"The pile is now connected with the galvanometer, and its reflector is close to the radiating surface, the face of the pile itself being about 6 inches distant from the surface."

(337.) "The needle of the galvanometer moves; it now points steadily to 60°, and there it will remain as long as the temperature of the radiating surface remains sensibly constant. I will now gradually withdraw the pile from the surface, and ask you to observe the effect upon the galvanometer. You will naturally expect that, as the pile is withdrawn, the intensity of the heat will diminish, and that the deflection of the galvanometer will fall in a corresponding degree. The pile is now at double the distance, but the needle does not move; at treble the distance, the needle is still stationary; we may successively quadruple, quintuple—go to ten times the distance, but the needle is rigid in its adherence to the deflection of 60°. There is, to all appearance, no diminution at all of intensity with the increase of distance."

(338.) "From this experiment, which might at first sight appear fatal to the law of inverse squares, as applied to heat, Melloni, in the most ingenious manner, proved the law. I will here follow his reasoning. Imagine the hollow cone in front of the pile prolonged; it would cut the radiating surface in a circle, and this circle is the only portion of that surface whose rays can reach the pile. All the other rays are cut off by the nonreflecting lining of the cone. When the pile is moved to double the distance, the section of the cone prolonged encloses a circle exactly four times the area of the former one; at treble the distance, the radiating surface is augmented nine times; at ten times the distance the radiating surface is augmented 100 times. Now, the constancy of the deflection proves that the augmentation of the surface must be exactly neutralized by the diminution of the intensity. But the radiating surface augments as the square of the distance, hence the intensity of the"