

# Rivers - An Introduction

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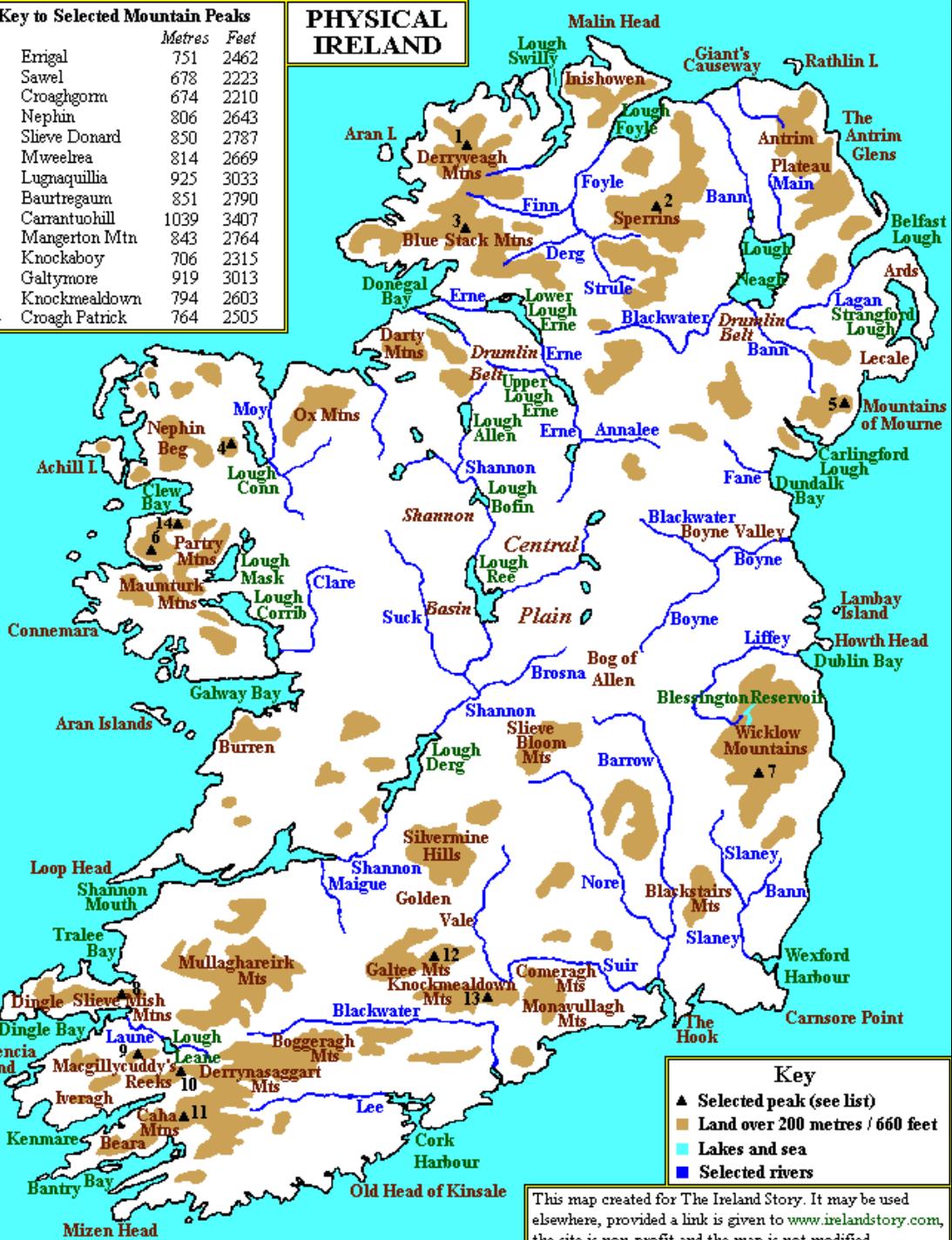
**Rivers**



**What is a  
River?**

		Metres	Feet
1	Erigal	751	2462
2	Sawel	678	2223
3	Croaghgorm	674	2210
4	Nephin	806	2643
5	Sieve Donard	850	2787
6	Mweelrea	814	2669
7	Lugnaquilla	925	3033
8	Baurtregaum	851	2790
9	Carrantuohill	1039	3407
10	Mangerton Mtn	843	2764
11	Knockaboy	706	2315
12	Galtymore	919	3013
13	Knockmealdown	794	2603
14	Croagh Patrick	764	2505

