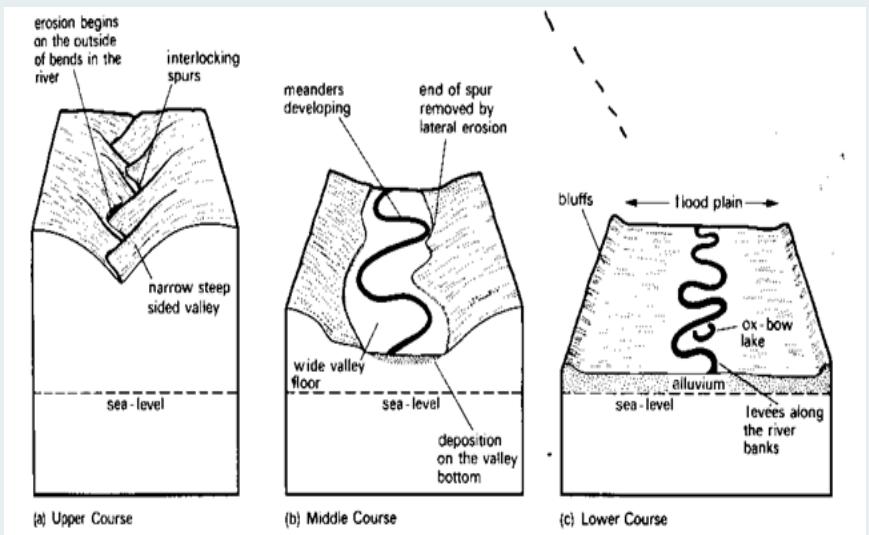


River Profile

River Profile is the appearance and display of a river from source to mouth. It has three stages:

1. The upper course (youthful or torrent stage).
2. The middle course (valley or mature stage).
3. The lower course (old age/flood plain/senile stage).



The Upper (Youthful or torrent) stage:

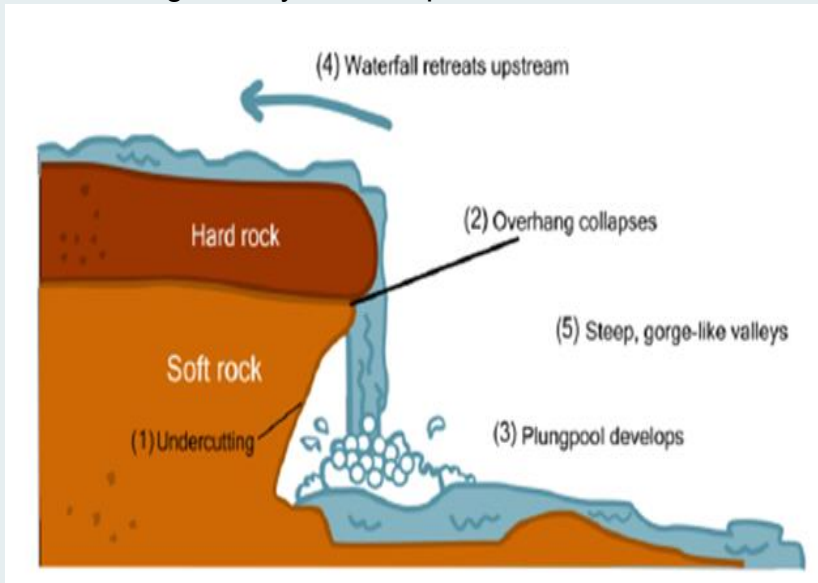
The source of most rivers is a mountainous area. In such areas, rivers are characterized by:-

- Fast flowing and cut deep, narrow, steep-sided V-shaped valleys
- Interlocking spurs occurs so that a river follows a zigzag course
- River has little volume of water and therefore concentrates on vertical erosion.
- Potholes are cut by rapid circular movement of pebbles.
- Waterfalls and rapids develop where hard rock
- The river has few tributaries

Formation of Waterfalls

Mountain streams may erode waterfalls. A waterfall forms where a stream flows from an area of harder to softer rock. The water erodes the softer rock faster than the harder rock. This

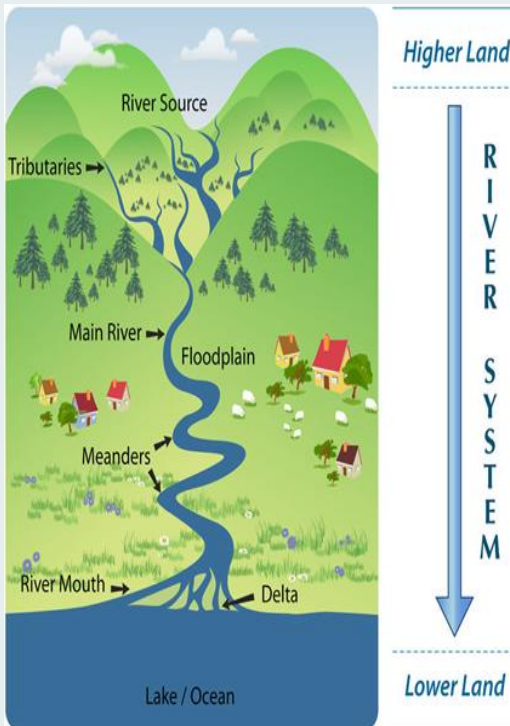
causes the stream bed to drop down, like a step, creating a waterfall. As erosion continues, the waterfall gradually moves upstream.



