A grisly picture of a river staining the surrounding cliff of ice with a dark blood-red colour is definitely not what one can expect to find in Antarctica, the coldest continent of the world, but it does exist! The bizarre sight of eerily red water spilling out of a glacial surface has been fascinating scientists, since it was first discovered in 1911 by Australian geologist Griffith Taylor, who speculated it to be hued by the red algal growth; however, that hypothesis was never verified.

Located in Antarctica’s McMurdo Dry Valleys at the northern end of Taylor Glacier, the enigma behind the bloody falls has finally been solved by the geo-scientists. This natural phenomenon owns its gory-look neither to the blood nor red algae, but to the iron oxidized in brine saltwater. Antarctica’s Blood Falls is a slowly oozing outflow of iron-rich saltwater, from the tongue of Taylor Glacier onto the ice-covered surface of West Lake Bonney in Victoria Land, East Antarctica. Perplexing the researchers for decades, the flow was earlier a mystery, as the mean temperature is 1.4 degrees Fahrenheit (-17 degrees Celsius) and little glacial melting can be seen at the surface.

The iron oxide which is responsible for the scary fleshy look of this glacier is produced by the same process that gives iron a dark red colour when it rusts. The Taylor Glacier is estimated to be at least 1.5 million years old. A study suggests that when Taylor Glacier was extending across the icy continent a million years ago, it trapped a small saltwater lake under countless layers of snow and ice. The saltwater gradually concentrated to form the brine, too salty to freeze at regular temperatures. The sub-glacial brine lake has been scraping iron from the underlying bedrock.

In a study published in the Journal of Glaciology (April 2017), researchers have reportedly traced the water’s exact starting point to a reservoir of brine beneath the glacier. The radar method called Radio-Echo Sounding (RES) was used for investigating the glacier. Imaging of the underneath brine, amplifying contrast with the fresh glacier ice, revealed a complex network of subglacial rivers and a subglacial lake. The brine gets injected into the ice through cracks in ice under immense pressure explaining the flow of super-salty water through an extremely cold glacier. Brine has lower freezing temperatures and releases heat as it freezes, and that heat warms the surrounding colder ice. Taylor Glacier is now the coldest known glacier to have persistently flowing water.

Researchers are hoping to find out more about the coupled geochemical evolution of a microbial environment hosted by the brine, which was expected as nearly dead, but is actually home to some extremely hardy and sturdy bacteria.