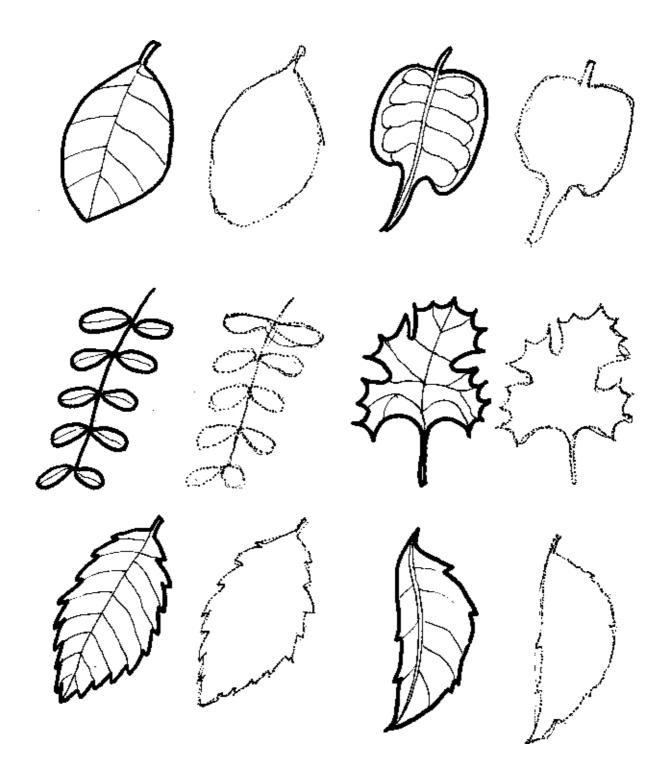
26. Each row or pictures has one picture which is not in the same group as 1he other three. For example, in the first row three of the squares have trees in them and one square has a leaf. The leaf is not a member of the tree group and so a cross has been put underneath it. Get the children to put crosses under the odd-man-out for each row. If there is time you can draw some of your own on the blackboard.



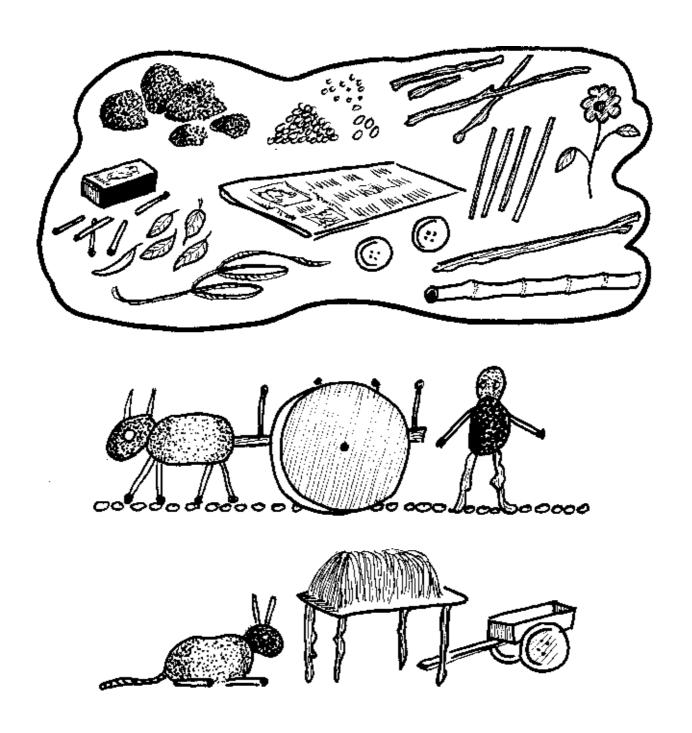
27. Ask the children to look carefully at the page first and see if they can to find out what is to be done. Bring one or two leaves to the class, sit near the children and show them how to trace round the leaves with a pencil. Then get the children to make patterns as shown. If they have colours the patterns can be coloured.



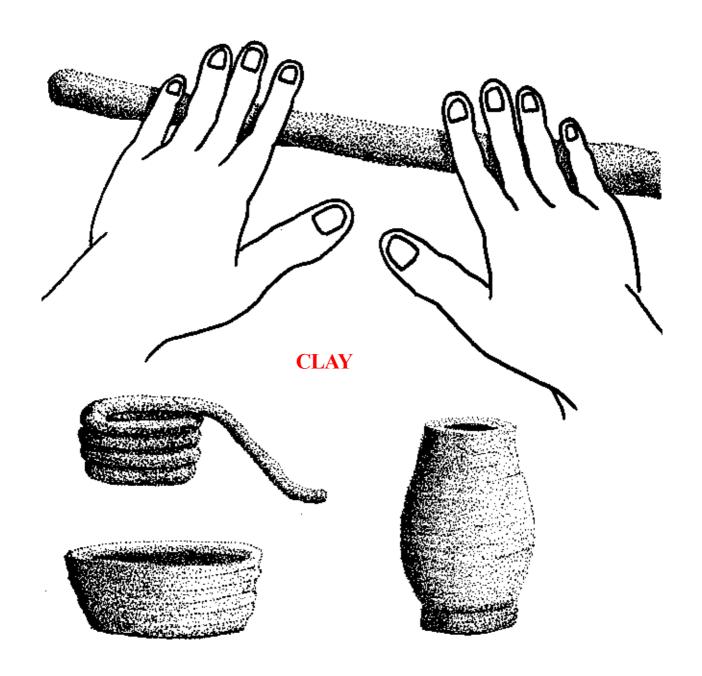
28. Talk to the children about trees. Ask them whether they know the names of any trees near their school or homes. Try to get the children to describe these trees in simple terms. Then get them to do the work on the page. Those who finish early can copy the pictures into their exercise books or on to their slates.



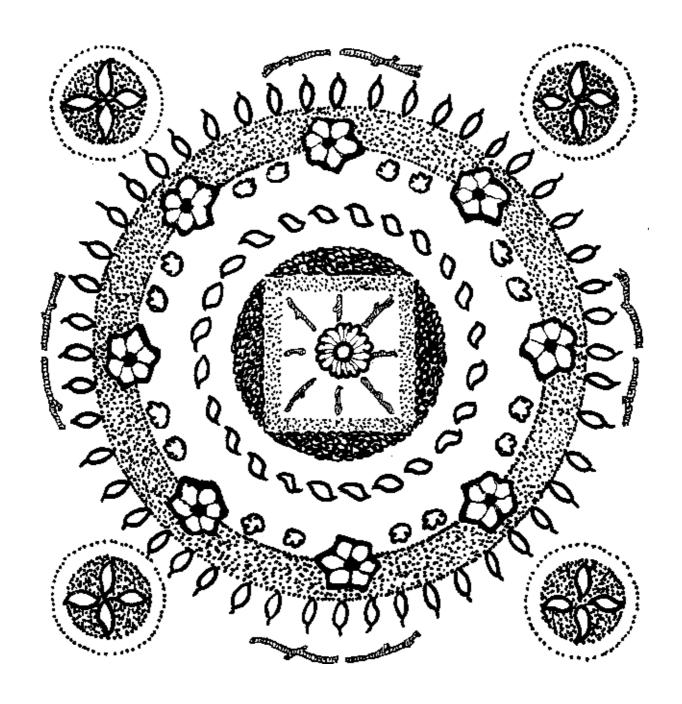
29. Bring six or eight leaves to class. Show them to the children and ask them if they know which trees they have come from. Point out the difference between; say a tamarind leaf and a mango leaf. Then get the children to do the work on the page and copy the leaves into their exercise books or slates.



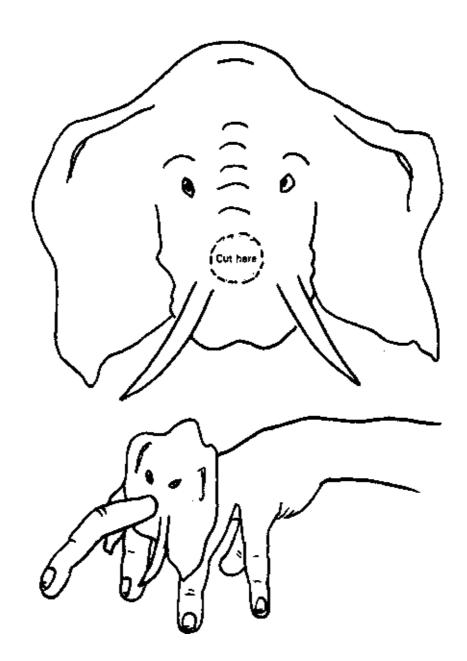
30. Ask the children to bring to the class before it begins a collection of stones twigs, leaves and any other bits and pieces which are available. Get the children to make pictures with the things they have brought. Some examples are given on the page, but you and the children will no doubt think of many more things to make.



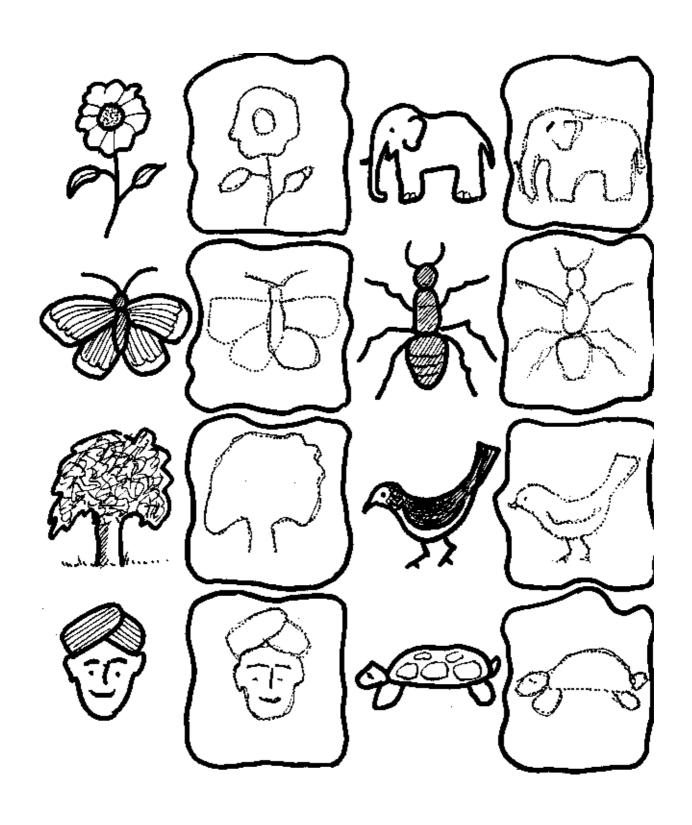
31. Show the children how to roll out long snakes of clay and make pots by building up the rolls. As each roll goes on top of the next use a little slip like paste (clay mixed with water) to stick the rolls together. The pots can be smoothed on the outside if the children like to do so.



