



## BALANCE ROD.



**STAND** the rod on the floor.

What do you notice when you let go of it?

**BALANCE** the rod on your hand with the weight well up.

How long can you manage to hold it upright?

**REPEAT** the experiment with the weight lower down.

What do you notice?

When set up vertically and let go, the rod simply tips over: it is unstable and cannot maintain its balance.

However if it is on your hand, you can counteract any movement of the rod by many slight movements of your hand – a dynamical maintenance of equilibrium. So the art of balancing is a contest between your speed of reaction and the inertia of the rod: the faster and more practiced you are, the longer you can keep the rod in equilibrium.

The centre of gravity of the rod plays an important part: the further up the rod the weight is, the greater is the moment of inertia of the rod for rotating about the base, so the slower the rod tends to rotate out of its equilibrium position, giving you more time to correct the movement of the rod.

