

a light. . . . It begins with an ordered—not chaotic—arrangement of facts, deduces axioms from these, and from the axioms again designs new experiments.” Many experiments were made on the action of heat on various things, either alone or mixed with others. **Boyle**, who introduced the word “analysis” to denote the art of discovering one substance in presence of another, and who contended for the use of the word “element” in the meaning of a *constituent* of, and not as a *property* of matter, made many such experiments, and systematically put Bacon’s advice into practice. And so knowledge of facts gradually accumulated, and speculations acquired some substantial basis. To **Priestley**, a nonconformist clergyman of Birmingham, we owe the discovery of numerous gases, and **Scheele**, his contemporary, a Swedish apothecary, also enriched chemistry in this respect. The discovery of oxygen, in 1774, was made simultaneously by both of these illustrious men. It had been generally supposed that all gases, or, as they were then termed, “airs,” were merely modifications of atmospheric air; and it was not uncommonly held that air, in consequence of its want of substantiality, was but one remove from nothing. **Joseph Black**, Professor of Chemistry in Edinburgh in the middle of the eighteenth century, was the first to prepare carbonic acid gas, or, as he termed it, “fixed air,” in a pure state; and by determining the loss of weight on heating its compound with magnesia, to show that it was due to the escape of the gas; for he succeeded also in absorbing the gas, and reconstituting the carbonate of magnesia, which then possessed practically the same weight as it originally had. In spite of this discovery, made in 1756, the doctrine was still generally held that burning substances lost their constituent principle, “phlogiston;” and we owe to the French chemist **Lavoisier** the true explanation of the phenomenon of combustion. Lavoisier had been informed by Priestley in the autumn of 1774 of his discovery of what, according to the views then current, he termed “dephlogisticated