Luc denied all solution, and held vapor to be a combination of the particles of water with fire, by which they became lighter than air. According to him, there is always fire enough present to produce this combination, so that evaporation goes on at all temperatures.

This mode of considering independent vapor as a combination of fire with water, led the attention of those who adopted that opinion to the thermometrical changes which take place when vapor is formed and condensed. These changes are important, and their laws curious. The laws belong to the induction of latent heat, of which we have just spoken; but a knowledge of them is not absolutely necessary in order to enable us to understand the manner in which steam exists in air.

De Luc's views led him[8] also to the consideration of the effect of pressure on vapor. He explains the fact that pressure will condense vapor, by supposing that it brings the particles within the distance at which the repulsion arising from fire ceases. In this way, he also explains the fact, that though external pressure does thus condense steam, the mixture of a body of air, by which the pressure is equally increased, will not produce the same effect; and therefore, vapors can exist in the atmosphere. They make no fixed proportion of it; but at the same temperature we have the same pressure arising *from them*, whether they are in air or not. As the heat increases, vapor becomes capable of supporting a greater and greater pressure, and at the boiling heat, it can support the pressure of the atmosphere.

De Luc also marked very precisely (as Wallerius had done) the difference between vapor and air; the former being capable of change of *consistence* by cold or pressure, the latter not so. Pictet, in 1786, made a hygrometrical experiment, which appeared to him to confirm De Luc's views; and De Luc, in 1792, published a concluding essay on the subject in the *Philosophical Transactions*. Pictet's *Essay on Fire*, in 1791, also demonstrated that "all the train of hygrometrical phenomena takes place just as well, indeed rather quicker, in a vacuum than in air, provided the same quantity of moisture is present." This essay, and De Luc's paper, gave the death-blow to the theory of the solution of water in air.

Yet this theory did not fall without an obstinate struggle. It was taken up by the new school of French chemists, and connected with their views of heat. Indeed, it long appears as the prevalent opinion.

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[8] Fischer, vol. vii. p. 453. *Nouvelles Idées sur la Météorologie*, 1787.