

speak of some erroneous opinions entertained by the author of the theory; as, for instance, that the heat produced in combustion, and even in respiration, arose from the conversion of oxygen gas to a solid consistence, according to the doctrine of latent heat. Such opinions not being necessarily connected with the general idea of the theory, need not here be considered. But the leading generalization of Lavoisier, that acidification was *always* combination with oxygen, was found untenable. The point on which the contest on this subject took place was the constitution of the *oxymuriatic* and *muriatic* acids;—as they had been termed by Berthollet, from the belief that muriatic acid contained oxygen, and oxymuriatic a still larger dose of oxygen. In opposition to this, a new doctrine was put forward in 1809 by Gay-Lussac and Thenard in France, and by Davy in England;—namely, that oxymuriatic acid was a simple substance, which they termed *chlorine*, and that muriatic acid was a combination of chlorine with hydrogen, which therefore was called *hydrochloric acid*. It may be observed, that the point in dispute in the controversy on this subject was nearly the same which had been debated in the course of the establishment of the oxygen theory; namely, whether in the formation of muriatic acid from chlorine, oxygen is subtracted, or hydrogen added, and the water concealed.

In the course of this dispute, it was allowed on both sides, that the combination of dry muriatic acid and ammonia afforded an *experimentum crucis*; since, if water was produced from these elements, oxygen must have existed in the acid. Davy being at Edinburgh in 1812, this experiment was made in the presence of several eminent philosophers; and the result was found to be, that though a slight dew appeared in the vessel, there was not more than might be ascribed to unavoidable imperfection in the process, and certainly not so much as the old theory of muriatic acid required. The new theory, after this period, obtained a clear superiority in the minds of philosophical chemists, and was further supported by new analogies.¹

For, the existence of one *hydracid* being thus established, it was found that other substances gave similar combinations; and thus chemists obtained the *hydriodic*, *hydrofluoric*, and *hydrobromic* acids. These acids, it is to be observed, form salts with bases, in the same manner as the oxygen acids do. The analogy of the muriatic and fluoric compounds was first clearly urged by a philosopher who was

¹ Paris, *Life of Davy*, i. 337.