32. Before the class ask the children to bring to school some sticks, some stones, some twigs, some leaves, some flowers, some sand and some pebbles. Ask them to work in groups of three or four and to make patterns similar to the ones shown on this page. They can easily do this work outside the classroom- Those who finish early can experiment with new patterns in the shape of a square or a triangle, etc. On the day after this perhaps they can make bigger patterns, four or five children working in a group.



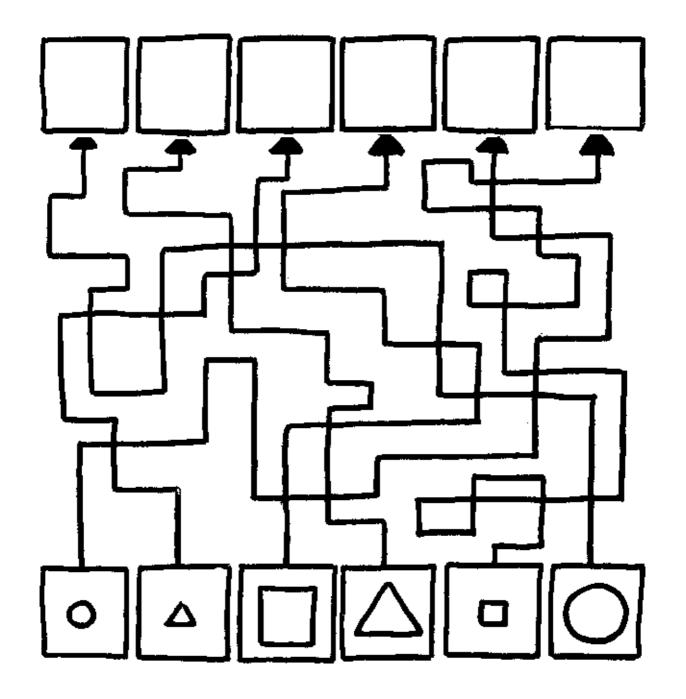
33. Use card if you have it (see Appendix I). If not, you will have to use two or three cigarette packets stuck together. You will also need scissors. Get the children to copy the elephant heads on to card and to cut them out.



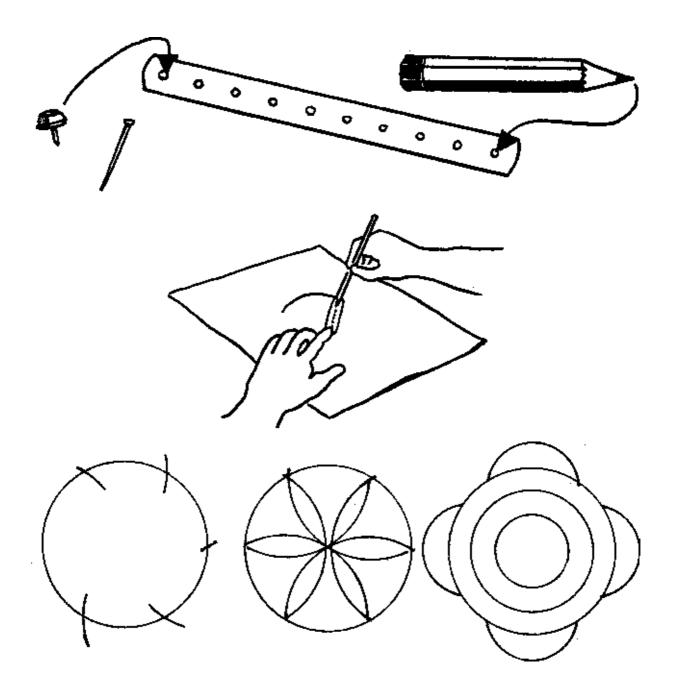
34. Get the children to copy the pictures on the page.



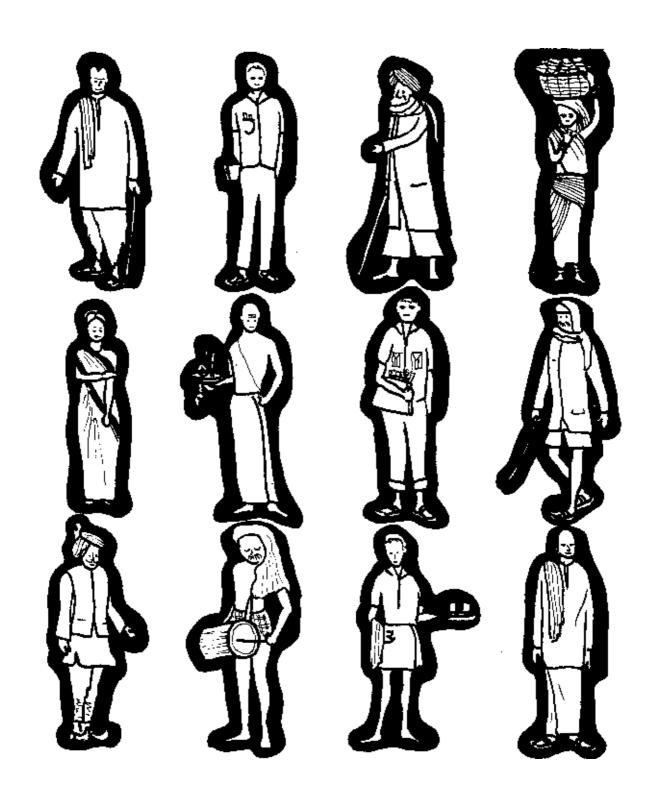
35. The numbers 4, 5 and 6. Note that the symbols 4, 5, 6 are not yet used.



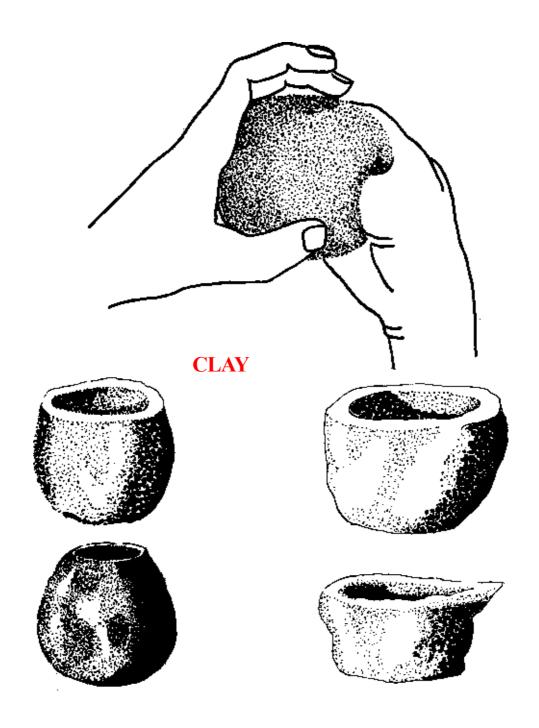
36. On this page the concept of bigger and smaller is introduced. Talk to the children about big and small. Use some examples. 'My hand is big; your hand is small. Gopal's house is big; Raju's house is small.' Draw a big circle and a small circle on the board. Get them to say big and small when you point to the circles. Get them to draw big and small circles on their slates or notebooks at your dictation. Then get them to do this page. Those who finish early can make more puzzles for their friends.



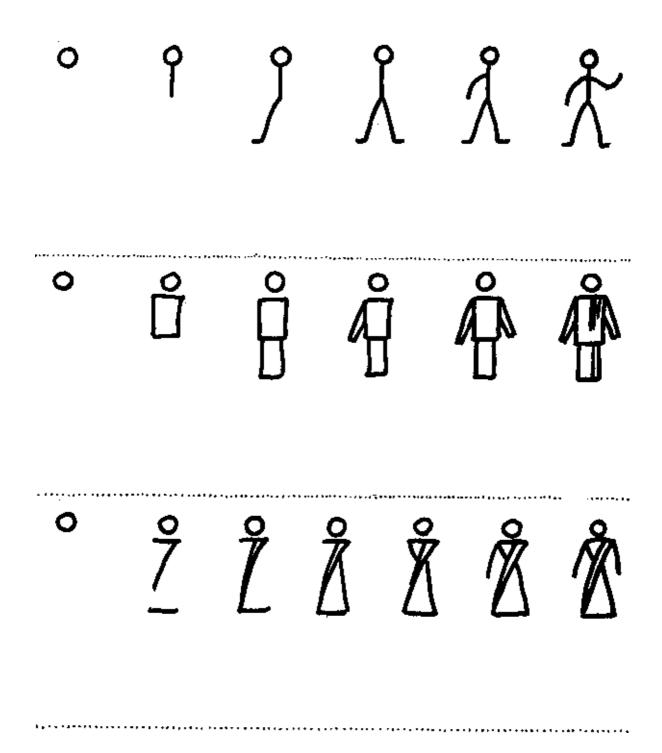
37. Get the children to make a compass as shown on this page. This can be made out of thin card, or out of three or four folds of newspaper. If drawing pins are not available ordinary pins can be used or even thorns. Once children get some practice at drawing circles there are many beautiful designs that they can make, as shown on the page. Colours can also be used. Perhaps the children can make a very large compass like this out of a piece of wood, and use it to mark circles in the playground They can make an even longer compass with two sticks and a piece of string.



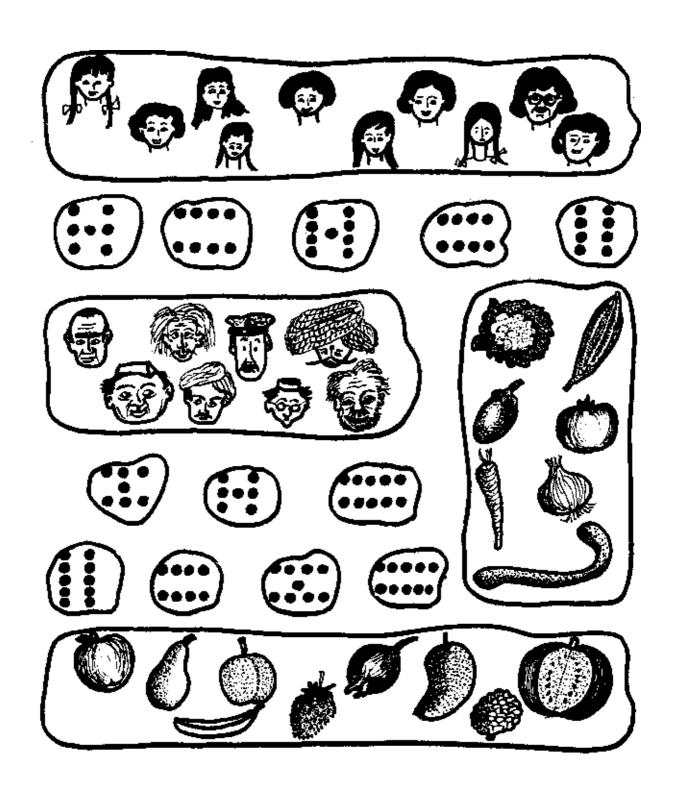
38. A page of pictures to talk about. Ask the children plenty of questions: (What different kinds of clothes do people wear? What different hats have you seen? What kinds of shoes do people wear? Why do people wear clothes? And so on.) Get the children to draw some pictures if they can of people in different kinds of clothing.



