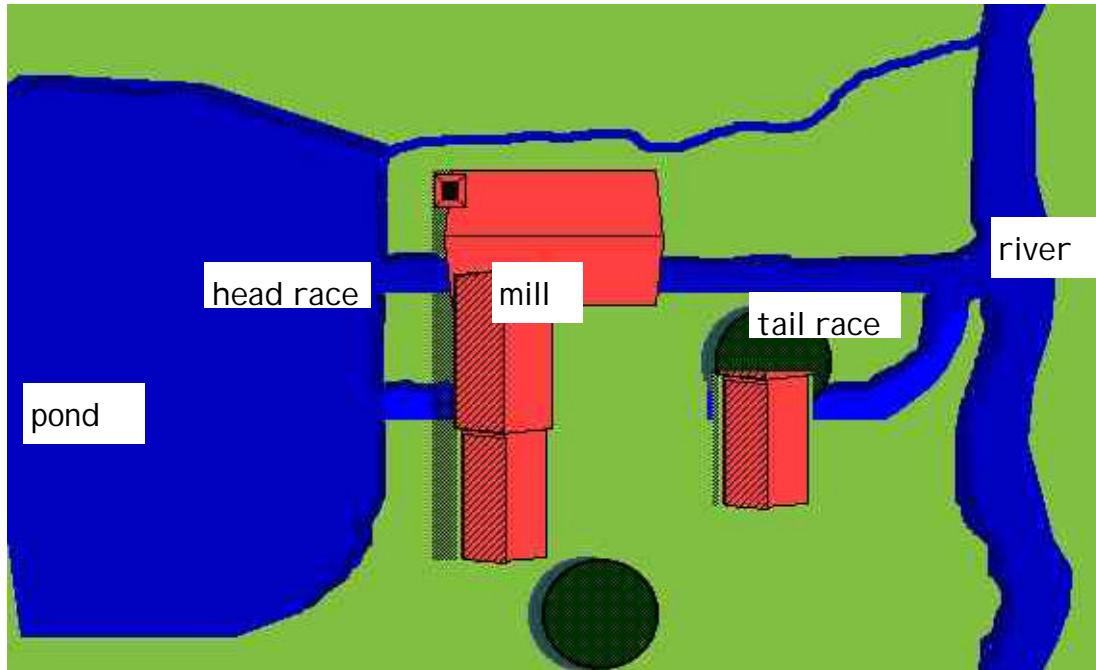


A plan of the mill and the pond



The **pond** is on the West side of the mill and the **River Cole** is on the East side.

When I open the **sluice gate**, water will flow out of the pond onto the top of the water wheel.

The **water wheel** will be turned around and the pond water will flow out of the mill on the east side down to the river.

Questions:

What do you call the place where the water is stored?

Which side of the mill is the river on?

