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LETTER TO THE EDITOR

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THE VALUES given for the nucleation site density in the conclusion of [1] are erroneous and a more accurate estimate based on the results of [2] can be made.

The smallest drop which could be identified in the photographs, [1], had a diameter of one to two microns. With a minimum spacing of 1·7 microns between centers of individual drops, the maximum possible density of drops is 6×10^7 drops/cm^2. The nucleation site density may be far greater than the density of drops in the one to ten micron range. In the simulation performed in [2], as the nucleation site density is increased the density of drops at a given size approaches a asymtotic limit. Thus, submicron sized drops must be counted to determine the true nucleation site density.

The actual site densities for the experiments reported in [1] can be estimated from the numerical simulation of dropwise condensation, [2]. For a given vapor pressure, a given condensing fluid, and a fixed temperature difference, the predicted heat transfer coefficient averaged over the plate surface is solely a function of the nucleation site density. For the heat transfer coefficients measured in [1], the nucleation site densities predicted by [2] are $3{\cdot}5 \times 10^7$ sites/cm^2 and 3×10^6 sites/cm^2 for saturation temperatures of 212°F and 88°F respectively.

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