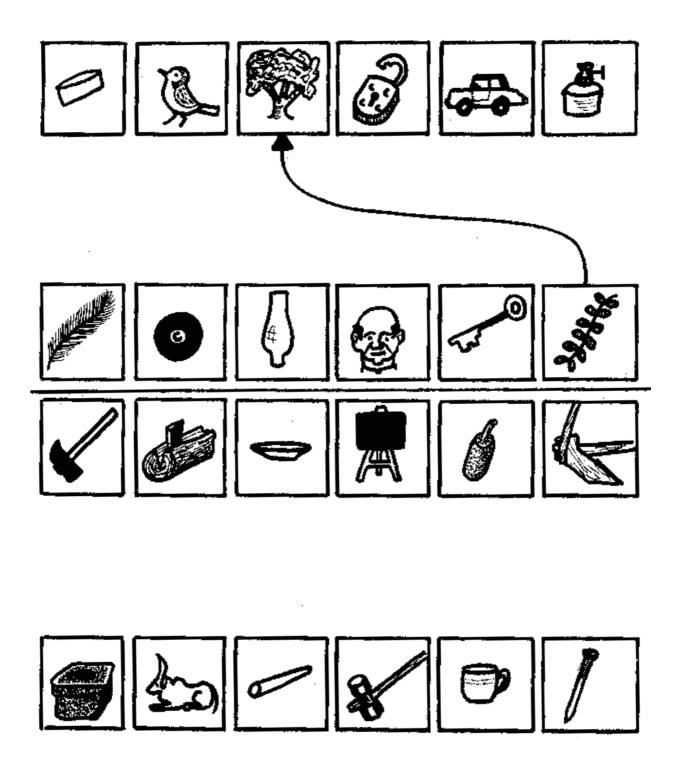
39. Get the children to make thumb pots out of clay, as shown in the drawing on the page. They hold a ball of clay in their left hand and push the right thumb into the clay, turning the ball round and round as they do so. These pots can be dried in the shade and then perhaps given to the local potter so that he can fire them in his kiln. They can then be used to hold water



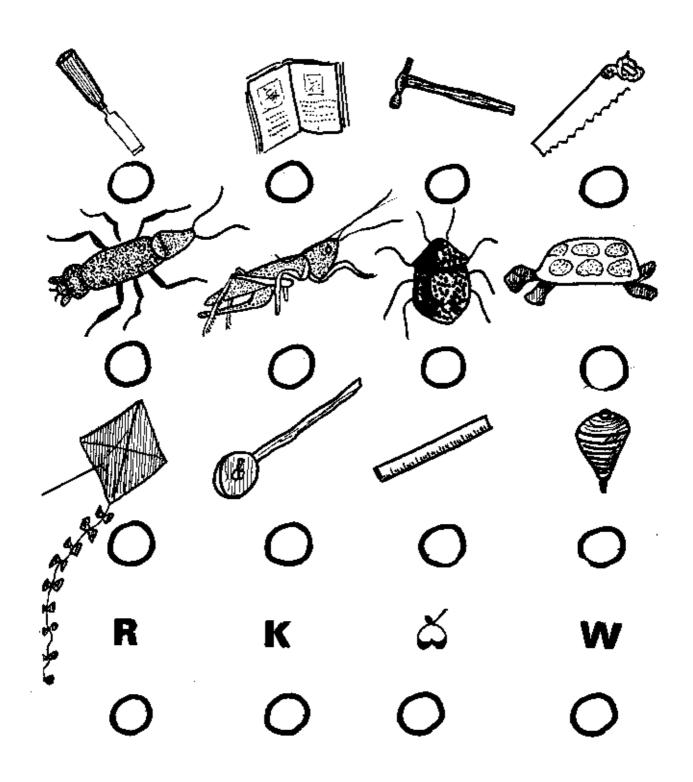
40. More pictures to copy. These pictures provide a chance for children to observe the position of the arms and legs during various activities. Get one child to come to the front of the class and hold up his arms. Then get the rest of the class to make a drawing of him, similar td the ones on this page.



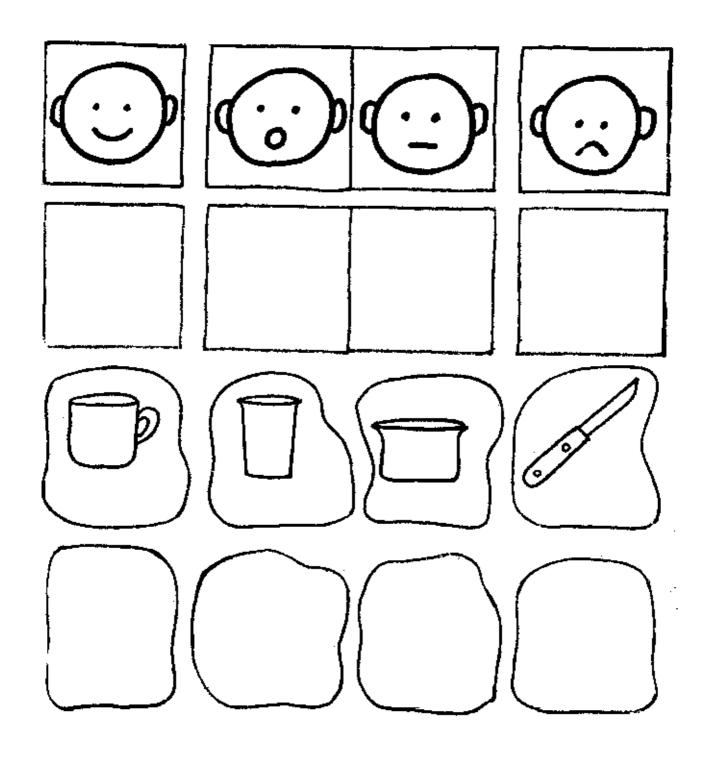
41. Numbers 7, 8, 9 and 10.



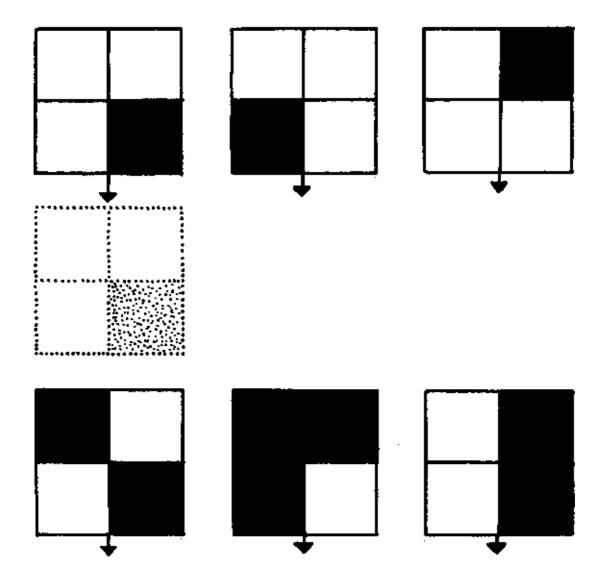
42. Connections. In the two sets of rows, one picture below is connected in some way with the picture in the row above it. For example as the arrow shows, the leaf is connected with the tree. Ask the children to draw fines and arrows showing the connections between the other sets of pictures.



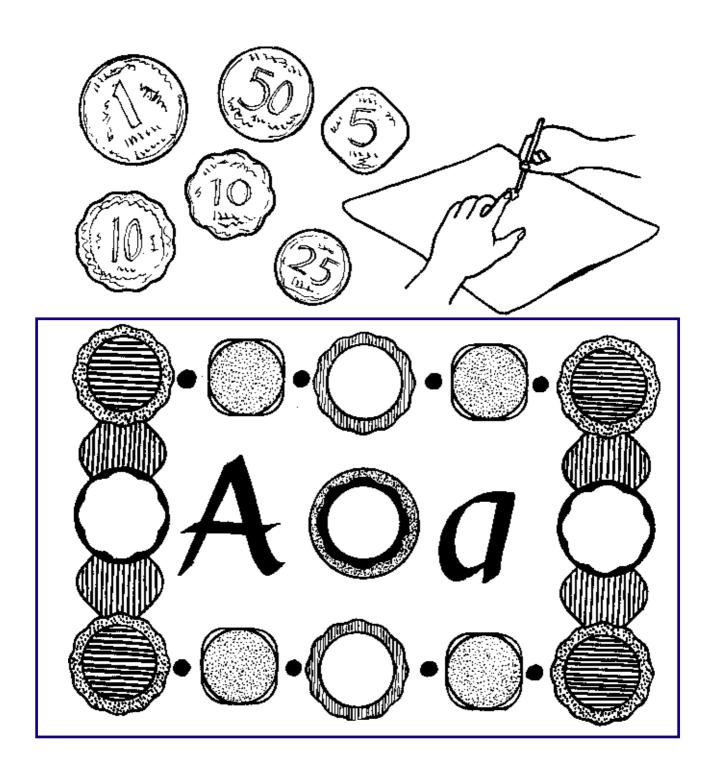
43. Odd-man-out; some of them are more difficult than before.



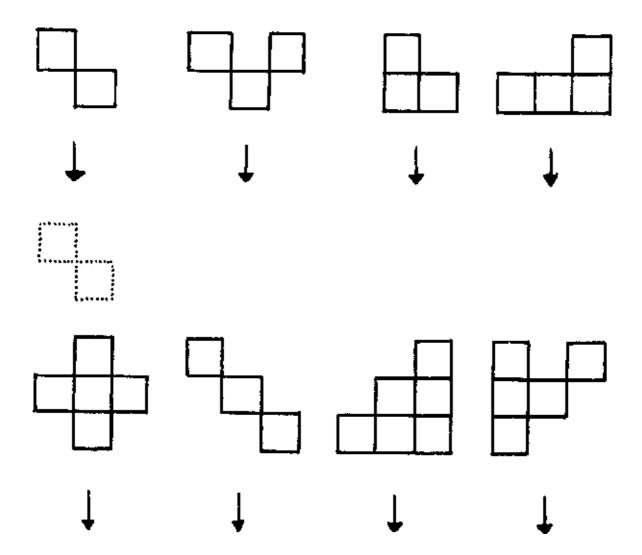
44. Pictures for the children to draw. They can first draw them in the spaces below the pictures, and then try drawing similar pictures in their notebooks or slates.



