

Dufay, whose experiments appear in the Memoirs of the French Academy, in 1733, 1734, and 1737.<sup>1</sup> "I discovered," he says, "a very simple principle, which accounts for a great part of the irregularities, and, if I may use the term, the caprices that seem to accompany most of the experiments in electricity. This principle is, that electric bodies attract all those that are not so, and repel them as soon as they are become electric by the vicinity or contact of the electric body. . . . Upon applying this principle to various experiments of electricity, any one will be surprised at the number of obscure and puzzling facts which it clears up." By the help of this principle, he endeavors to explain several of Hawkesbee's experiments.

A little anterior to Dufay's experiments were those of Grey, who, in 1729, discovered the properties of *conductors*. He found that the attraction and repulsion which appear in electric bodies are exhibited also by other bodies in contact with the electric. In this manner he found that an ivory ball, connected with a glass tube by a stick, a wire, or a packthread, attracted and repelled a feather, as the glass itself would have done. He was then led to try to extend this communication to considerable distances, first by ascending to an upper window and hanging down his ball, and, afterwards, by carrying the string horizontally supported on loops. As his success was complete in the former case, he was perplexed by failure in the latter; but when he supported the string by loops of silk instead of hempen cords, he found it again become a conductor of electricity. This he ascribed at first to the smaller thickness of the silk, which did not carry off so much of the electric virtue; but from this explanation he was again driven, by finding that wires of brass still thinner than the silk destroyed the effect. Thus Grey perceived that the efficacy of the support depended on its being silk, and he soon found other substances which answered the same purpose. The difference, in fact, depended on the supporting substance being electric, and therefore not itself a conductor; for it soon appeared from such experiments, and especially<sup>2</sup> from those made by Dufay, that substances might be divided into *electrics per se*, and *non-electrics*, or *conductors*. These terms were introduced by Desaguliers,<sup>3</sup> and gave a permanent currency to the results of the labors of Grey and others.

Another very important discovery belonging to this period is, that

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<sup>1</sup> Priestley's *History of Electricity*, p. 45, and the Memoirs quoted.

<sup>2</sup> *Mém. Acad. Par.* 1734.

<sup>3</sup> Priestley, p. 66.