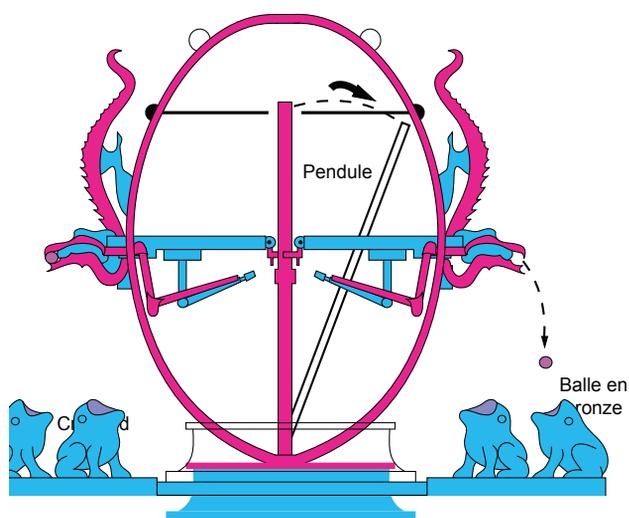
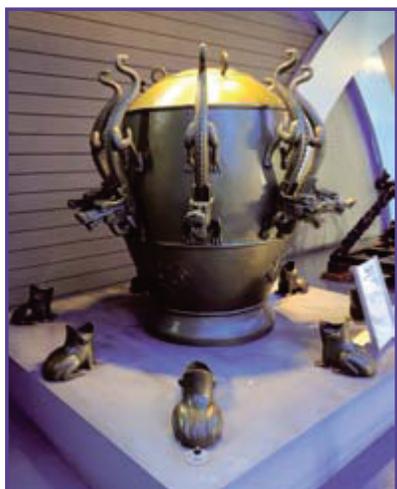


### The invention of the seismograph

From year the 92 AD to year 126 AD, China experienced a number of earthquakes which caused a lot of damage and deaths. In 132 AD, the Chinese mathematician and philosopher Zhang Heng invented an instrument intended to detect earthquakes and to allow him to study them. Zhang Heng had built the first seismograph.



This instrument resembles a large bronze vase with a diameter of 1.83 m. On the upper part, on the outside, eight dragons each hold a ball in their mouth. They are oriented in the eight main cardinal directions (North, South, East, West, Northwest, Northeast, Southwest and Southeast). Under each dragon head is a bronze frog with its mouth open.

#### How does this seismograph function?

During an earthquake, a pendulum inside the vase begins to oscillate and pushes a lever which causes the mouth of one of the dragon heads to open: this dragon releases its copper ball. The ball then falls into the frog directly below.

The sound produced by the metal ball indicates that a vibration has taken place... and the dragon which lost its ball indicates the direction of propagation of the seismic wave. However, this seismograph does not to determine the distance nor the intensity of the earthquake.

In 138 AD, Zhang Heng's seismograph is said to have detected, from the town of Luoyang where the instrument was located, the earthquake which destroyed the town of Longxi, 500 km away.

#### And now?

Today, throughout world, scientists use electronic seismographs which record the vibrations on a computer. The recordings enable the calculation of the energy released by the earthquakes (its "magnitude") and, if several recordings are made at different places, combining them can locate the earthquake very precisely.