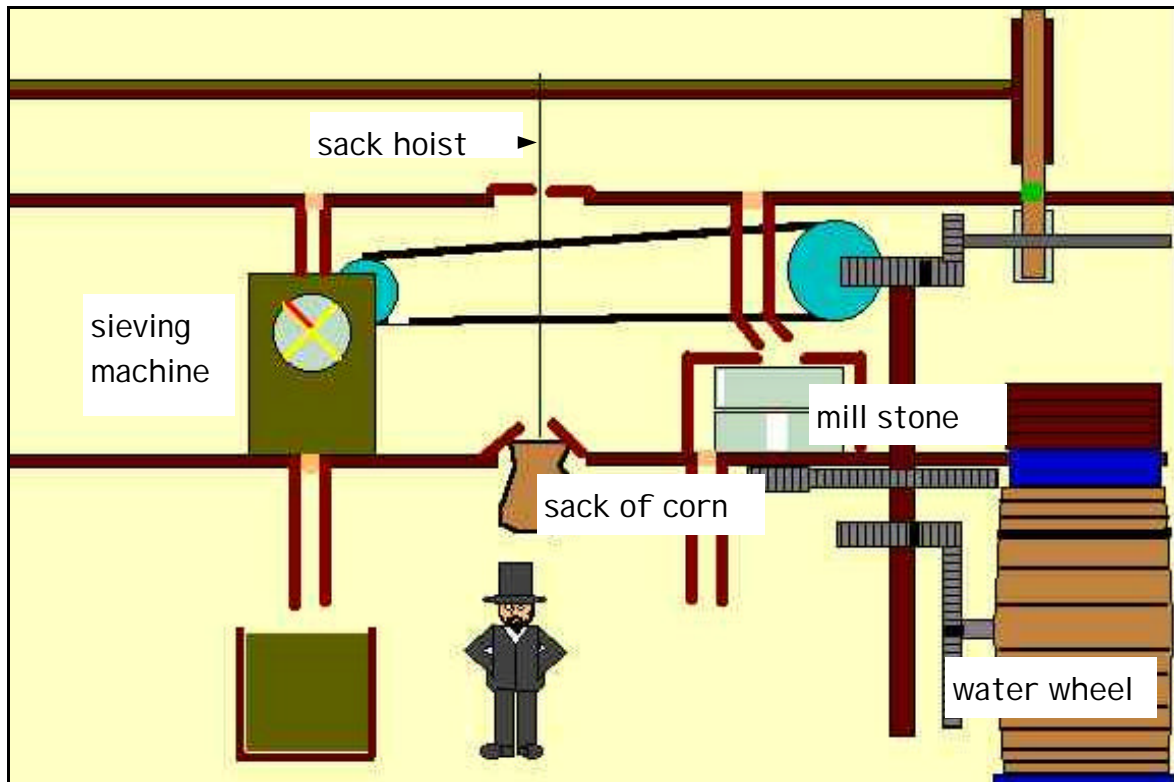
What is the name of the river?

What is the name for the channel that brings the water out of the pond to the water wheel?

a colour version of these sheets is available on the internet at:

www.schoolsliaison.org.uk/sarehole/literacy/index.html

How the Mill works...



Remember the two things that we do to the **corn** to turn it into flour?

First we **grind** it in the **mill stones**.

Then we **sieve** it in the **sieving machine**.

The **mill stones** and the **sieving machine** are both on the **middle floor** of the mill.

You have to take the sacks of corn up to the **top of the mill** first so you can pour the corn down into the **stones** or the **sieving machine** from the top floor.

Can you see the **chain** hanging down in the middle of this room? It's called a **sack hoist**. The miller used it to hoist sacks of corn up to the top of the mill.