Qn: *How a Waterfall Forms and Moves?*
Why does a waterfall keep moving upstream?

Middle stage

At this stage, the river erodes the sides and floor of the valley straightening out its course and widening its valley. This is because at this stage, the river has many tributaries which increase its volume and load.

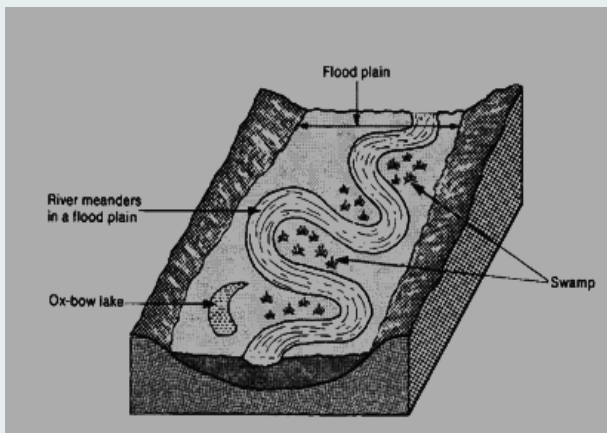


The main features of rivers in this stage are wider valleys with open v-cross section, gentler river gradient, river bends, concave banks standing out as river cliffs while convex banks develop into slip-on" slopes, emergence of bluffs which develop into interlocking spurs and are gradually removed by lateral erosion. Some deposition begins to take place at this stage.

Lower old, plain stage

At this stage, the river has a very large volume of water and a heavy load. Deposition is dominant. This is because, the river gradient is gentle, and the flow is very slow. Seasonal floods are common, resulting in the deposition of alluvium on the valley sides and beyond.

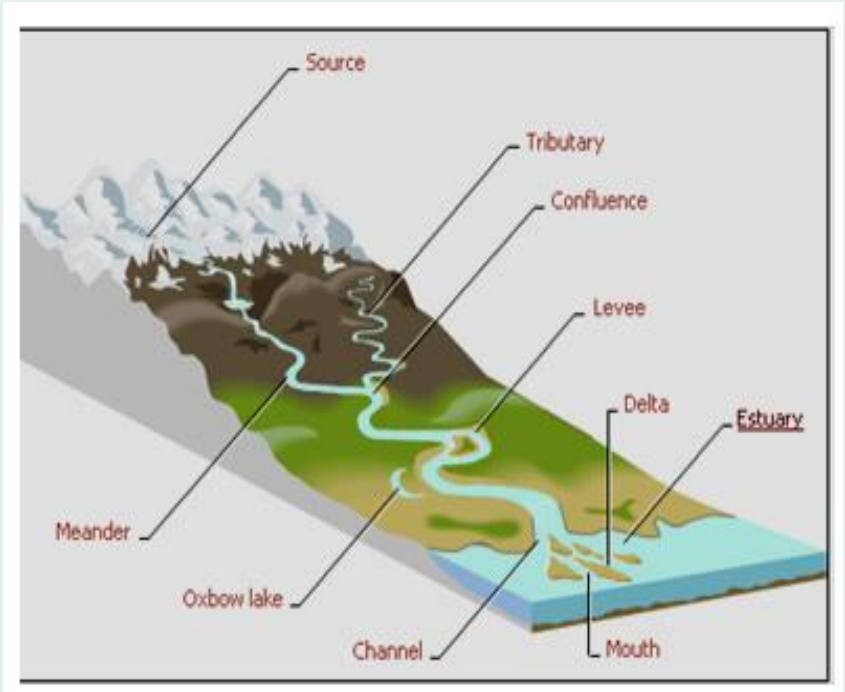
Deposition of sediments interrupts river flow, creating braided channels. The river valley is generally shallow, broad and flat.



Features and Characteristics of this stage

- meanders and ox-bow lakes,
- natural levees and deferred tributaries,
- braided channels,
- flood plains as well as deltas and distributaries.

Appearance of a river at different stages



Formation of oxbow lakes.

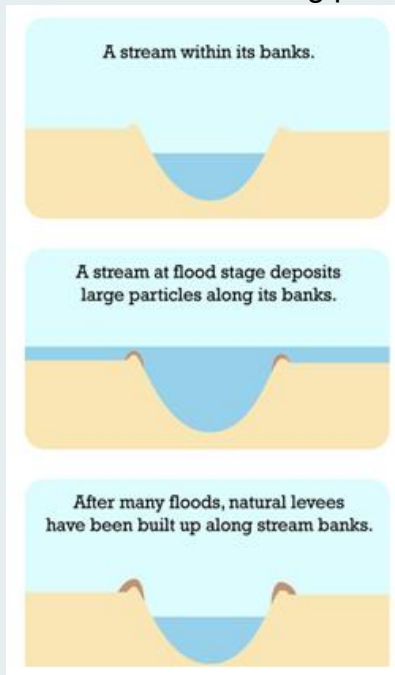
They are formed when the neck of a meander becomes very narrow. There comes a stage when the river floods heavily and also flow faster. It sweeps across the narrow neck to form a new course.



When the floods subside, the lake is left separate from the river.

Formation of levees.

Whenever the lower course of a river overflows its banks in flood periods small amounts of deposition occur on the banks. During low water periods the river deposits material on its bed. Over the years both banks and beds are built up above the surrounding plain.



This diagram shows how a river builds natural levees along its banks.

FOR MORE INFORMATION

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