## PHYSICAL IRELAND



## IRELAND River Map

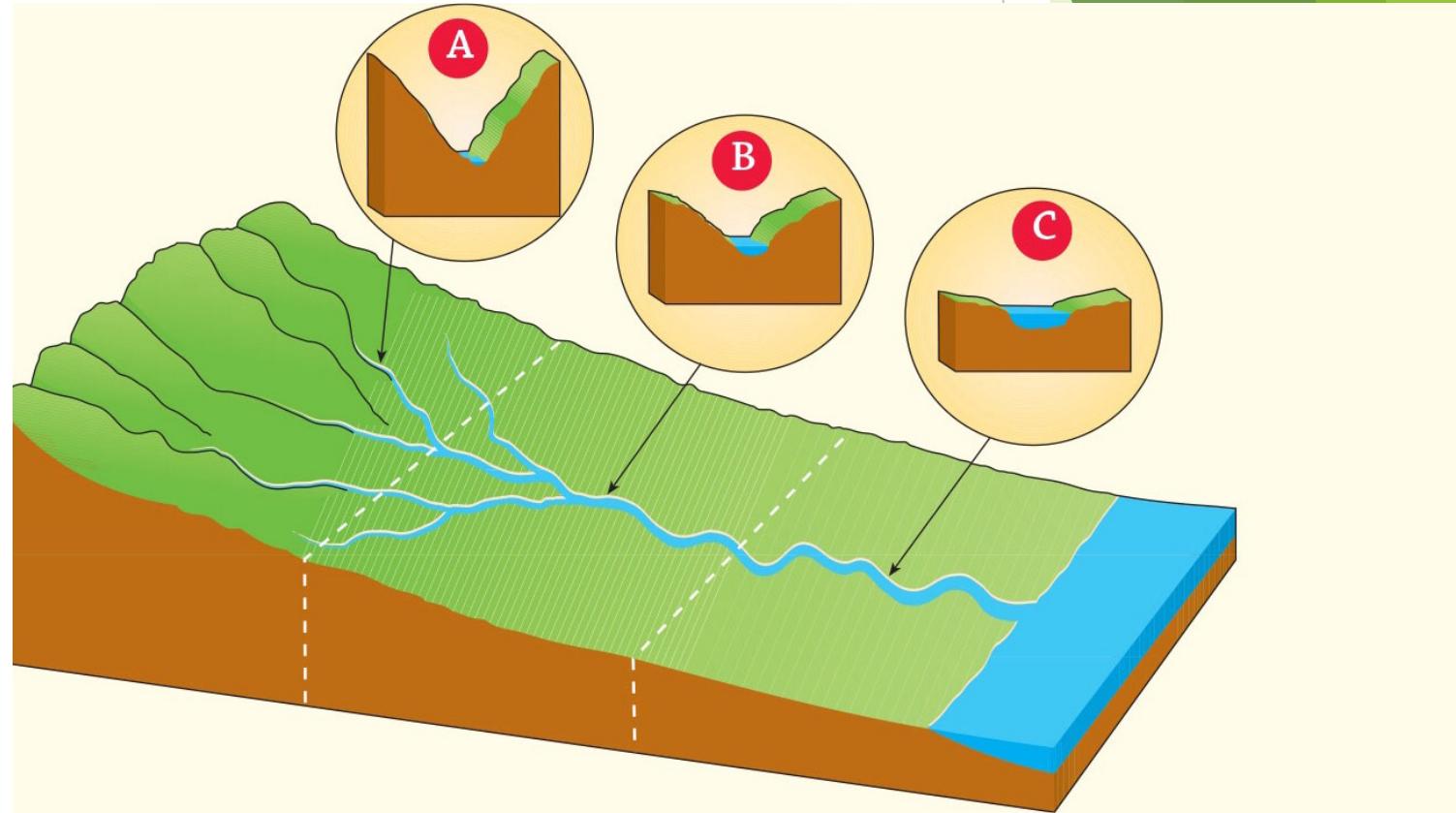


# River Terminology

Source	The place a river begins
Course	The route taken by a river as it makes its way to the sea.
Tributary	A small river or stream that joins up with a larger river.
Confluence	The point at which a tributary joins a river.
Mouth	The point where a river enters the sea.
Estuary	The part of a river mouth that is tidal.
River Basin/ Drainage Basin	The area of land drained by a river And its tributaries.
Watershed	The high ground that separates one river basin/drainage basin from another.