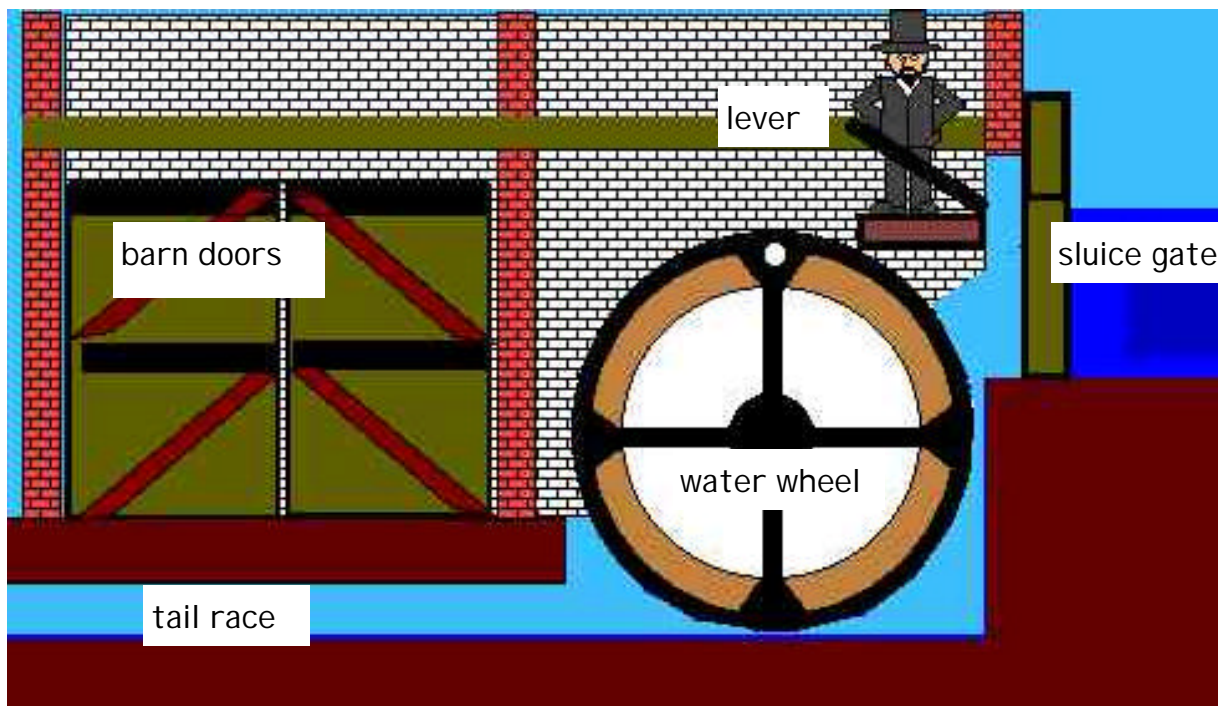
Questions:

What two things does the miller do to the corn?

What is the chain for?

Where does the energy come from to work the sack hoist?

Turning the water wheel



This is a picture of the miller starting the **water wheel**.

The wheel is the shape of a **cylinder** and it's made from **iron** and **elm** (a hard wood).

As you can see, the water in the pond is higher than the **tail race**. When he pulls up the **lever**, the **sluice gate** opens and the water pours out of the pond.

It's just like pulling the plug out of the bath!

It's the force of **gravity** that makes the water run downhill from the **pond** to the **tail race**.

As the water falls, it runs into **buckets** on the water wheel and the weight of the water pushing down on one side of the wheel makes it turn.

Questions:

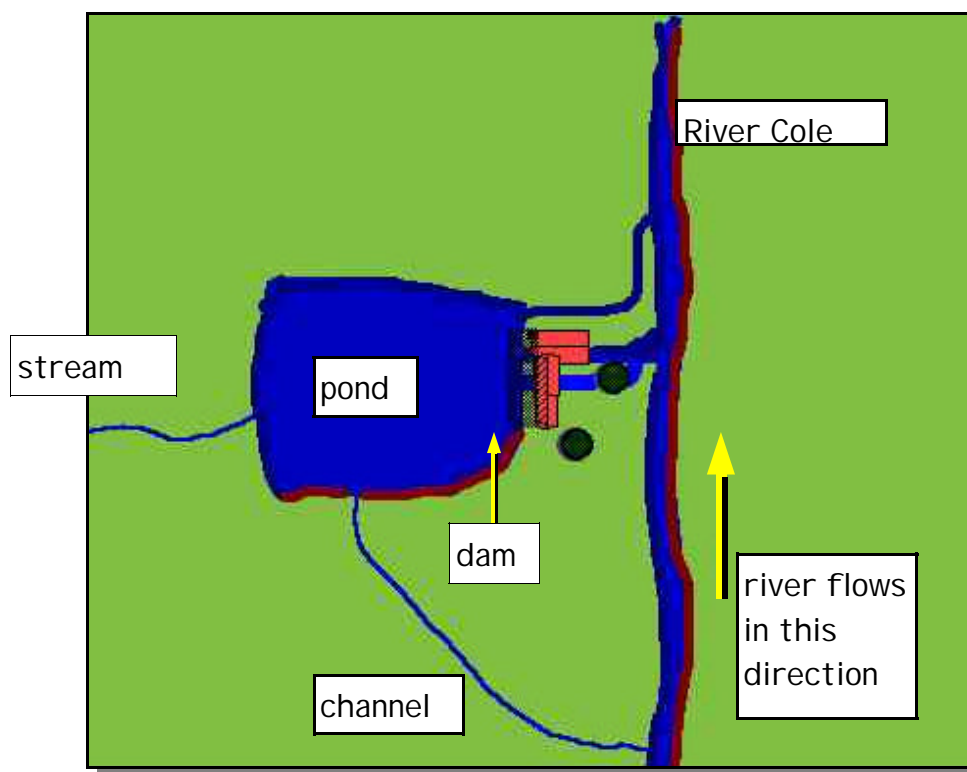
What's the force that makes the water fall downwards?

