LXI. *Note on the Constitution of the Olefine produced by the Action of Zinc upon Ethylic Iodide.*

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As long ago as the year 1849 (*Jour. Chem. Soc.*, vol. ii, p. 277), it was proved by one of us that the olefine produced by the splitting of ethyl at the moment of liberation from its iodide, has the formula C_nH_{2n} , and that the value of n in this formula is 2; but the constitution of the gas has never been ascertained. The equation—

expressing the transformation of ethyl into ethylic hydride and the olefine C_2H_4 admits of the two following interpretations:—

and

If the transformation occurred according to the first of these equations, the olefine would be *ethylene*, and if according to the second, *ethylidene*. We endeavoured to decide between these two interpretations by combining the olefine with chlorine and ascertaining the boiling point of the compound: for ethylenic chloride boils at 82·3° C. (Regnault) or 84·6 (Dumas), whilst ethylidenic chloride boils, according to Geuther (*Ann. Ch. u. Pharm.*, Bd. cv, 323) at 60° C.

The gas accumulated in an iron digester during the decomposition of ethylic iodide by zinc was led, in a slow stream, first through a Woulf's bottle and pumice column containing alcohol, to absorb the vapour of ethylic iodide, then through concentrated sulphuric acid to absorb alcohol vapour, and lastly, through a long bulbed tube containing several ounces of antimonie chloride. After many litres of the gas had passed, the contents of the tube containing antimonie chloride were mixed with water and submitted to distillation in a water-bath. The distillate consisted of a heavy oily layer and a lighter aqueous one. The former was separated, dried over calcic chloride, and rectified. Its boiling point was then determined by Chapman Jones's method (*Jour. Chem. Soc.*, 1878, p. 175). It behaved like a homogeneous liquid, and boiled under a pressure of 760 mm, at 83° C.

The olefine produced by the action of zinc upon ethylic iodide is therefore *ethylene*, and the isolation of *ethylidene* still remains to be accomplished, all attempts to separate this radical from its compounds having hitherto failed.