Mount Pelée Volcano, Martinique

Mount Pelée (14°48′N, 61°10′W) is a 1,397 m high stratovolcano composed of mostly pyroclastic rocks; it dominates the northern part of the Martinique island, which is a part of the volcanic arc forming the Lesser Antilles (West Indies). The arc itself is a product of the subduction process of the North American tectonic plate plunging under the Caribbean plate. Altogether, 17 volcanoes have been active in the West Indies in the last 10,000 years. Most of them are subaerial and generally represent the mountainous interiors of some of the arc’s islands.

Mount Pelée’s volcanic cone is composed of volcanic ashes and hardened lava strata. This volcano is mostly famous for its eruption in 1902, which resulted in a high number of victims and extended destruction; this event was the worst volcanic disaster of the twentieth century. On May 8, 1902, on the Ascension-Day, the “eruption” killed around 26,000–36,000 people, including the island’s governor, and destroyed the Saint-Pierre town located about 6 km south of the peak, the largest Martinique town at that time.

On that fatal morning, most people on the island were recklessly observing the fireworks the mountain was showing off. The shift-telegraph operator just sent the report describing the volcano’s activity to the operator at the Fort-de-France centre, claiming: “no significant new development”. His last transmission was “Allez” [you go], after which he handed over the line to the remote operator. It was 7:52 a.m.; the next second, the telegraph line went dead. A cable repair ship had the city in direct view; the upper mountainside ripped open and a dense black cloud shot out horizontally. A second black cloud rolled upwards, forming a gigantic mushroom cloud and darkening the sky for an 80 km radius. The initial speed of both clouds was later calculated as exceeding 670 km/h. Large horizontal pyroclastic cloud was hugging the ground, speeding down toward the city of Saint Pierre, appearing black and heavy, glowing hot from the inside. In few tens of seconds, it reached the city, instantly igniting everything combustible it came in contact with.

A rush of wind followed, this time toward the mountain. Then, in a half-hour period, the downpour of muddy rain mixed with volcanic ashes occurred. For the next several hours, all communication with the city was interrupted. Nobody knew what was happening or who had an authority over the island, as the governor was not available and his status was unknown. Some survivors were picked from the sea; mostly badly burned sailors, who had been blown into the sea by the volcano’s blast and then clung for hours to the floating debris. A warship arrived toward the shore at about 12:30 p.m., but unbearable heat prevented landing until about 3 p.m. The city burned for several more days.

The area devastated by the pyroclastic cloud covered about 20 km², with the city of St. Pierre taking its main brunt. The cloud consisted of superheated steam, volcanic gases, and dust of extremely high temperatures reaching allegedly over 1000°C.

Figure 65 is a newspaper xylographic illustration taken from the Czech Journal Nové Ilustrované Listy 1902 (New Illustrated Gazette of 1902), which mediated Mount Pelée eruption to the readers. Technically, the illustrations are of a low quality, but they well illustrated the situation as it appeared both during and shortly after the explosion of Mount Pelée. In the bottom picture, we can see the situation that followed the event, when the furious volcano had calmed down and the burned town of St. Pierre, the pearl of the Lesser Antilles, appeared devastated. The horrified French seamen, members of the rescue squad, stare on dead corpses spread over on the beach.

Saint Pierre was populated by some 30,000 people. During the catastrophe, practically, all inhabitants of the coastal town St. Pierre died. They were mostly intoxicated by the poisonous volcanic gases, as were the inhabitants of Roman Pompeii and Herculaneum, several centuries earlier, during the Vesuvius eruption of AD 67. Many people were also swelled by the minor explosions and mud flows first emitted by the volcano. There were pitifully only a couple of survivors: Léon Compère-Léandre, a man who lived at the edge of the city; one woman, a housemaid, also survived the pyroclastic flow but perished soon after; the only sensation she remembered from the event was a sudden feeling of heat. Included among the victims were the passengers and crews of several ships docked at the Saint Pierre harbor.

As a certain irony of fate, one among the very few who survived was a criminal imprisoned in the municipal penitentiary. The primitive brig had no ventilation; due to no direct contact with the outer space the convicted criminal survived being protected from the all-burning heat and
poisoned air. Later he was freed by the army rescue team and even pardoned.

The top of Mount Pelée is formed by a horseshoe like caldera opened to the south; the present summit crater l’Etang Sec is filled with two lava peaks created during the eruption in 1902 and 1929. Geological survey disclosed the relicts of at least 20 huge explosions within the last 5,000 years. The 1792 and 1851 eruptions were historically confirmed. The eruption of 1902 was a typical example of the “Mount-Pelee-type” volcanic activity, when the active crater is filled with viscous lava, which only partly runs over the caldera brim. During the explosion, predominantly ashes and extreme quantities of gas were ejected. High temperature lava then gravitates down the volcano slopes with a high velocity of several hundred kilometers per hour. The last activity of Mount Pelée was reported in 1932.

Fig. 65 Fall of St. Pierre town (top picture), French sailors searching for cadavers in the ruins of devastated St. Pierre town (bottom). Illustrations from a Czech journal. Private collection, Prague