What's the mathematical name for the shape of the water wheel?

What do you call the parts of the wheel that catch the water?

What materials are the wheel made from?

How the mill gets its water...



In this picture, you can see how water gets into the pond.

Before the mill was built, there was a little **stream** called the *Cold Bath Brook* that ran into the *River Cole*.

The mill builders dug out a pond next to the stream to store the water for the mill.

The pond was lined with clay to make it **impermeable**.

At one end they built a **dam** and a **channel** to take the water to the water wheel.

They built the mill on the **east** side of the dam.

They dug another **channel** on the east side of the mill to join up the pond to the river.

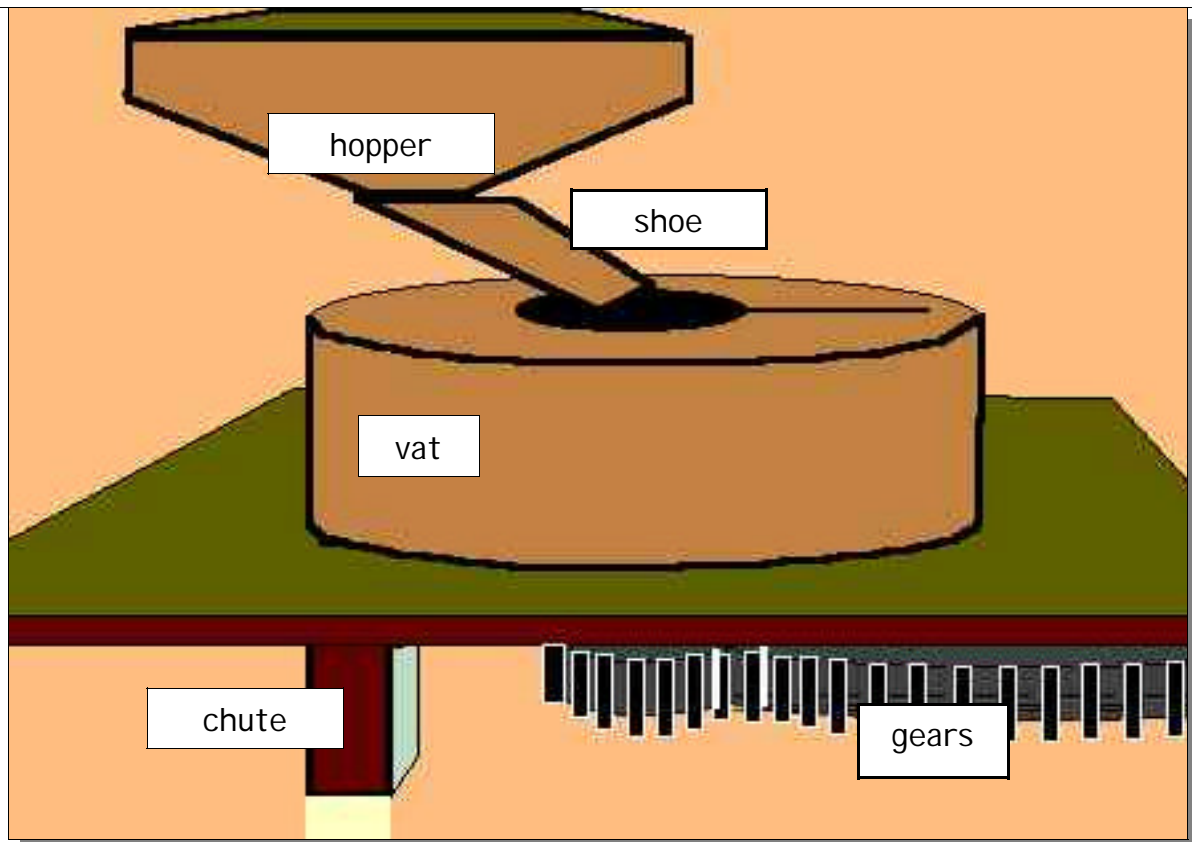
Then they **diverted** the stream into the pond