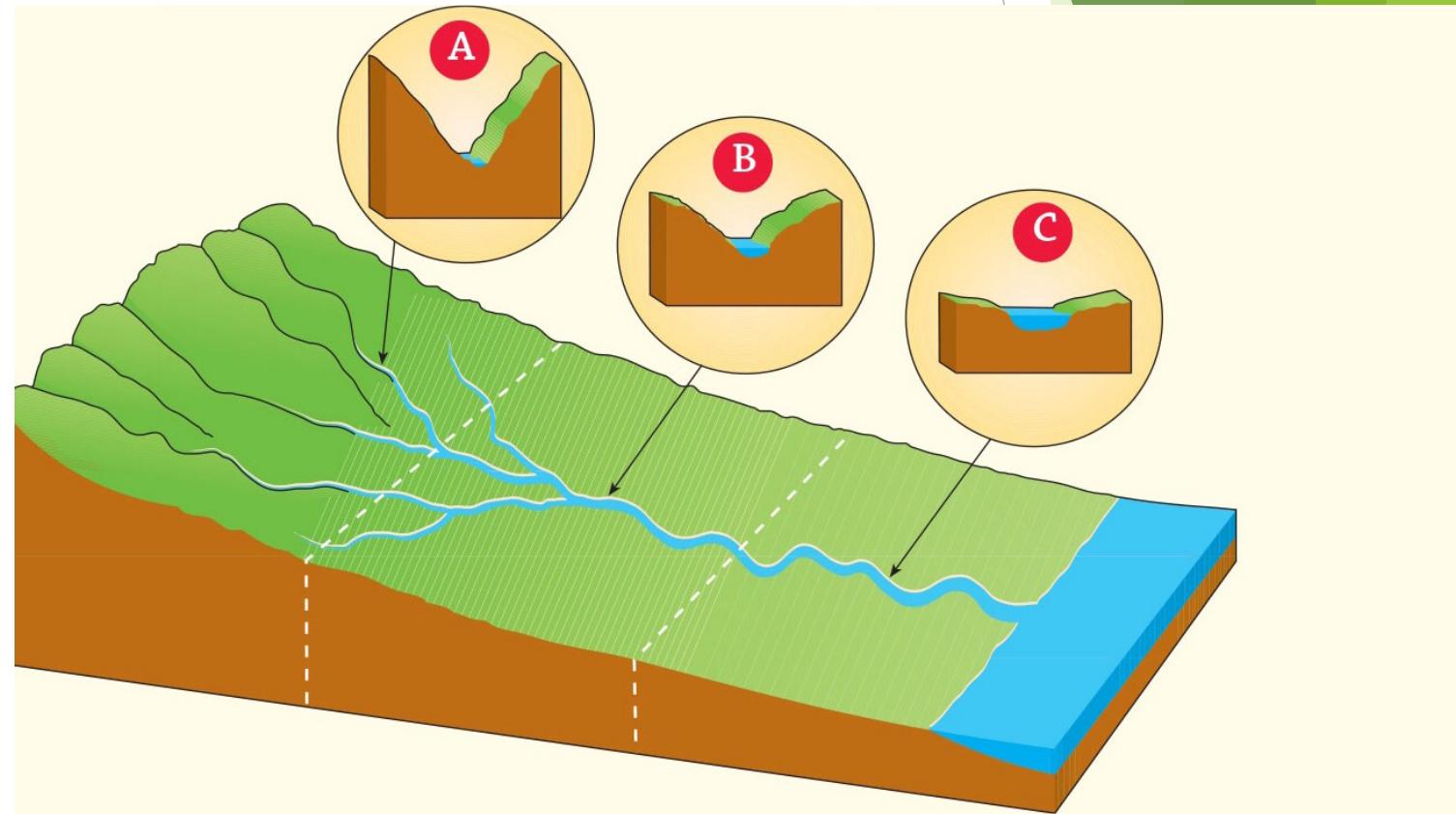
# Stages of a River

- Upper/Youthful Stage (A)
  - Steep slope/gradient
  - Steep V-shaped valley
  - Fast moving water.



