Girtanner,[9] in his *Grounds of the Antiphlogistic Theory*, may be considered as one of the principal expounders of this view of the matter. Hube, of Warsaw, was, however, the strongest of the defenders of the theory of solution, and published upon it repeatedly about 1790. Yet he appears to have been somewhat embarrassed with the increase of the air's elasticity by vapor. Parrot, in 1801, proposed another theory, maintaining that De Luc had by no means successfully attacked that of solution, but only De Saussure's superfluous additions to it.

It is difficult to see what prevented the general reception of the doctrine of independent vapor; since it explained all the facts very simply, and the agency of air was shown over and over again to be unnecessary. Yet, even now, the solution of water in air is hardly exploded. M. Gay Lussac,[10] in 1800, talks of the quantity of water "held in solution" by the air; which, he says, varies according to its temperature and density by a law which has not yet been discovered. And Professor Robison, in the article "Steam," in the *Encyclopædia Britannica* (published about 1800), says,[11] "Many philosophers imagine that spontaneous evaporation, at low temperatures, is produced in this way (by elasticity alone). But we cannot be of this opinion; and must still think that this kind of evaporation is produced by the dissolving power of the air." He then gives some reasons for his opinion. "When moist air is suddenly rarefied, there is always a precipitation of water. But by this new doctrine the very contrary should happen, because the tendency of water to appear in the elastic form is promoted by removing the external pressure." Another main difficulty in the way of the doctrine of the mere mixture of vapor and air was supposed to be this; that if they were so mixed, the heavier fluid would take the lower part, and the lighter the higher part, of the space which they occupied.

The former of these arguments was repelled by the consideration that in the rarefaction of air, its specific heat is changed, and thus its temperature reduced below the constituent temperature of the vapor which it contains. The latter argument is answered by a reference to Dalton's law of the mixture of gases. We must consider the establishment of this doctrine in a new section, as the most material step to the true notion of evaporation.

---

[9] Fischer, vol. vii. 473. [10] *Ann. Chim.* tom. xliii

[11] Robison's *Works*, ii. 37.