Years later, they dug a channel **upstream** to connect with the river to get more water.

Questions:

Which of these was made by humans? The river; the dam, the stream; the pond.

Mill stones part 1...



This is a mill stone.

The wooden part over the top is called a **vat**.

The miller pours the corn down from upstairs into the hole in the middle of the stone and it is ground up between the stones.

The **hopper** and the **shoe** guide the corn through the stone.

The **vat** and the **chute** guide the ground up corn down to the floor below. (Did I remember to tell you that the ground up corn is called **meal**?)

You can see how the **gears** turn the stones from underneath.

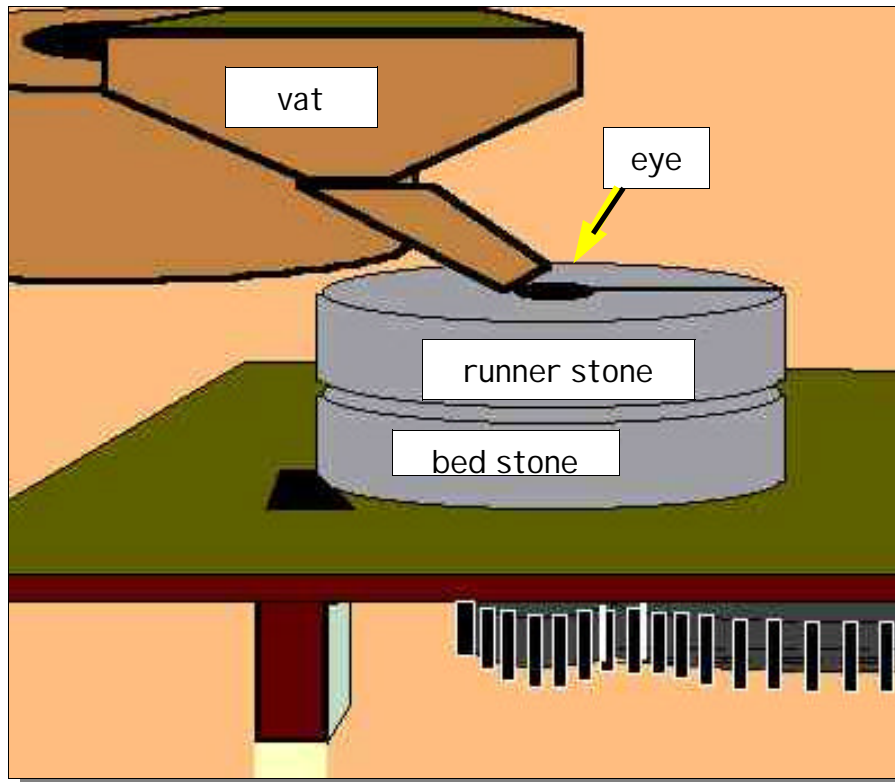
Questions:

Can you think of a word that ends in chute?

What would happen to the meal if there was no vat

What's the force called that causes the corn to pour down into the stone?

Mill stones part 2...



When you lift the **vat** off the stone you can see that there are two stones underneath.

