ON THE ABSORPTION OF CONDENSATION-PRODUCING ATMOSPHERIC DUST BY
SOLID NUCLEI AND SURFACES, AND
ON THE DIFFUSION VELOCITY OF
SUPPOSEDLY NON-IONIZED
DUST PARTICLES.*

Let \( r \) be the radius of a tube stretched along the axis \( X \), and conveying dust-laden air at a velocity, \( v \). Consider two sections at a distance \( dx \) apart; the dust entering per second at the near face is \( \pi r^2 n_v \); the dust leaving per second at the rear face is \( \pi r^2 (n + [dn/dx] dx) v \), if the air current is kept constant and \( n \) is the density of dust distribution, or is proportional to the number of particles per cubic centim. On the other hand, the absorption of dust particles by the walls of the section in question, is \( k \cdot 2\pi r \cdot n \cdot dx \), where \( k \) is the absorption per square centim. per second, per unit of dust concentration, and the absorption, as a first hypothesis, is taken proportional to the density of distribution of particles in air.†

Hence \( \pi r^2 (dn/dx) dx \cdot v = k \cdot 2\pi r \cdot n \cdot dx \), or

\[
\frac{dn}{n} = - \frac{2k}{vr} dx. \tag{1}
\]

Let the density in case of air saturated

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† Briefly \( k \) is the diffusion velocity of the dust particle, i.e., its normal velocity in air at rest. Equation (1) neglects the spontaneous dissipation of dust particles. This is permissible for the fast air currents \( v \) of Table I. The full equation is treated below.
Editor's Summary

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