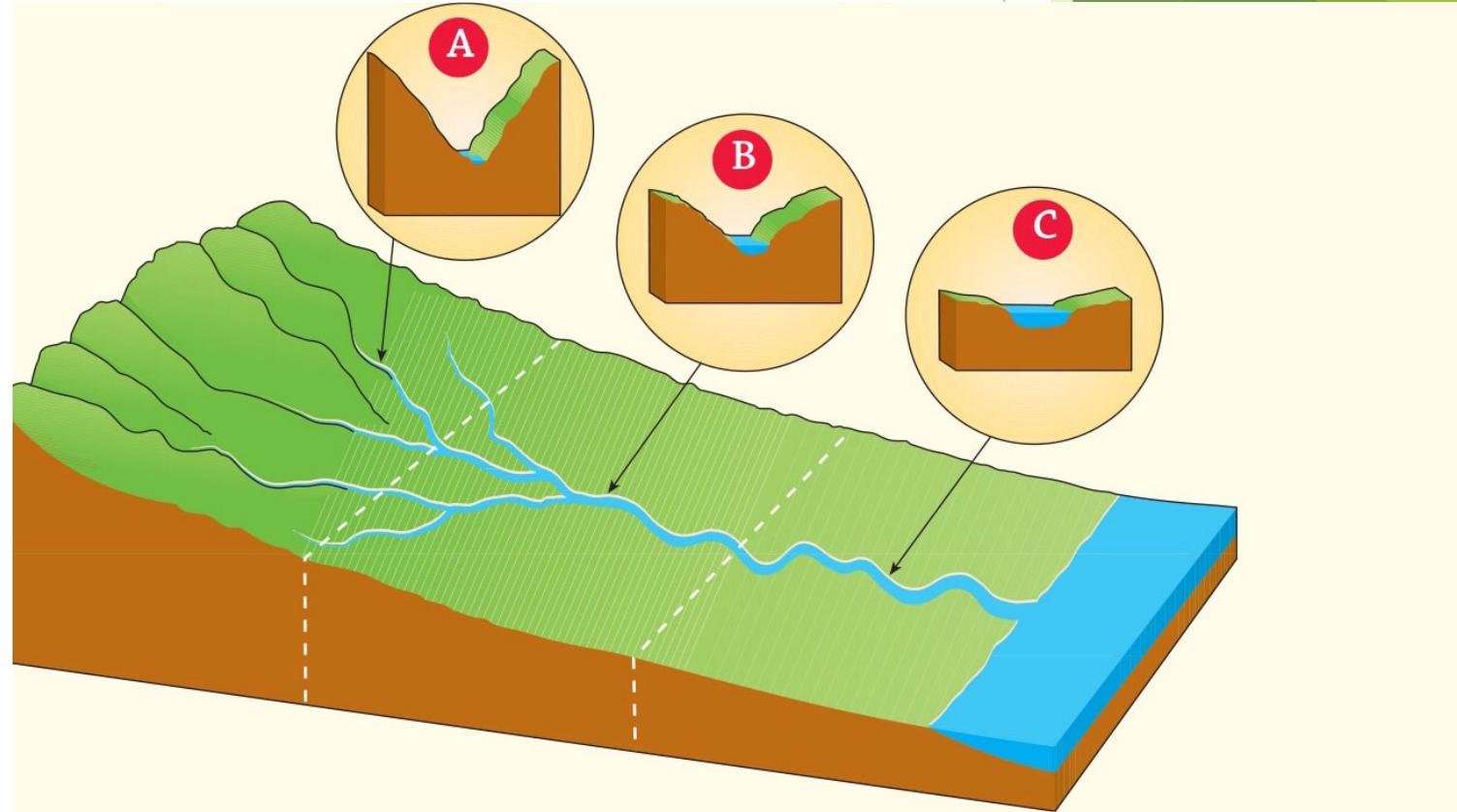
# Stages of a River

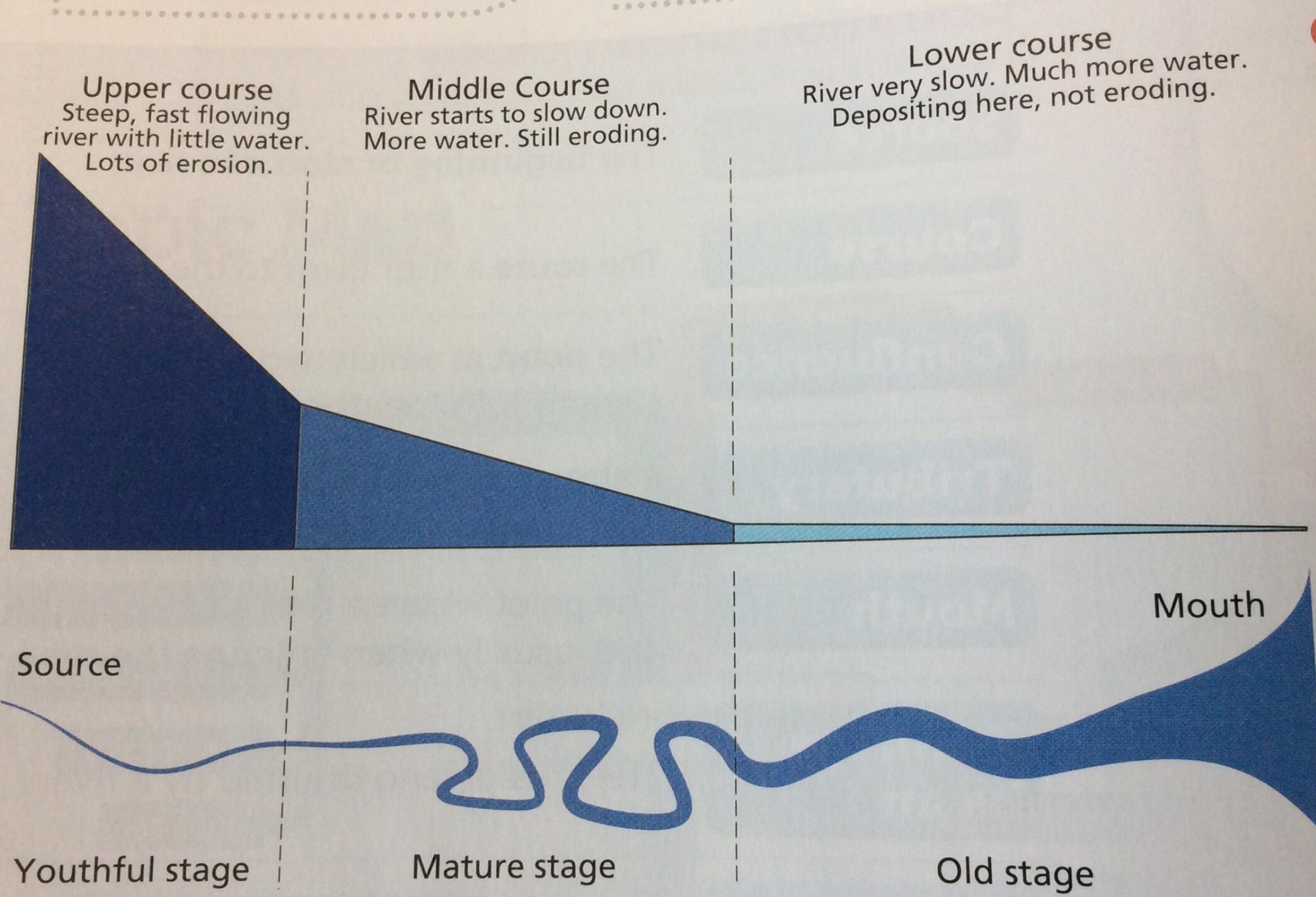
- Middle/Mature Stage: (B)
  - Gentler slope/gradient.
  - U-shaped valley - wider floor & gently sloping sides.
  - Water slows down.



# Stages of a River

- Lower/Old Age Stage: (C)
  - Almost flat gradient.
  - Wide valley with a flat floor & gentle sides.
  - Slow moving water.





# How do Rivers work?

- As a river moves along its course, the water shapes the landscape in three different ways:
  - **EROSION**
  - **TRANSPORTATION**
  - **DEPOSITION**

# River Erosion

- Rivers erode the bed of the river & the banks of the river through several different processes.
1. **Hydraulic Action:** The force of the moving water breaks away material from the bed & the banks of the river.
  2. **Abrasion:** The material carried by the river wear away the banks & bed of the river.
  3. **Attrition:** The material is worn down, smoothed and rounded as they hit of each other.
  4. **Solution:** Acid in the water breaks down or dissolves some rocks such as Limestone.

# Pop Quiz!!!

- Explain each of the following key terms;
  - Watershed
  - Source
  - River Basin

- Confluence
- Estuary
- Tributary

In the boxes provided, match each of the letters in **Column X** with the number of its pair in **Column Y**.