The bottom one is called a **bed stone** and the top one is called a **runner stone**.

The hole in the middle of the stone is called an **eye**.

If you have a look at the bed stones over by the water wheel, you can see that they have **grooves** cut on them called the **stone dressing**.

The stone dressing is there to improve the **efficiency** of the stones.

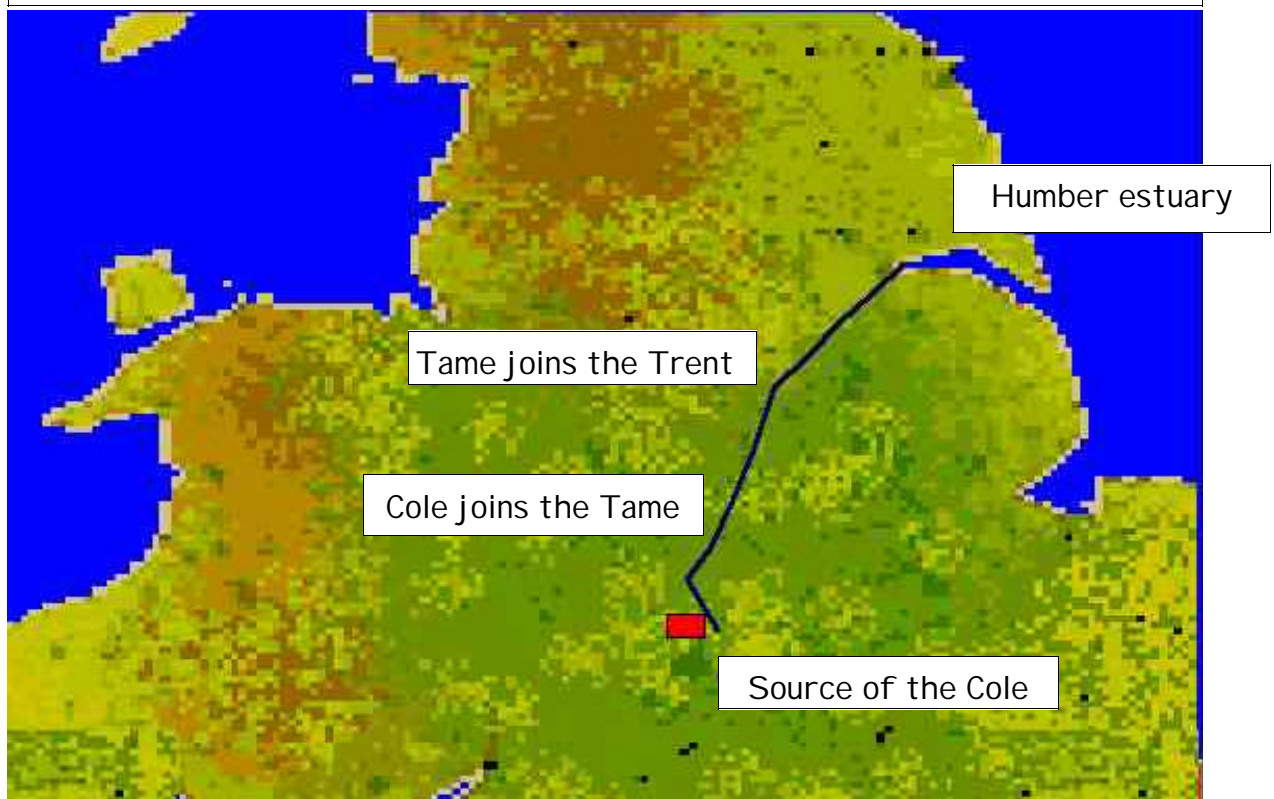
Question:

What does the word efficient mean?

Can you find a tool that the miller used to dress the stones?

How did they get the stones up to the middle floor?

The river system...



The **River Cole** starts about 3 miles from the mill. Its source is just a muddy **spring** in the middle of a field. The River Cole is only 27 miles long. It joins the **River Tame** and then joins the **River Trent** which flows North East into the North Sea at the **Humber Estuary**.