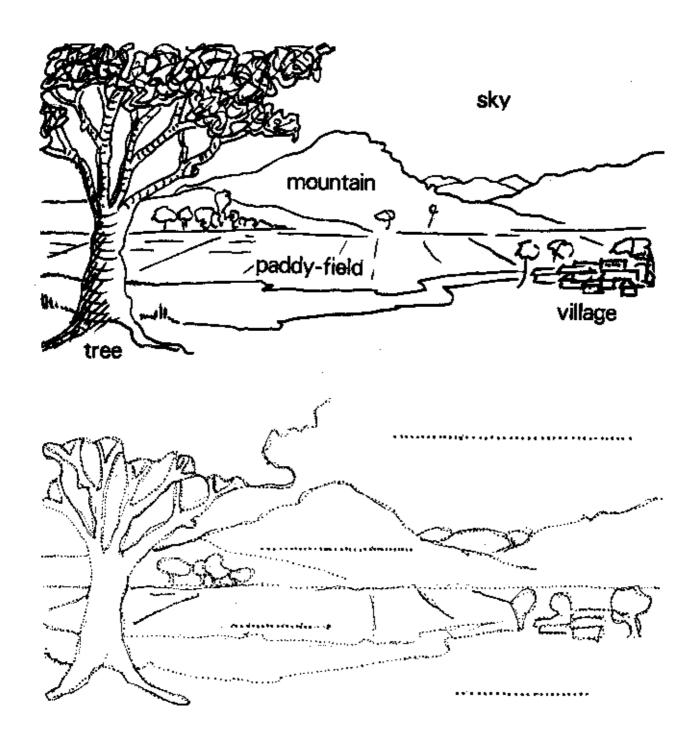
45. Children can copy the patterns shown in the spaces provided. Some of the children may find this difficult because it involves more difficult spatial relationships. If you can see after most of the class have done one or two of the easier ones at the top of the page, that the children are finding it difficult, draw more easy ones on the board. Let them copy these correctly before they go on to do the work of this page.



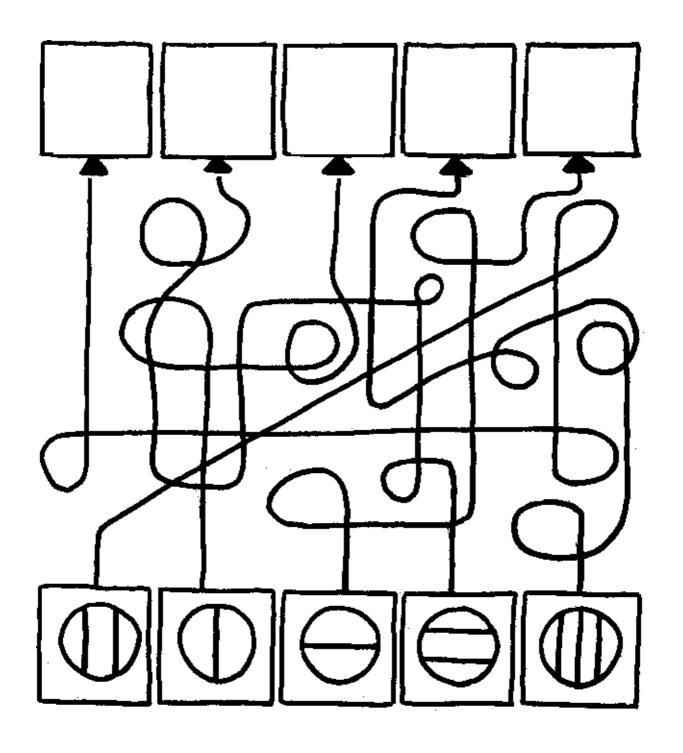
46. Ask the children if they can bring one or two coins with them to the class. One, two, five or ten paisa. You should also provide yourself with some coins in case the children cannot bring any. Get the children to .make some of the patterns shown on the page and to make up new ones on their own,



47. For completing this page follow the same instructions as given in page 45.



48. By now the children will have learnt to write a certain number of words. Let them fill in the blanks on the picture if they can. If they cannot you will have to demonstrate writing the words a few times on the blackboard; then get the children to write a few times on the blackboard; then get the children to write them in their exercise books or slates. Those who finish early can copy the pictures into their exercise books or slates.



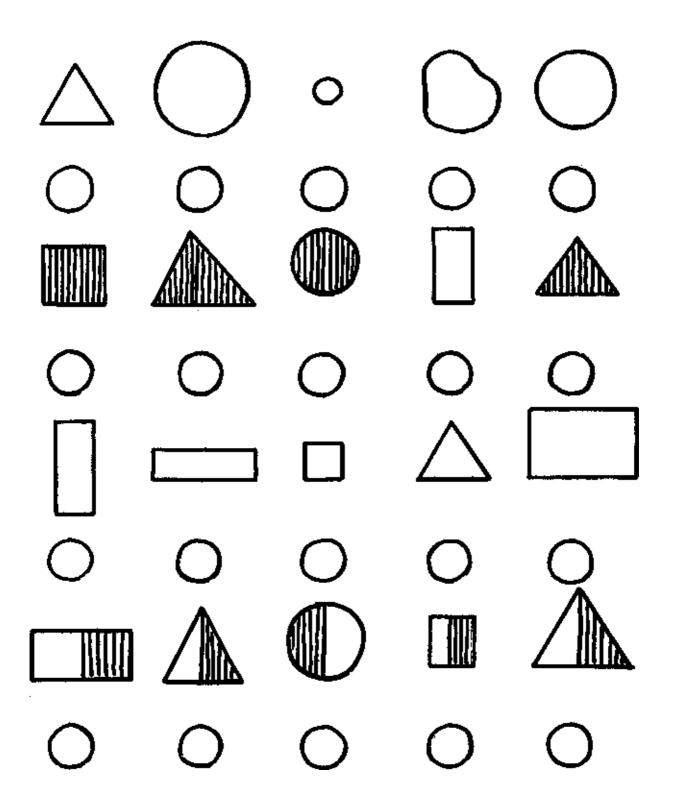
49. Make sure that the children can discriminate between the different figures at the bottom of the page. You may have to draw these on the blackboard for the benefit of the children before they do the work on the page.

	I am a girl
	My name is Uma.
I live in India.	
India is my country.	

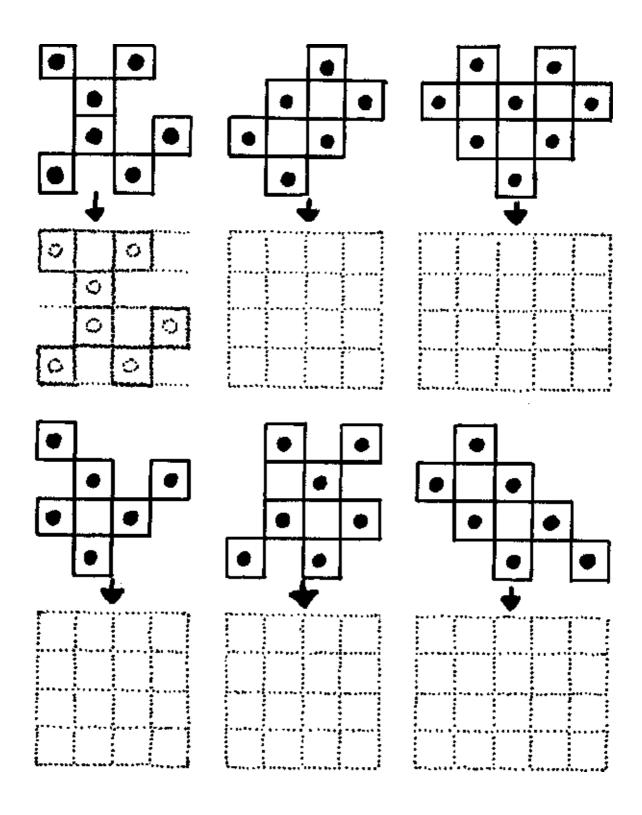
50. You will know whether the children can do this on their own or not. If they cannot then you help them by writing similar sentences on the blackboard.

	I am a boy.
	My name is Krishna
I live in India.	
India is my country	y.

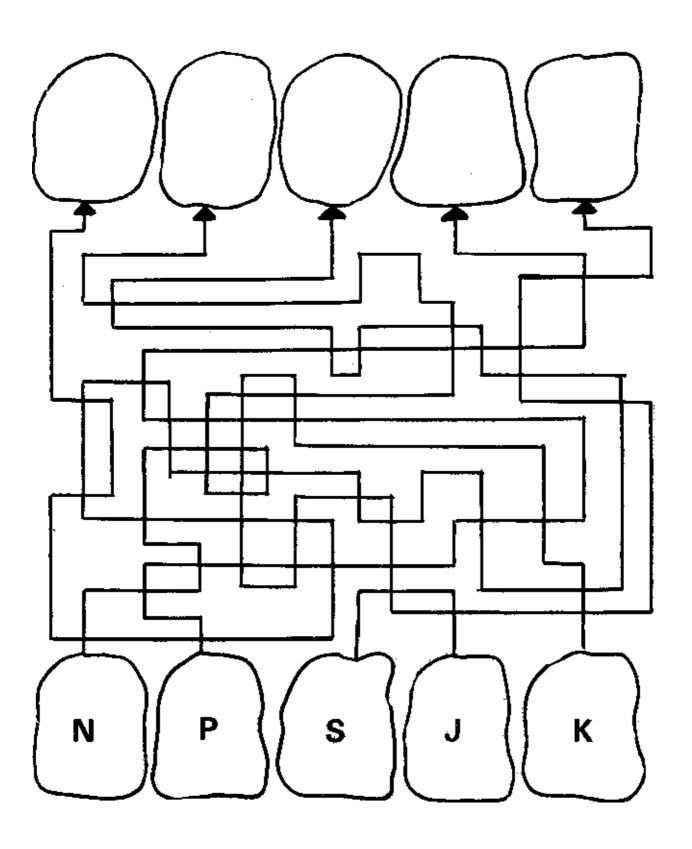
51. You will know whether the children can do this on their own or not. If they cannot then you help them by writing similar sentences on the blackboard.



