There is a definite amount of water vapor which can exist in the air at any moment, and this amount depends mainly upon the temperature. The higher the temperature the larger the quantity of vapor possible. For example, the maximum amount at 32 degrees Fahr. is 2,113 grains per cubic foot, at 110 degrees is 26,112 grains. When this limit is reached the vapor is said to be saturated, and any further addition of vapor results in changing some of it by condensation into water. If there is less than the maximum amount of vapor that can exist in the air at any moment, the degree of saturation is expressed in percentage, and this is called the relative humidity. for example, a relative humidity of 75 per cent. signifies that there is in the air 3-4 of the total amount that can exist at that temperature. Since the possible amount of vapor decreases with the temperature, any sudden cooling of the air increases its relative humidity. If, for example, the air at 45 degrees with a relative humidity of 75 per cent. were cooled to 37 degrees, the vapor would be more than saturated and some of it turned to water.

If water vapor is a better conductor of heat than dry air, its conductivity must increase with the relative humidity; i.e., the nearer it approaches saturation. When condensed into water it is 25-fold a better conductor of heat than dry air, as we have seen.

Cellars are frequently so damp that at moderate temperatures, the air is nearly saturated and small reductions of temperature bring about condensation. The normal January temperature of Boston, Mass., is 27 degrees, and the normal relative humidity 73.3 per cent. At this time of year in that region the average temperature of a tolerably tight cellar might be 40 degrees with an average relative humidity of 85 per cent. to 90 per cen. (The writer has just measured the conditions in his house cellar, and finds the temperature to be 41 degrees, the relative humidity 92 per cent., and the dew point 40 degrees. That is to say, if the temperature should fall one degree, dew would form in the cellar.) The humidity, of course, depends upon its ventilation; but in cold locations in order to keep cellars from freezing it is necessary to make them so tight that the ventilation is poor. With an average cellar temperature of 40 degrees and a relative humidity of 85 per cent to 90 per cent., the air inside the hive, owing to the moisture exhaled by the bees, would likely be 95 per cent. saturated and upwards. The writer has no observations of hive temperatures in winter, but assuming it to be 60 degrees, a reduction of one degree would produce saturation and condensation of some of the vapor within the hive into water if the humidity were 95 per cent. The hive surfaces, the comb and the bodies of the bees would be wetter, and the heat of the bees would be drawn off so rapidly that they might not be able to make it good by a larger consumption of food. Even if they could, this enforced excessive consumption of food without opportunity for evacuation of the waste, might of itself seriously injure the bees if they did not succumb to the cold. The foregoing is based upon the assumption that the air in the cellar remains 90 per cent saturated. But, as we have seen, a fall of temperature of one degree in the cellar would produce saturation throughout the cellar, and before long the air within the hive would, by diffusion, seem saturated without any reduction of the temperature in the hive. Apparently the bees in a cellar hive live ordinarily in an atmosphere of vapor that is almost saturated, and slight temperature falls within the cellar serve to