The Cole is a **tributary** of the Tame and the Tame is a tributary of the Trent.

Questions:

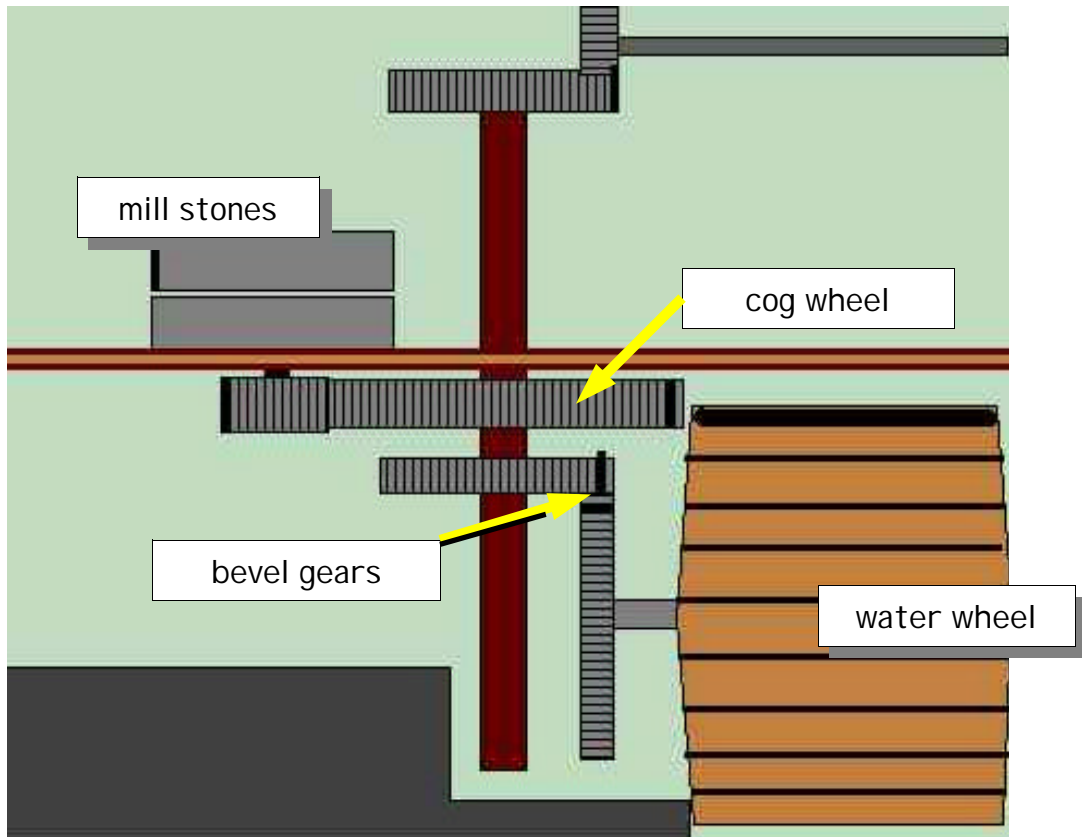
What do you call a small river that flows into a larger one?

What do you call a bend in a river?

What does **erosion** mean?

What is a river's **source**?

Gears



The mill uses **gears** to take the energy from the water wheel to the mill stones.

The gears with **wooden** teeth are **cog wheels**.

A cog wheel is a gear that has teeth that can be **replaced** if they wear out or break.

The water wheel turns slowly and one of the jobs that the gears do is to **speed up the energy** so that the stones can spin round at 120 r.p.m. (revolutions per minute)

The other job that the gears do is to **turn the energy round a corner** so that the water wheel can be **vertical** and the stones can be **horizontal**.

This is done with a special gear called a **bevel gear**.

Questions:

What two **materials** are the gears made from?

What's the name for a corner of 90 degrees?