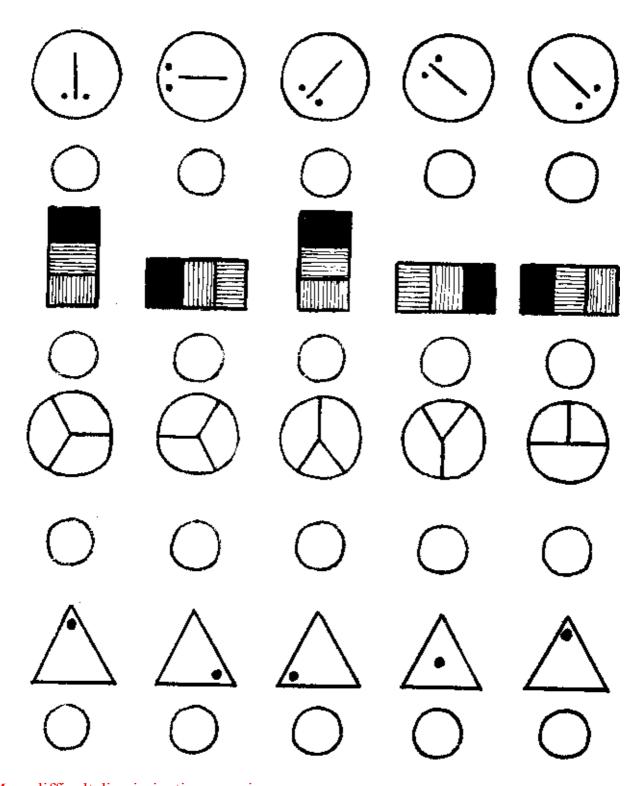
52. Odd-man-out, more difficult this time. Those who finish early can make more odd-man-out puzzles of this kind and try them on their friends.



53. More difficult patterns.



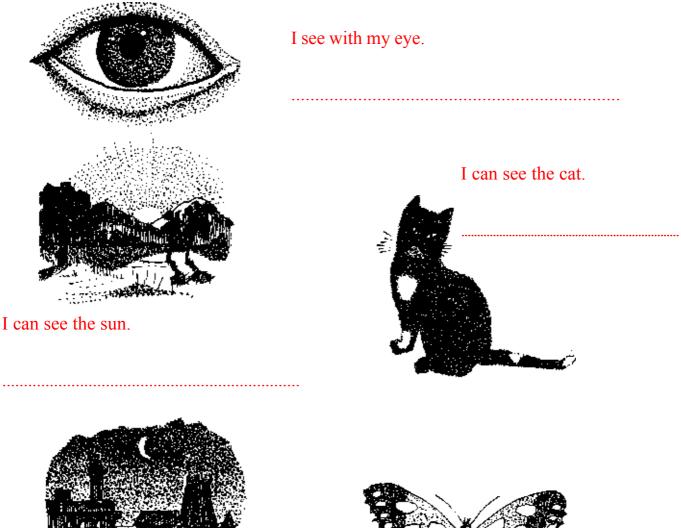
54. Letters to be written, for the first time, in the spaces provided. If children have learnt all the letters they can make up similar puzzles and give them to their friends.



55. More difficult discrimination exercises.

	I hear with my e	ear.
	I can hear a dru	m.
I c	an hear cymbals.	
I can hear the rain.		I can hear a bird.

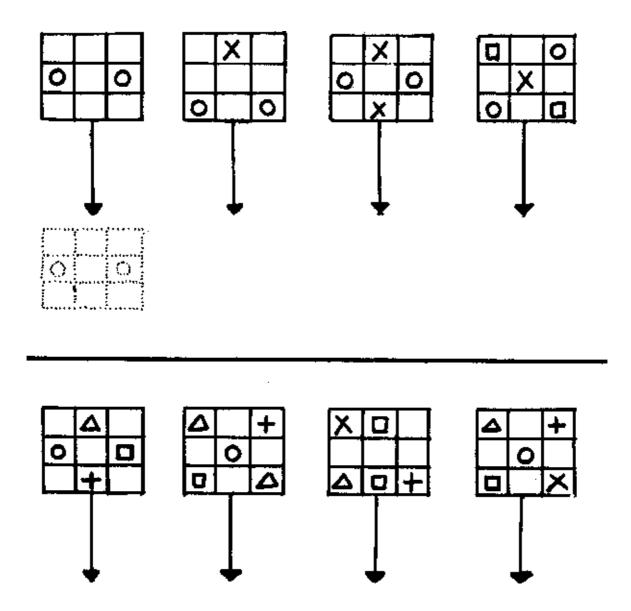
56. Ask the children to look at the page, then read it aloud and get them to read it. Perhaps some of the children in the class can imitate these or other sounds. Get them to try making the sounds which animals make — dogs, ducks, chickens, etc. Then get them to copy the sentences into the spaces provided.



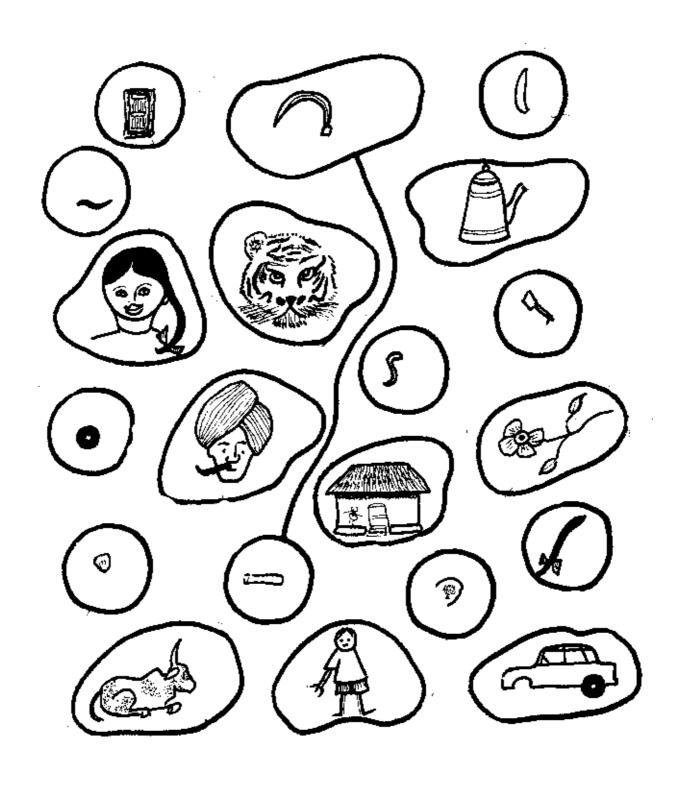
I can see the moon.



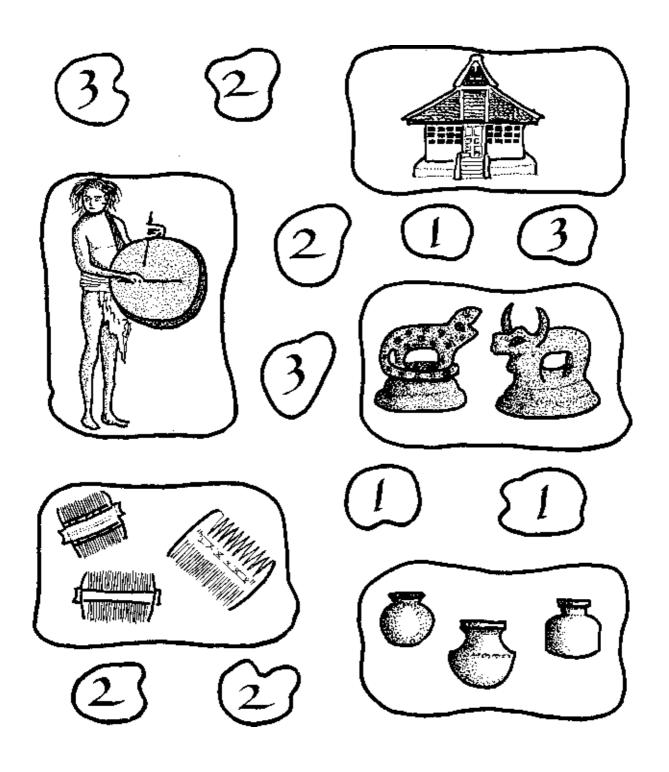
57. Follow the procedure for page 56. What can children see out of the classroom, what can they see at night and what can they see from a distance? Ask plenty of questions before the children copy the sentences in the book.



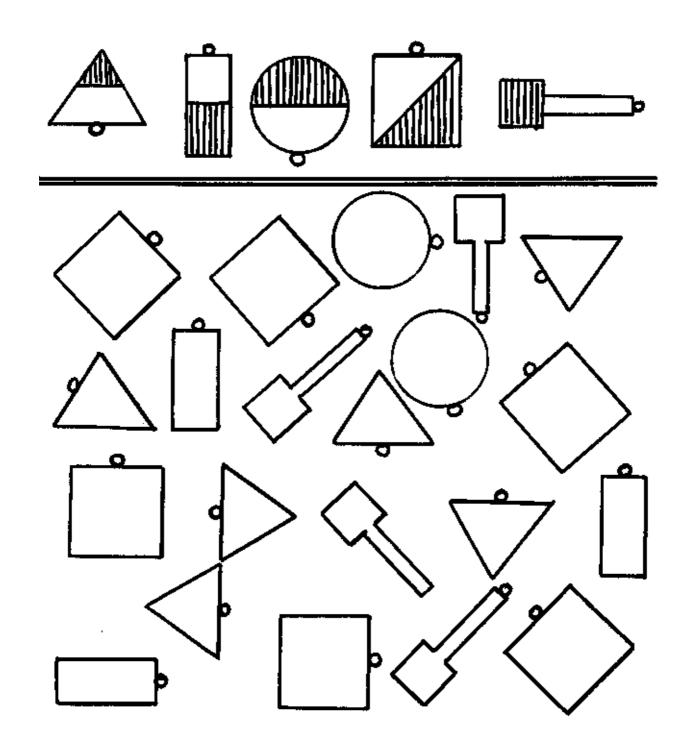
58. More difficult spatial relationships. If the children find these too hard you will have to draw some easier ones on the blackboard. Get the children to work on these before they start work on the page.



