Antoine Laurent Lavoisier, an accomplished French chemist, had pursued, with zeal and skill, researches such as those of Black, Cavendish, and Priestley, which we have described above. In 1774, he showed that, in the calcination of metals in air, the metal acquires as much weight as the air loses. It might appear that this discovery at once overturned the view which supposed the metal to be phlogiston *added* to the calx. Lavoisier's contemporaries were, however, far from allowing this; a greater mass of argument was needed to bring them to this conclusion. Convincing proofs of the new opinion were, however, rapidly supplied. Thus, when Priestley had discovered dephlogisticated air, in 1774, Lavoisier showed, in 1775, that fixed air consisted of charcoal and the dephlogisticated or pure air; for the mercurial calx which, heated by itself, gives out pure air, gives out, when heated with charcoal, fixed air,[1] which has, therefore, since been called *carbonic acid gas.*

Again, Lavoisier showed that the atmospheric air consists of pure or vital air, and of an *unvital* air, which he thence called *azot.* The vital air he found to be the agent in combustion, acidification, calcination, respiration; all of these processes were analogous: all consisted in a decomposition of the atmospheric air, and a fixation of the pure or vital portion of it.

But he thus arrived at the conclusion, that this pure air was added, in all the cases in which, according to the received theory, *phlogiston* was subtracted, and *vice versâ.* He gave the name[2] of *oxygen* (*principe oxygène*) to "the substance which thus unites itself with metals to form their calces, and with combustible substances to form acids."

A new theory was thus produced, which would account for all the facts which the old one would explain, and had besides the evidence of the balance in its favor. But there still remained some apparent objections to be removed. In the action of dilute acids on metals, inflammable air was produced. Whence came this element? The discovery of the decomposition of water sufficiently answered this question, and converted the objection into an argument on the side of the theory: and thus the decomposition of water was, in fact, one of the most critical events for the fortune of the Lavoisierian doctrine, and one which, more than any other, decided chemists in its favor. In succeeding years, Lavoisier showed the consistency of his theory with

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[1] *Mém. Ac. Par.* 1775.

[2] *Mem. Ac. Par.* 1781, p. 448.