In 2009 and 2010 two underwater cataracts were found in the Romanche and Chain fracture zones in the equatorial Atlantic near the main sills of the fractures. In the Chain Fracture Zone Antarctic Bottom Water (AABW) rapidly descends from 4067 m to 4573 m. In the Romanche FZ, AABW descends from 4265 to 4970 m. The gravity flows are modeled in the laboratory experiments. The flows split into three branches. The densest water flows at the bottom. The least dense water mixed with the surrounding waters continues its flow at the level of the sill. The flow of water with the medium density descends and accumulates kinetic energy but cannot reach the bottom due to insufficient density and forms a hydraulic jump. The velocities of the flow are as high as 35 cm/s. The entire waterfall effect occurs below the level of the sill, while the isopycnals above the sill remain more or less horizontal. Thus, the flow in the cataract decreases its velocity due to the general widening of the flow.