59. Join bits to wholes see page 13.



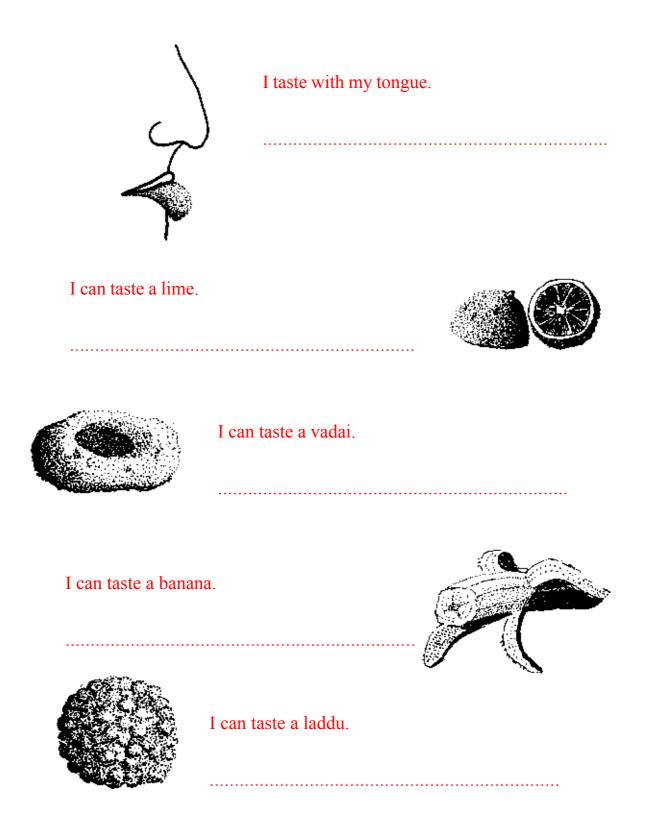
60. The symbols for the numerals introduced for the first time.



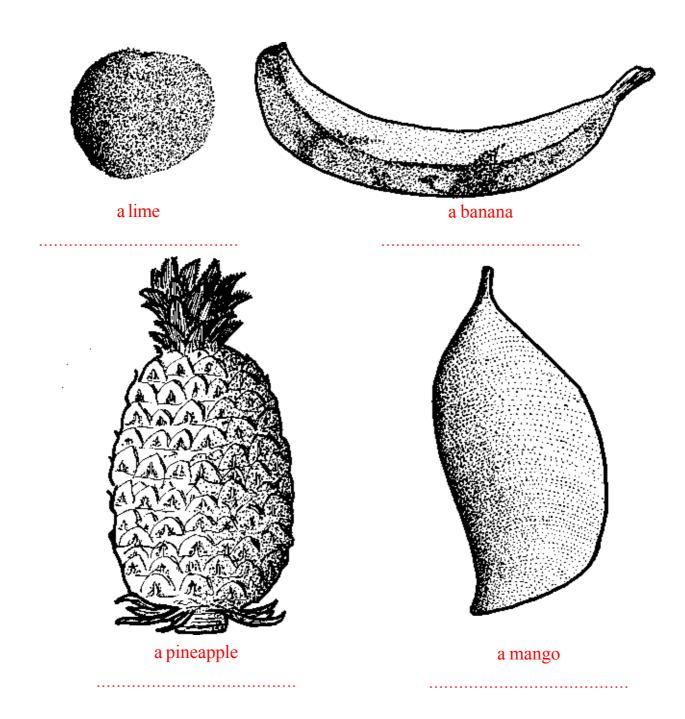
61. More difficult shading exercises. In this exercise some of the figures are rotated. Children should be shown that the figures are the same even if they are not upright.

I smell wit					
		I can smell			
	I can si	nell a mango.			
can smell an oni					
			I can smell a	flower.	

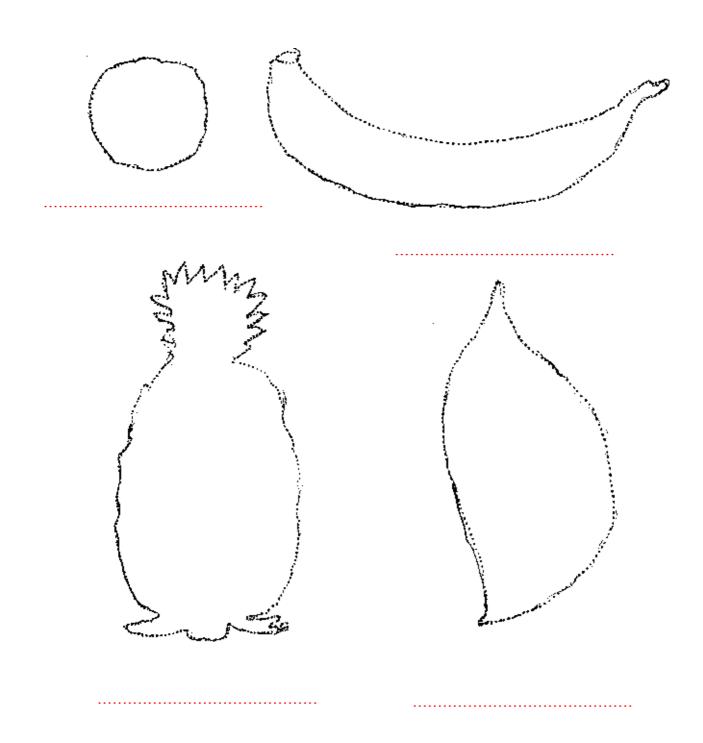
62. Talk about various smells before the children do the work on this page. Get them to tell you which smell they like, which they don't, how many smells they can remember. Can they all tell what is being cooked before they actually see it? Then get them to write the words in the spaces provided and copy the pictures on their slates or notebooks. (See also Appendix II for more work on smells.)



63. Deal with this in the same way as you did with page 62. Plenty of questions are necessary before children write on the page.



64. Talk to the children about different kinds of fruit which are available. Perhaps you could tell them something of fruits which are not available and which they have never seen. Then get them to trace over the dots on page 65 and write in the names of the fruits.



65. See page 64 for instructions.

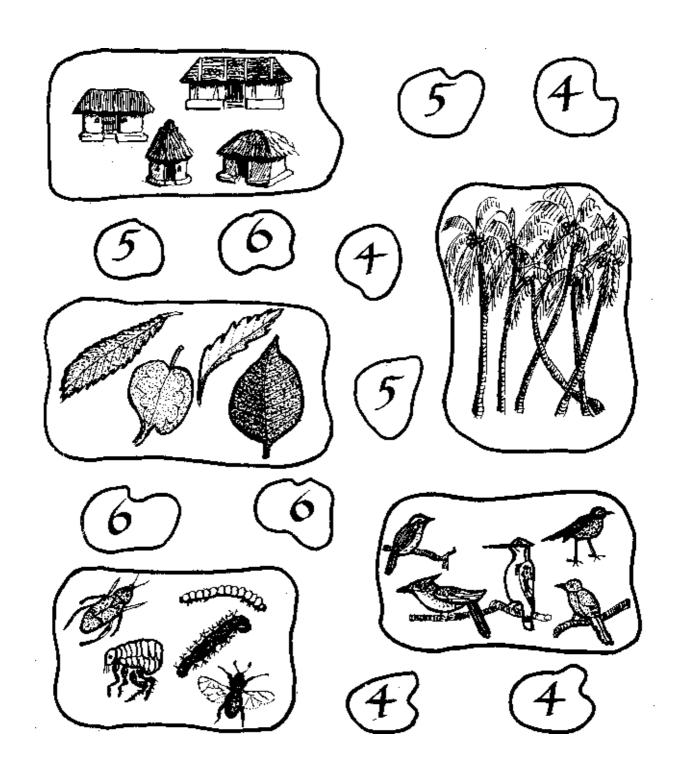




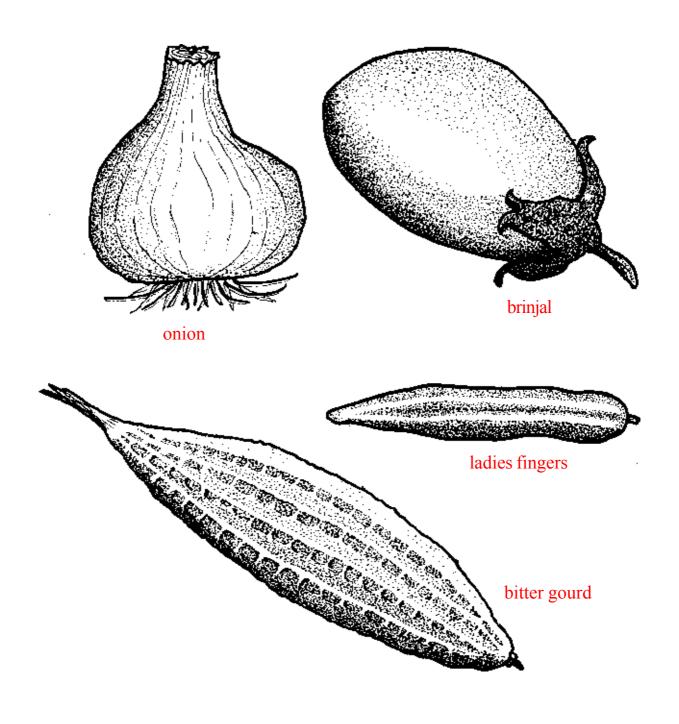
I can feel wood.	

 $\lambda(a^{(1)}, a^{(1)}) = \lambda(1/2) \sqrt{\lambda(a^{(2)})^2 \left(a^{(2)} + a^{(2)} \right)}$

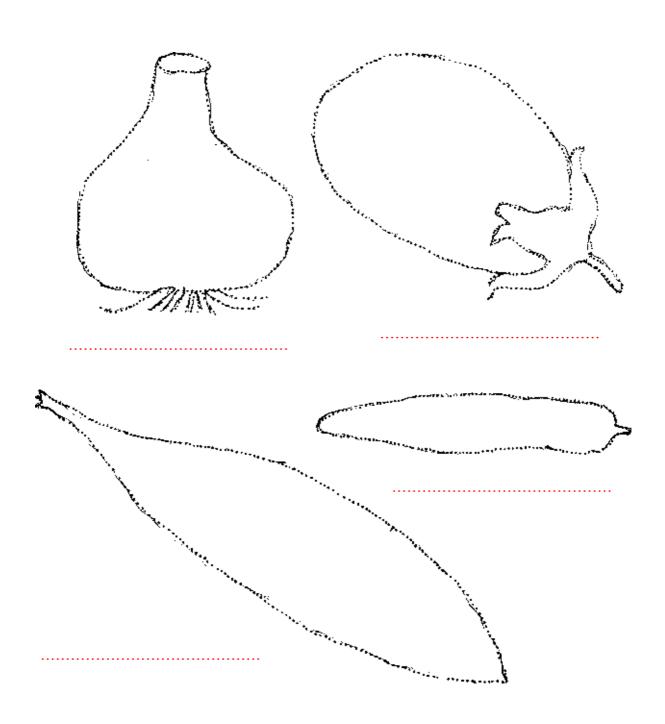
66. Talk to the children about feeling, especially with their fingers and toes. Ask them what kind of surface they like to walk over. Then get them to give you some words used when they feel things, e.g. hard, soft, and smooth, etc. Then get them to write the sentences on the page. The hand at the top is copied from Michelangelo.



