

8 September 2015 Session 3b 2:00 -3:40pm

THE EMERGENCE OF MACEDONIO MELLONI'S OPTICAL BENCH

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Keywords: Macedonio Melloni, banco ottico, calore radiante

We present a reconstruction of the emergence of Melloni's optical bench, one of the most common apparatus of historic collections of scientific instruments in schools and universities both in Italy and abroad. While originally developed as an instrument for experimental research, Melloni's bench was soon used also as a teaching and demonstration tool.

The bench was first introduced to the scientific community on 12 January 1835, when Italian physicist Macedonio Melloni presented a memorandum to the *Academie des Sciences* in Paris summarizing all his previous experimental work. Melloni claimed that by properly choosing the components of the apparatus it was indeed possible to reproduce the most significant experiments he had performed to prove the identity between "calorific rays" and visible light.

In this study we will analyse the development of the different components and accessories of Melloni's bench: sources, screens, lenses and the mobile arm built to overcome the problems of secondary emission. Particular attention will be paid to the "thermomultiplier", the combination of a thermopile and galvanometer, also through Melloni's original documents preserved in the archives of the *Academie des Sciences*. Though originally devised by the Italian physicist Leopoldo Nobili, the thermomultiplier was eventually improved by Melloni to become a powerful tool in the study of what later was known as infrared radiation.

Emanuela Colombi studied physics at the University of Parma where she received her PhD in 2015 with a thesis on "Macedonio Melloni: a scientific biography".

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