

MUDCRACKS

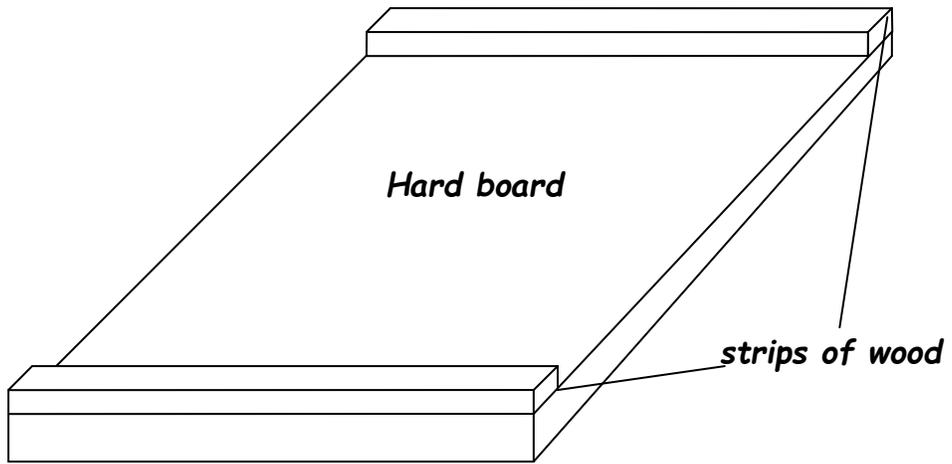
Purpose

To study the formation of mud cracks, to determine what controls their size and to see how modern mud cracks compare with fossil ones.

Instructions

- 1. Select a board and measure the depth that the clay will occupy. This is the same as the thickness of the strip of wood on the side.*
- 2. Place some mud on the board and roughly level it with the trowel.*
- 3. Level the mud by resting the piece of wood on the side strips and pulling it over the clay. Fill in any holes and add more clay if necessary so that the clay covers most of the board.*
- 4. Examine the clay at intervals to see how the cracks develop. Photograph or sketch the pattern.*
- 5. Once the clay has dried photograph or sketch the pattern of cracks.*
- 6. Measure the number of cracks per 20cm in several places and average them.*
- 7. Look and make an estimate of the number of cracks meeting at each intersection and the angles between those cracks.*
- 8. Compare your results with students who used different boards.*
- 9. Compare your patterns with photographs of fossil mud cracks.*

Board for putting clay on



Teachers' Section

Requirements

Mud. This can be natural or can be made from cat litter. If the latter add equal weights of water and cat litter and mix well. Leave for 30 minutes and stir again so that it is a smooth paste.

Boards Two boards 40cm by 40cm with strips nailed to opposite edges of the top surface. The strips should be 2cm thick on one board and 1cm thick on the other.

Two boards 25cm by 25cm with strips as above but 3mm and 6mm thick.

4 pieces of wood for levelling 5cm by 1cm , two (for the larger boards) 50cm long and two (for the smaller boards) 35cm long.

Plasterer's trowel.

Stool

Photographs or examples of fossil mud cracks.

Notes

Shallow trays can be used instead of wooden boards. Students should wear old clothes or lab coats and the surfaces should be covered with newspaper as filling the boards can be a bit messy.

It is often best to photograph the mud cracks with a scale and let students measure enlargements of the photograph.

Results

The deeper the mud the larger the mud cracks. The cracks are V shaped and pieces of clay tend to curl up so that they are concave. Some fossil mud cracks show an almost hexagonal pattern. Neither I nor my students have ever reproduced this. It is now known that the hexagonal pattern only develops at depth and the top more irregular layer must be eroded before the hexagonal pattern is exposed.

Thick mud often has two sets of cracks, a smaller thinner set of cracks surrounded by larger ones.

Time

Setting up tray 10 minutes. Measuring and comparing about 30minutes.