



↑ This river is fed by snowmelt.

↓ glacier



## Snow on the Ground, Glaciers, and Icecaps

Snow that falls on the ground will usually stay frozen and pile up. After a few months, when the air warms during spring, the snow begins to melt. It turns back to a liquid state. This water is called **snowmelt**. Snowmelt will either run off into a river, lake, or stream, or it will soak into the ground.



↑ iceberg

In some areas, it is so cold year-round that snow does not melt. In fact, it piles up year after year and can become very thick and deep. Because of the weight of the snow, it **compacts** and becomes ice. This happens in such places as Antarctica and Greenland and on very high mountains. In fact, the snow in Antarctica and Greenland has piled up hundreds of meters (thousands of feet) thick. It also covers several hundred square kilometers (miles). When snow piles in this way, it is called an **icecap**. The oldest snow in Antarctica is 740,000 years old. The oldest snow in Greenland is 250,000 years old.

In some mountains, this snow and ice is not spread over a wide area but piles up in valleys. When the ice and snow gets heavy enough, it begins slowly to move downhill. When this happens, the formation is called a **glacier**. A glacier can be several kilometers (or miles) long and look something like a river of ice.

When the lowest end of a glacier gets warm enough, it melts into liquid water. The water flows like a river or stream. When the edges of an icecap or glacier meet the ocean, large chunks of ice may break into the water. These are called **icebergs**.



## Rain, Rivers, and Groundwater

Water that falls from the sky in liquid form is called rain. Whenever it rains, water soaks into the ground. It flows through the small spaces between the soil particles in the ground. Deeper underground, the rock is solid and the water can't flow through it. So, all the small spaces in the soil begin to fill up. When there is enough water, it flows horizontally. Water that soaks into the ground like this is called **groundwater**.

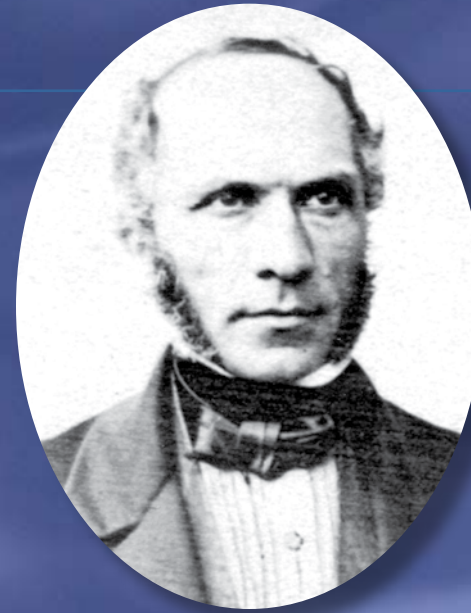
People have known about groundwater for thousands of years. They have learned how to get this water from the ground and bring it to the surface. The water is used for drinking and for watering plants and crops.

If there is a lot of water during a rainstorm, all the water can't soak into the ground. Instead, the rainwater runs over the ground's surface and into streams and rivers. These streams and rivers flow into larger streams and rivers or lakes. As the water flows, people sometimes use it for drinking and giving water to plants and animals. Eventually, all the water makes its way back to the ocean.

↑ At some point in the water cycle, water may flow in rivers and streams.



↑ Throughout time, people have found groundwater by digging wells.



↑ Henry Darcy

↓ Because the reservoir was at a higher altitude than the city, Darcy could build fountains that used gravity to shoot water into the air. The people of Dijon drew water from fountains like this.

## Bringing Water to the People

Today, we expect that when we turn a faucet, water will flow freely. For people in the past, it wasn't always that way. People would catch rain in barrels as it ran off their roofs. They would dig wells and pull their water up from the ground. Water would be carried in wagons from places farther away. In the 1830s, a French scientist named Henry Darcy designed a system that brought water right to people in their homes. He did it in his hometown of Dijon, France. It was one of the first cities to have such a system. Darcy did other important experiments with water flow, too. The people of Dijon were so thankful for what he did that they honored him with a monument in the center of town.

