

drous phosphoric and arsenic acids, which are equally ( $\text{PO}_2)_2\text{O}$ , etc." (Vol. viii, p. 92).

One of the objects proposed in the essay just quoted, was a comparison of the views of Gerhardt and Liebig with regard to the formation of ethers, amids, and allied bodies. Gerhardt in accordance with the electro-chemical theory of Berzelius, had considered the acids in these reactions to be electro-negative by their oxygen, while the alcohols, ammonia, and the hydrocarbons were electro-positive by their hydrogen, so that these bodies *minus*  $\text{H}_2$ , replaced  $\text{O}_2$  in the acid. To this view we objected that it leaves unexplained that change in the basic relations of the acid, which Liebig rightly understood when he compared the ethers to salts, and represented the acid as losing  $\text{H}$ , which is replaced by the elements of the alcohol *minus*  $\text{HO}_2$ . This theory, unlike that of Gerhardt, made the ethers of the hydracids enter into the same class with those of the oxacids; at the same time it did not include those bodies which are produced with the elimination of  $\text{H}_2\text{O}_2$ , by the action of oxygen acids upon ammonia and hydrocarbons, and which were recognized in Gerhardt's system, as completely analogous to the ethers in the mode of their formation. Here the compound radical theory is found to be defective, although the analogy which forms its point of departure is correct. In concluding this comparison we remarked that "we are led to recognize the view of Liebig, *apart from his ideas of dualism, and his theory of compound radicals*, as the one fundamentally true." (Vol. vii, p. 405.)

In this Journal for March, 1848, (vol. v, p. 263,) we observed that the relation of wood-spirit to acetonitryl is the same as that of water to hydrocyanic acid, and that water differs from wood-spirit, precisely as this last differs from spirit of wine, so that the relation of homology, recognized by Gerhardt in the compounds of carbon, is extended to water and hydrogen; for from the relations which we