Column X	
A	Attrition
B	Abrasion
C	Hydraulic Action
D	Solution

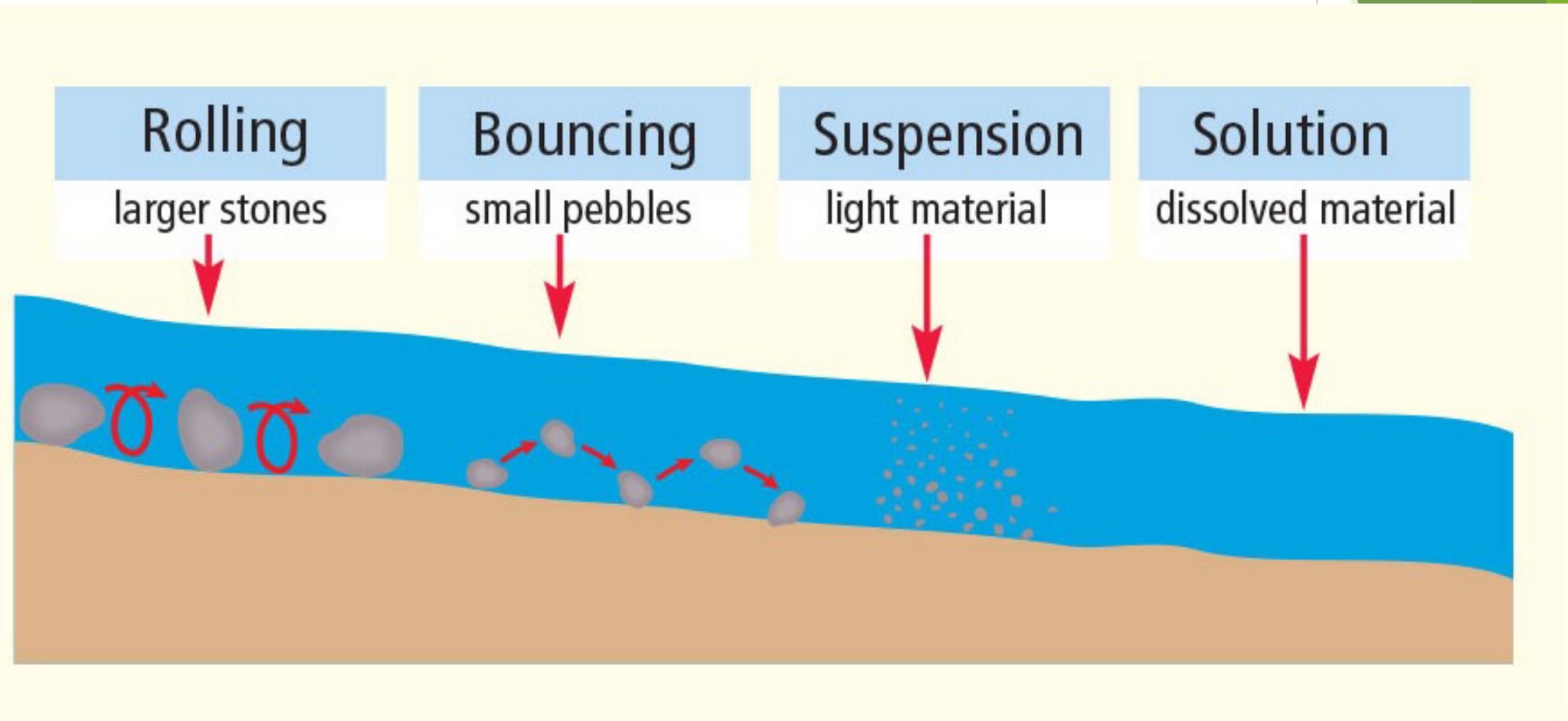
Column Y	
1	The force of moving water.
2	Chemicals in water breaking down some rocks.
3	The river's load hitting against the bed and banks of the river.
4	Stones hitting off each other while being carried by the river.

X	Y
A	
B	
C	
D	

# River Transportation

- When river erode the banks & the bed of the river, the material is transported downstream in a number of different ways. The material that is transported by the river is called its load.
1. **Rolling:** The larger particles (stones & pebbles) are rolled along the bottom of the river. This process is called *traction*.
  2. **Bouncing:** The smaller particles are bounded along the bed of the river. This process is called *saltation*.
  3. **Suspension:** The lightest particles (silt & clay) are carried along, suspended in the water.
  4. **Solution:** The dissolved load (e.g. limestone) is carried in solution.

# River Transportation



# River Deposition

- The river drops or *deposits* its load when:
- It loses its speed and has less energy.
- The volume of the river decreases.
- When there is an increase in the size of the load.
- It enters a flat or gently sloping plain.
- When it flows into a lake or sea.

## Youthful Stage

- The youthful stage of a river has a small volume of water and a steep gradient.
- It uses most of its energy to erode the landscape.
- As a result of this erosion, a number of landforms/**features** are formed.
- E.g.
  - V-shaped valley
  - Interlocking Spurs
  - Waterfall

## V-shaped valley

A V-shaped valley has a narrow floor and steep sides.

The river carries stones and rocks in its water. The force of the water and the grinding of rocks and stones cut down into the riverbed, deepening it by **vertical erosion**. Meanwhile, weathering breaks up rock and soil on the valley sides. They eventually collapse and the debris slides into the river. This gives the river its 'V' shape. The debris is eventually worn down and transported by the river. Examples are seen in the youthful stage of the rivers Moy, Lee, Liffey and Slaney.

