

# IMBRICATION

**Purpose**

To determine the effect of water movement on the arrangement of flat pebbles. To use this information to deduce the direction of water flow in sedimentary rocks.

**Instructions**

**Activity I**

1 Set up a table like this

Run no.	Dipping upstream	Dipping down stream	vertical	horizontal	Sloping sideways
	Water flow -> Pebbles ///	Water flow -> Pebbles \\\			
1					
2					
3					
total					

2 Place the counters in the end of the trough.

3 Fill the jug with water and pour it quickly into the top of the trough above the counters.

4 Count the counters and fill in the table. Make sure that you are clear about which are dipping upstream and which are dipping downstream. It is easy to confuse the terms.

5 Repeat instructions 2 to 4 two more times.

6 Draw your conclusions.

**Activity II**

1 Mark the long axis of 30 pebbles on the photocopy.

2 Copy and fill in this table and make a tally of the direction of dip of the pebbles.

Dipping left	horizontal	Dipping right
--------------	------------	---------------



**3** *Deduce which way the water was flowing.*

## **Teacher's Section**

### **Requirements**

***A piece of flat bottomed guttering at least 1m long with a stop end  
20 or so counters about 1cm diameter***

***1 litre jug***

***Block of wood about 10cm by 5cm by 5cm to support end of guttering  
Sink.***

***Tray under upper end to catch splashes.***

***Photocopy of a block of breccia showing imbrication.***

### **Making the equipment (10 minutes)**

***Cut a piece of flat bottomed guttering 1m long and fit a stop end to one  
end. Cover the bottom of the inside with Unibond glue and press pebbles  
into it. The pebbles should be the same size as the counters.***

### **Notes**

***Students must use diagrams both in their hypotheses before the  
experiment and in their results to make it quite clear how the slope of  
pebbles relates to the direction of water.***

***The evidence derived from this experiment can be confirmed by looking in  
the banks or bottom of any stream carrying tabular pebbles.***

***This activity is useful to do before looking at breccias and conglomerates.***

### **Results**

***Ignoring those dipping sideways or vertical or horizontal 95% or so of the  
remainder should be dipping upstream.***

### **Time**

***20minutes***

### **Cost**

***Guttering £8 for 2m***

**Imbrication (slope is exaggerated)**