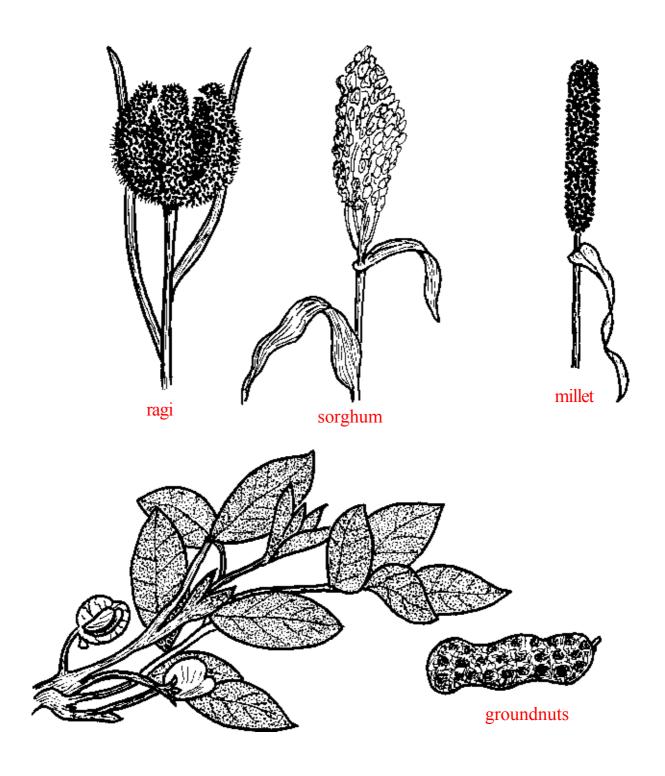
67. Numerals 4, 5 and 6.



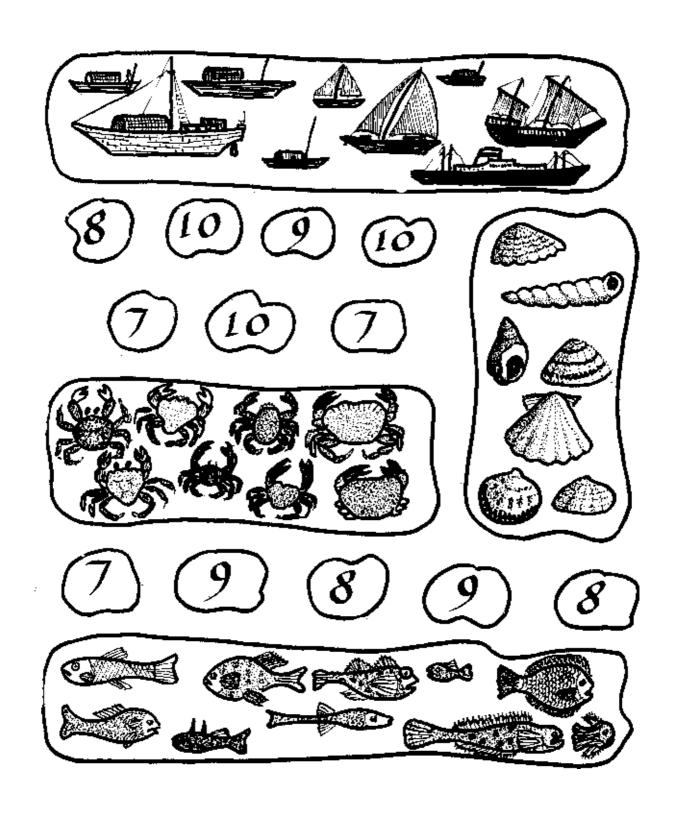
68. Instructions similar to those on pages 64 and 65.



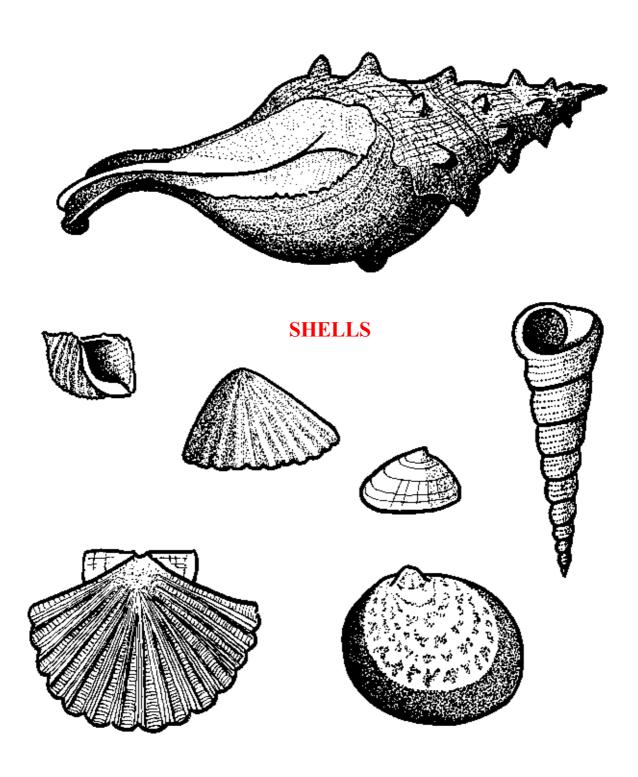
69. Same instructions as on page 68.



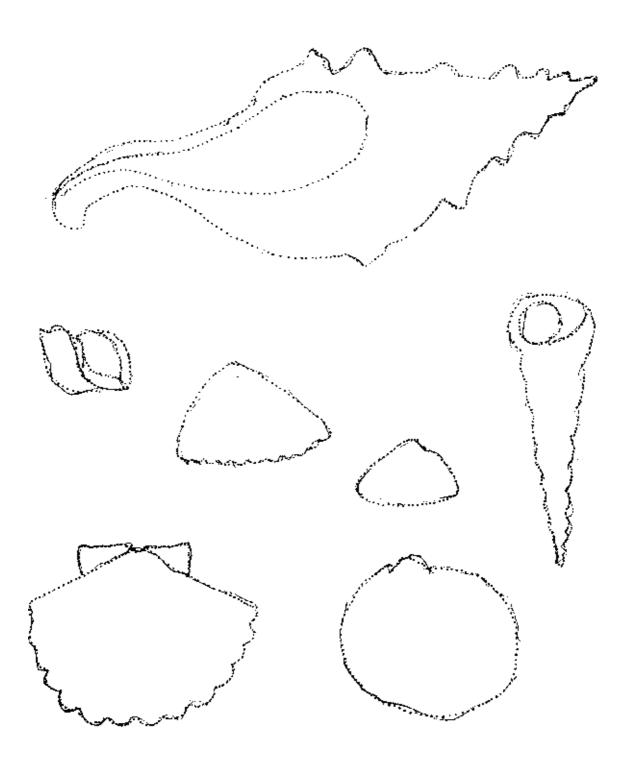
70. Talk to the children about various crops which are grown near your school and perhaps, about other crops which are grown in different parts of the country Get them to bring you samples of seeds of some crops when they come to class next day,



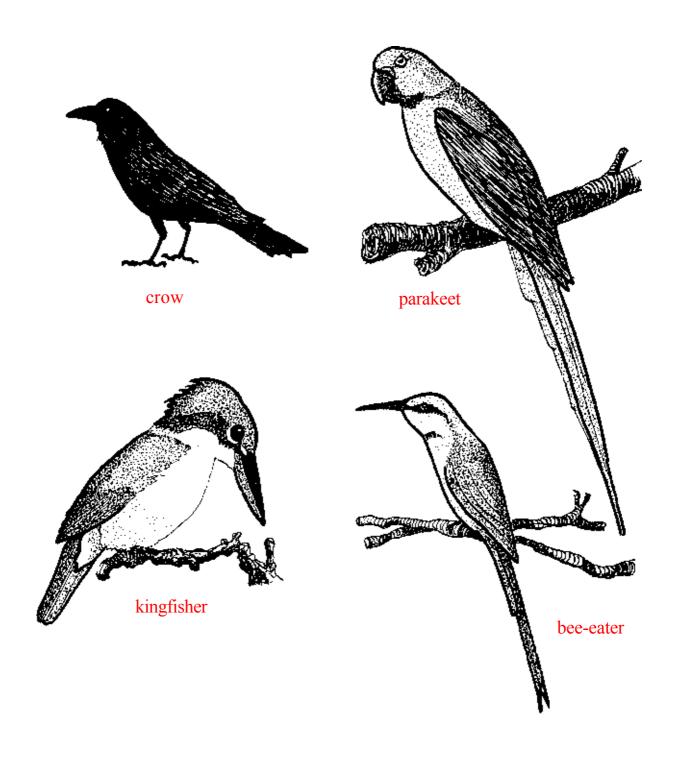
71. Numerals 7, 8, 9 and 10.



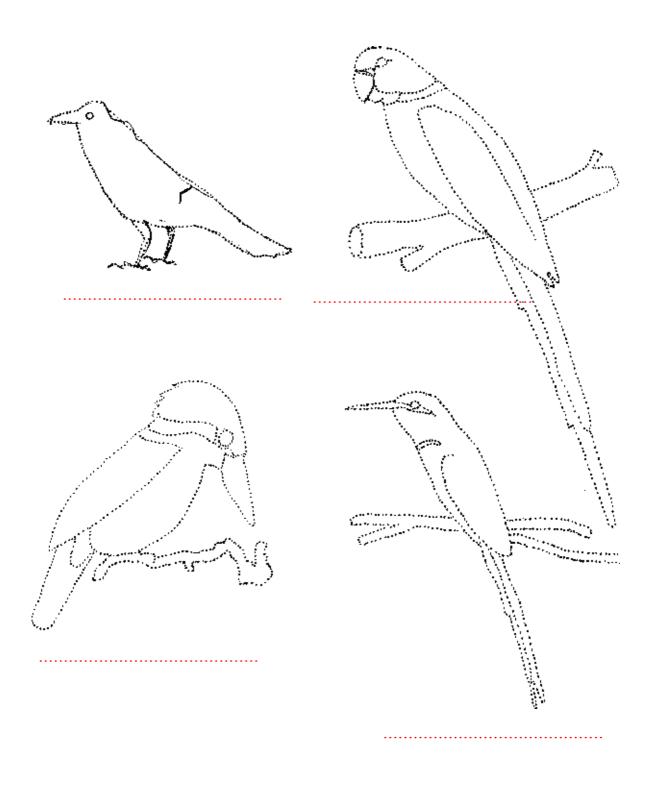
72. Talk to the children about shells, and, if you live near the sea, get the children to collect some. Show them coloured pictures if possible. Then get them to trace over the lines on page 73.