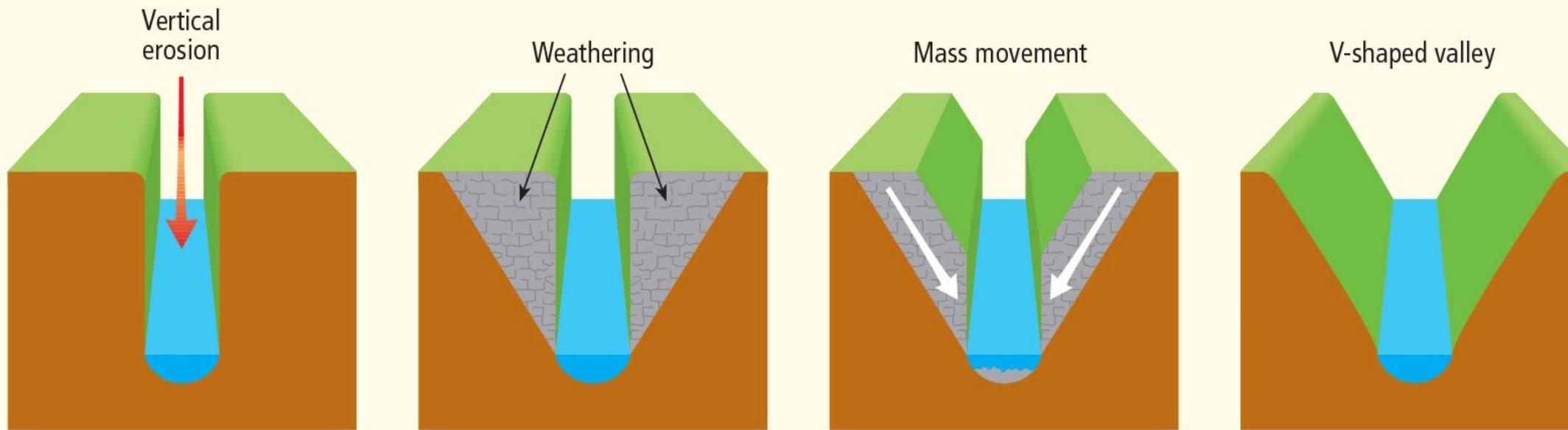
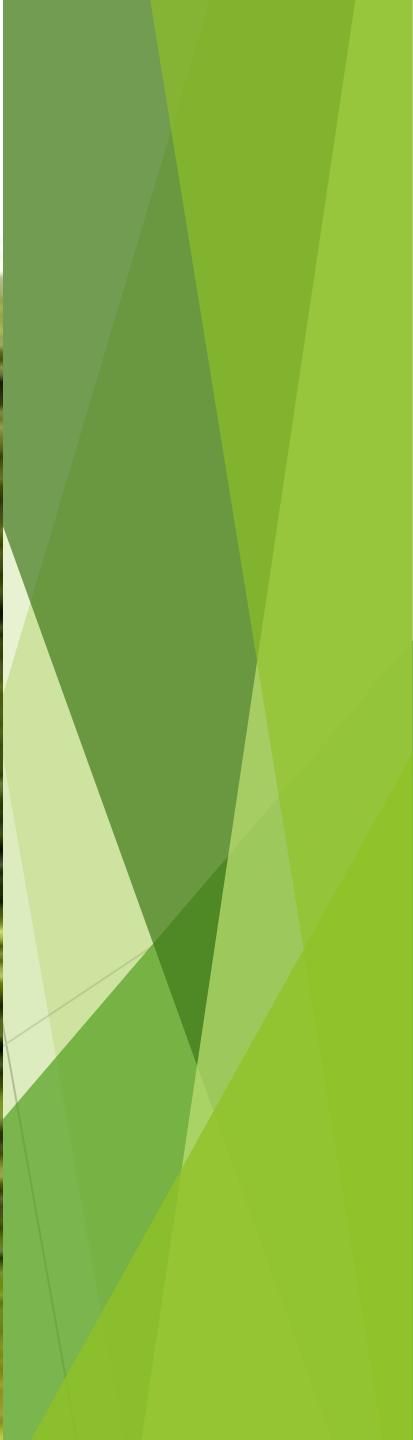


