

Waterwheel / Flowing Water / Water Gun

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■Purpose of Exhibition

Water on the ground evaporates and turns into vapor. It soars upwards and makes clouds in the sky. Over time clouds are transformed into rain (water), which returns to the ground and pours into the ocean. Water circulates on the earth. In this "Exploring Water" exhibition, you can deepen your knowledge about this big circulation and characteristics of water through various experiments. We will explain three exhibits in this "Ocean Stage".



■Additional Knowledge

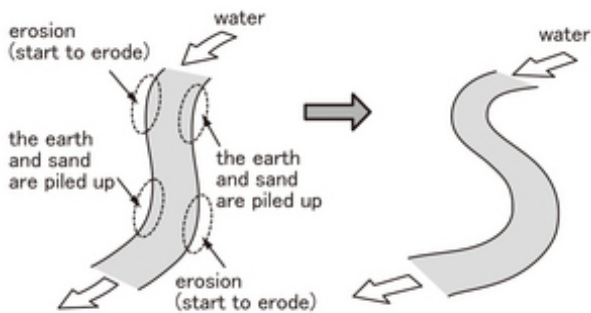


Fig. 1 River curve is gradual

Fig. 2 River curve is rapidly

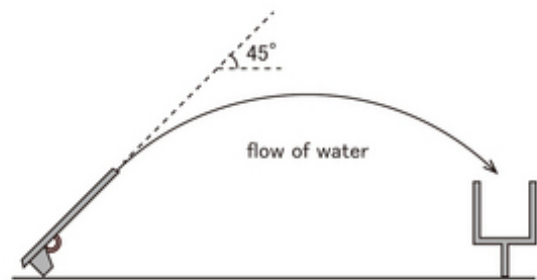


Fig. 3 Water Gun

[Let's Operate a Waterwheel]

The exhibit, "Let's Operate a Waterwheel" is installed in front of the big "Exploring Water" exhibit. Let's enter and rotate it. The big wheel starts to rotate slowly. The Archimedes' screw pump begins to move in accordance with the wheel rotation, and it's possible to pipe the water up and move a lot of devices.

The foot-operated treadwheel appeared in old documents in France in the 13th century. It was recorded as a machine that can lift heavy goods to higher ground when a person enters the treadwheel and makes it rotate. In other words, it was the power source of a crane.

[Have Fun with Flowing Water]

The purpose of this exhibition is to explore changes in the flow of water by putting various objects into the water current.

We tend to expect complicated flows. However, it is the same as in the natural world.

The water which flows through a river overflows during a flood, and the part of land in the area is called floodplain. The river that come through the floodplain and meandering through, as it were, makes many curves with little terrain change. The outside curve is flowing rapidly and subject to erosion. In another way, the inside flow is gradual, and the earth and sand which are carried from upstream are piled up. As a result, the curve

gradually becomes big (Figure 1). It takes a long time to become a complicated river.

[Water Gun]

Let's aim and shoot at the target with the water gun. You can hit the target from close range, but if you shoot at the target from a distant point, you should aim to shoot a bit higher. It is possible to throw the farthest distance by throwing out and up at 45° when throwing a ball. It is because falling motion is synthesized by the action of gravity. Similarly, in case of the water guns, because the water after shooting has additional downward force due to the gravity of water, pulling the trigger a little above the target is necessary (Figure 2).

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