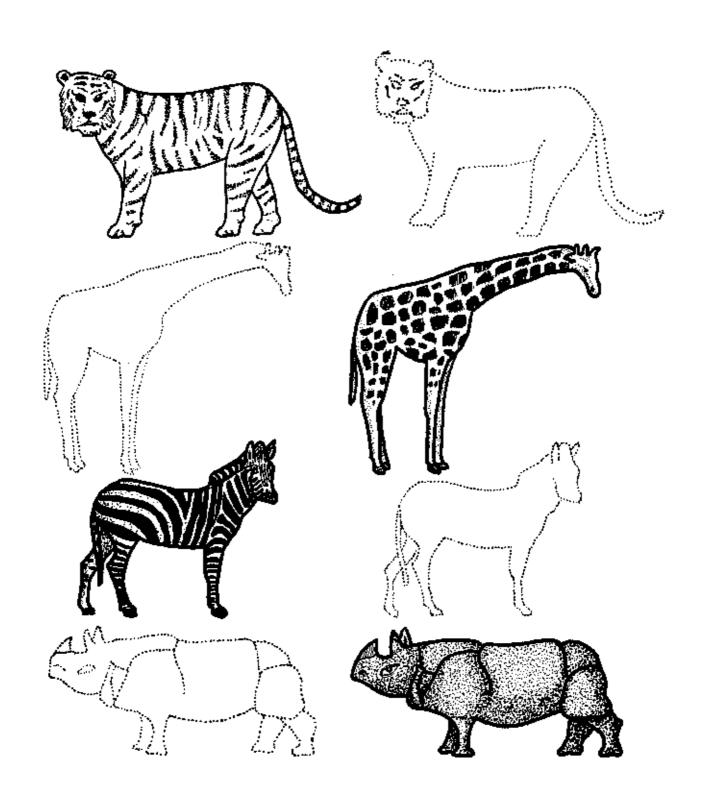
73. See instructions on page 72 and ask the children to complete this page.



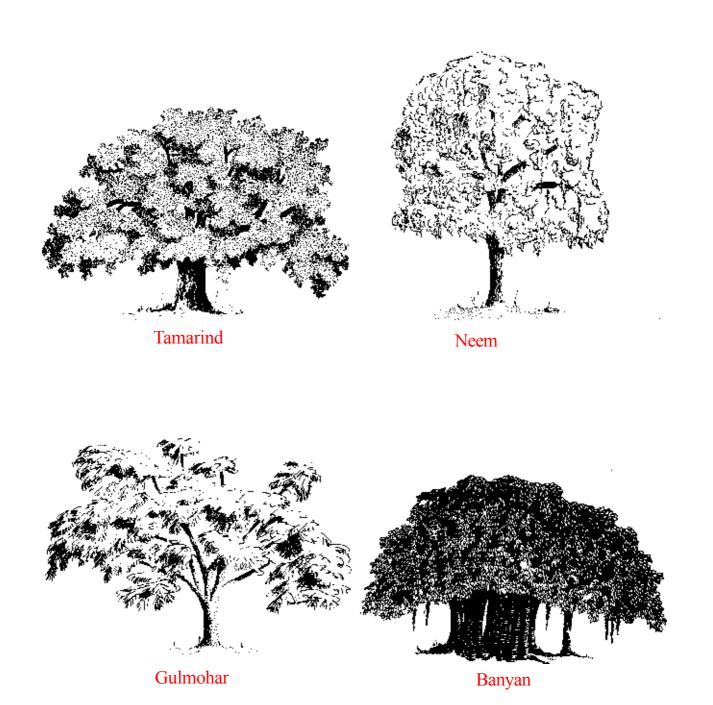
74. Ask the children about birds they see on the way to school or near their homes. See if they recognize any birds shown on the page. See if they can describe in detail other birds they may have seen. Then get them to trace over the dots on page 75 and write in the names of the birds.



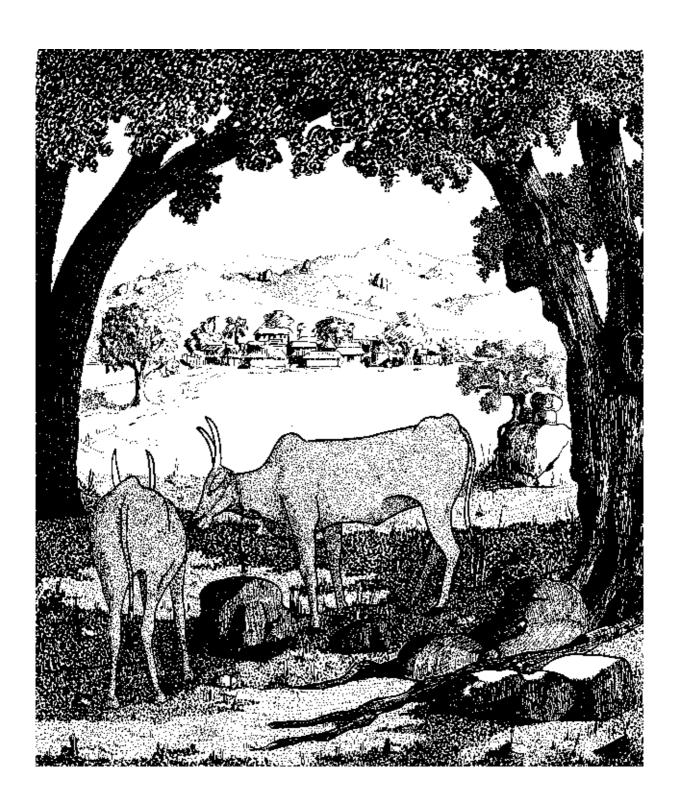
75. See page 74 for instructions.



76. Talk to the children about animals that they may have seen and also animals which they can see in their own environment. Then ask them to look at the rather strange animals on this page. Tell them all about each animal and get them to trace over the dots and complete the pictures (tiger giraffe, zebra and rhinoceros).



77. See if the children know the names of any trees in their environment. See if they can describe the leaves, the fruit and the flowers. Perhaps you can get them to make a collection of leaves from trees they know the names of. Then tell them the names of the trees on this page.



APPENDIX I

Clay: If you have a potter near your school you ought to be able to persuade him to let you have some clay for the school occasionally. If you ask him nicety he will probably mix it for you ready to use. Otherwise you may have to mix it yourself, if you can get dry clay. If you are making pottery for firing in kilns, mixing clay is one of the most important parts of the whole process and has to be done very carefully. However, the children are only going to use the clay for making models which may not be fired in a kiln and so the mixing need not be done so carefully. Hit the lumps of clay with a hammer or a piece of wood until you have broken up all the clay into very small pieces. Then pour some water over it, not too much, and leave for a few hours. Mix it up as though you are mixing dough for chapattis. Before using it the children should mix it again themselves. If you find this difficult you may be able to get the potter to come to the school and demonstrate the mixing of clay for you and for the children.

Paste: Paste is easily made by mixing *maida* flour with water. Mix the flour into the water until it gets the consistency of thick curds. Then put the vessel containing the mix over a fire and let it simmer for about five minutes; it should not boil too fast. It is ready for use as soon as it cools. This paste can be used for sticking card and paper together, for sticking flowers and leaves into books and for making paper chains etc. If you want to improve its keeping quality you can mix in a little oil of cloves.

Colour: If you have any money the best paints to buy are poster paints, sold in small pots; but they are expensive. The next alternative is to buy powder .colours. There are two kinds. There are pale powders used for mixing into whitewash to make it into a colour-wash. There are also powder colours used by ladies to put on their foreheads. Do not mix these powders with water but mix them with paste. If you are giving individual children colours, the best things to put them in are the small earthen lamps (deepas) which are sold at Diwali time; but any other containers such as tins, bottle tops, leaves or even pieces of paper, can be used if you cannot buy lamps. The young children you have in your class are not expected to have brushes, but if they can buy their own brushes they will be very useful for a variety of jobs.

Cardboard: You will sometimes need to use cardboard in the class; for example, on page 21 you are asked to make snap cards. If you have funds for buying cardboard, buy the large sheets of coloured card used for making file covers. If you cannot obtain or afford this kind of cardboard, you can make your own. You can make serviceable cardboard, by sticking old cigarette packets together or old post-cards. They can then be covered with white paper. If you are not able to collect old cigarette packets, the children can collect them for you. If there are no cigarette packets you can make quite good cardboard by sticking layers of paper, (old newspaper, for example) one on top of the other, with paste until the required thickness is obtained.

APPENDIX II

Card Games: The cards shown in the book on page 21 can be used for a number of games. Here are two of them:

A. Snap: This game can be played with from two to four players. An equal number of cards is given to each player. Each player keeps them face downwards in front of him. The first player turns up a card and puts it in front of his pack. Next, the second player does the same. If the two cards are the same the players should shout Snap. Whoever shouts first takes them both and adds them to his pack, at the bottom. Then the next player puts a card down, and so on round the circle. A player can only say Snap if the card that he turns up is the same as the last card turned up by the player on his right. Whoever collects all the cards at the end is the winner.

B. Pelmanism: The cards are well mixed and placed face-downwards on the floor. No card must be covering another card. Up to five players can play, and they sit in a circle round the cards. The first player turns up one card and then another card. If they are the same he keeps them and turns up two more. If they are not the same he turns them over again face downwards in exactly the same places as they were in before. He must not put them down in any other place on the floor. Then the next player has a turn and turns up two more cards. Of course the skill in the game depends on the child's ability in remembering which cards have been turned up, so that, for example, if he turns up a square with his first card he can remember that somebody else turned up a square some little distance away. If he can remember exactly where it is he can turn up the second square and take up both the cards.

Smells: A game for practising smelling can easily be made as follows. Get some small bags of plain cloth. You can sew these up by yourself or get the tailor to do so. Into each bag put a few pieces of something that smells strongly pepper, cardamom, garlic or whatever you like. Tie-up the bags securely. The bags can then be put on the table with a number by the side of each. Children can then try to guess what is in each bag. tt is better to write the numbers on separate slips of papers; if the numbers are written on the bags children are sometimes able to remember the numbers rather than the smells.