Fig 3.13 The formation of a V-shaped valley



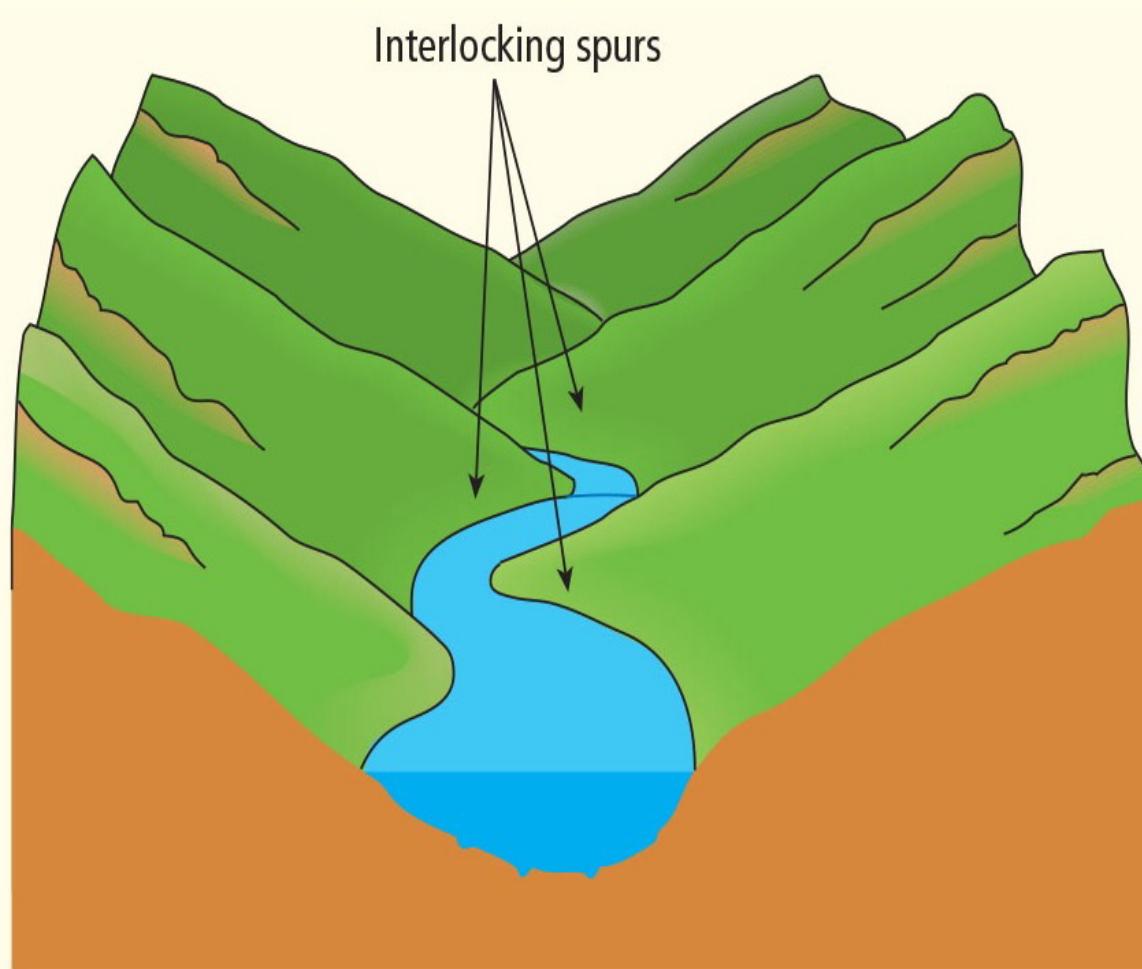


Fig 3.14 V-shaped valley with interlocking spurs



## Interlocking spurs

**Interlocking spurs** are a series of ridges that jut out from both sides of a young river valley and lock into one another like the teeth of a zip.

When the river meets hard or resistant rocks, it is unable to erode through them. Instead, it winds and bends to avoid them. At the same time, the river continues to erode downwards. In this way, the river develops a zigzag course. Examples are seen in the youthful stage of the rivers Moy, Lee, Liffey and Slaney.



# Waterfall

A **waterfall** is a feature where the river flows or falls over a vertical slope.

Waterfalls form when a layer of hard or resistant rock lies on top of a band of soft rock. Over thousands of years, the soft rock is eroded more quickly than the hard rock. Over time, the slope becomes steeper and a waterfall is formed.

As the water drops over the waterfall, it carries its load with it. This helps the waterfall to erode a deep hole called a **plunge pool**.

The falling water also cuts under the waterfall to form an overhang of hard rock. This eventually collapses. The process repeats itself and the waterfall retreats upstream. Examples include Aasleigh Falls (Mayo), Torc Waterfall (Killarney) and Glencar Falls (Sligo).

