steam. Saussure long since had shown that the amount of steam existing in a given space and temperature is the same, whether the space be free from or filled with air; and then Dalton distinctly proved that the vapour of water mixed with air, or other gas permanent over water, differs in no respect from pure steam, and is subject to the same laws. The aqueous vapour of the air constitues, in his opinion, a distinct and independent atmosphere, the elastic force of which forms at different temperatures different proportions of the elastic force of the whole. For example, at the temperature of 95 deg. it gives to air 1-50th of its elasticity. According, therefore, to this view, which is confirmed by the experiments of Gay Lussac and others, a volume of air, or gas, at any temperature, saturated with moisture, contains as much steam as would exist, at the same temperature, in a vacuum of the same extent.

The insensible vapour in the air we may then conclude is merely mechanically mixed with the atmospheric gases; there is no chemical combination. It is the diffusion of water in the state of steam, produced by the evaporation from the earth's surface. This evaporation is hardly ever interrupted; it continues very often even when rain is falling, or the ground covered with snow—under the burning sun of the equator, or in the eternal ice of the arctic regions, it still proceeds. It is, indeed, remarkable, as the Rev. L. Jenyns observes ("Meteorology," p. 164), that evaporation still goes on when water is frozen, the same as when it is liquid: even the most intense cold is insufficient of itself to put a stop to it. This circumstance often strikes persons with astonishment who witness it in its effects without being aware of the true cause. They see a fall of snow gradually waste—if light, wholly disappear—or a block of ice sensibly diminish during the continuance of a frost, especially if the wind blows tolerably fresh from some point towards the north, without the least sign of liquefaction on the surface. And they perhaps naturally enough wonder what has become of it. Sometimes also in deeper snows the surface becomes curiously grooved or channelled, by the wind acting unequally upon it, and thus promoting unequally the evaporation. This phenomenon is best observed around the trunks of trees, and near the interstices of palings, or wherever a stream of air acquires an increased force in a particular direction. There is every reason to conclude with Dr. Prout, that the quantity of vapour thus formed from snow and ice is precisely equal to what would be evaporated from water itself, provided water could exist as a fluid before the temperature at which it is congealed.

The amount of water in the air, from an average of seven years' observation at the Greenwich observatory during each month of the year, has been given by Mr. J. H. Belleville, in his "Manual of the Thermometer."

In the following table, column I, gives the mean weight, in grains, of vapour in a cubic f of air at 9'oclock, a.m., and column II. amount at 3 o'clock, p m., Column III. gi the mean addition of vapour required for cc plete saturation of a cubic foot of air at 9 o'clo and column IV. the amount needed at 3 o'clo

	EXISTING AMOUNT.		DEFICIENCY.	
	I.	II.	III.	IV.
	9 A.M.	3. P.M.	9 A.M.	3 P.M.
January..	2.70	2.84	0.17	0.3(
February.	2.58	2.72	0.25	0.6
March ...	2.77	2.85	0.40	1.0
April	3.26	3.37	0.68	1.4
May	4.02	4.06	1.10	2.0
June.....	4.71	4.78	1.45	2.4
July	5.07	5.26	1.50	2.2
August...	5.00	5.07	1.18	2.2
September	4.66	4.77	0.73	1.9
October..	3.96	4.01	0.35	1.0
November	3.27	3.42	0.22	0.5
December.	2.78	2.89	0.17	0.3

The amount of water which the air conta let us remember, increases with its temperatr The mean relative humidity of the air, Mr. I ville observes, is greater at 9 a. m. than a p. m.; the mean quantity of vapor in this t actually *increases*, but as the increase is no proportion to the increase of *temperature* the same interval, the air is relatively drier.

November, December and January are months when the air is most frequently satur with vapour. As Spring advances the air comes warmer, and the point of saturation ther removed. A cubic foot of atmosph air, when saturated with water, at the temp ature of 66 degrees, contains only at eight grains of water. Dalton calculated the medium quantity of vapour held in lution at once in the atmosphere may amo to about one seventieth of its bulk.

That vapor we have seen is mainly supp by the evaporation of the surface of the oc but the land contributes a large proportion: vegetable and animal worlds do the same. F as to the portion yielded by the land, the am of water evaporated from its surface has t examined by various experimentalists. S bler conducted his trials on a small scale, different earths exposed in trays to the sun winds (*Journal R. A. S.*, vol. i. p. 177). found that the difference in the evaporation the surface of different earths was not so g as might have been anticipated He determ that when a given surface of calcareous lost by evaporation during four hours 146 p an equal extent of fine garden-mould lost parts, some black turf soil 128 parts, and specimens of clay soil each lost 123 parts.

Some years after Shubler's experiments, Dickenson (*ibid*, vol v. p. 151) examined amount of the annual evaporation from