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ABSTRACT BOOK

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Ludovico Sicardi, an unknown pioneer of the Volcanic Geochemical Monitoring

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On December of 1977, almost 100 years since its last eruption, intense volcanic activity took place in Vulcano Island (Sicily). The elevated fluxes and the temperature increase of the fumaroles in La Fossa Crater, as well as the variations in their chemical composition, alarmed the scientific community. During that period, in the city of Palermo, Marcello Carapezza along with his colleagues Mariano Valenza and Mario Nuccio, were studying the fumarolic field of Vulcano. After extended bibliographic research, Valenza discovered the studies of Ludovico Sicardi, which were focused on Vulcano, Stromboli, Vesuvio and Campi Flegrei. Considering the fact that Sicardi's research was performed 60 years before its discovery, the scientists decided to meet Sicardi and discuss about his innovative work. They arrived late though; Ludovico had passed away a month before. Carapezza contacted Sicardi's wife, Zoe, and along with Valenza, went to Sanremo to Sicardi's house. Zoe provided them with information about his life and suspiciously gave them several boxes containing the scientific material of her husband.

Ludovico Sicardi was a chemist and a pharmacist, who was passionate about volcanoes. During his several field trips in Vulcano, he observed and described the fumarolic field on systematic basis, measuring the temperatures and recording their variations over time (Sicardi, 1973). He also performed the first chemical analysis of fluids emitted by fumaroles in Vulcano Island and Solfatara. Furthermore, he was the first to hypothesize the coexistence of SO₂ and H₂S in fumarolic discharges, which by that time was considered impossible. Also, he succeeded in measuring their ratio by developing an in situ method that chemically separated the S-gaseous species. This method was based on the sampling of fumarolic fluids, using a glass flask that contained a NH₄OH-AgNO₃ solution, with the aim to dissolve the soluble acid gases (CO₂, SO₂ and HCl) and block H₂S as an insoluble Ag₂S (Sicardi, 1955). Based on his articles, Sicardi can be considered as a precursor of the modern volcanic monitoring.

The scientific material of Sicardi was well preserved in Valenza's office and returned to light thirty-five years later, on the 20th of April 2018. This precious material was donated to the Museum of Mineralogy of Palermo and it is nowadays subject of study and cataloging by the collaborators of the Associazione Geode. The donation consists of his scientific field-equipment, glassware, copies of the scientific articles, old maps, photos of Vulcano and Solfatara. Among these, several notes and three important unpublished researches about Vulcano, Vesuvio and Campi Flegrei were found.

Sicardi, L. (1955): Captazione ed analisi chimica dei gas della esalazione solfidrico-solforosa dei vulcani in fase solfatarica. Bull. Volcanologique, ss.II t.17, 107-112.

Sicardi, L. (1973): The thermal oscillations of the fumaroles of the Island of Vulcano from 1913 to 1970. Stromboli, n.13.