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LETTERS TO THE EDITORS

COMMENTS ON THE PAPER "A THEORETICAL SOLUTION OF THE LOCKHART AND MARTINELLI FLOW MODEL FOR CALCULATING TWO-PHASE FLOW PRESSURE DROP AND HOLD-UP"

(*Received* 8 *October* 1974)

IN THE paper [1] which appeared recently in this journal, there are a few errors.

Equation (15) of the peper giving the value of X as

$$X = \left[\left(\frac{\Delta p}{\Delta L}\right)_L^+ \Big/ \left(\frac{\Delta p}{\Delta L}\right)_G^+\right]^{0.5} = \left[\frac{M_L^{*(1-0.5n)}}{M_G^{*(1-0.5m)}}\right]\left[\frac{\eta_L^{0.5n}}{\eta_G^{0.5m}}\right]\left[\frac{\rho_L}{\rho_G}\right]^{-0.5}\left[\frac{C_L}{C_G}\right]^{0.5}$$

is not correct as is obvious because the r.h.s. can be dimensionless only for $n = m$. The correct expression for X is,

$$X = \left[\frac{M_L^{*(1-0.5n)}}{M_G^{*(1-0.5m)}}\right]\left[\frac{\eta_L^{0.5n}}{\eta_G^{0.5m}}\right]\left[\frac{\rho_L}{\rho_G}\right]^{-0.5}\left[\frac{C_L}{C_G}\right]^{0.5}\left[\frac{\pi}{4}D\right]^{0.5(n-m)}.$$

Also equation (21) giving the value of U_G is not correct. The equation should read as

$$U_G = 2R\left[\arccos\left(1-\frac{H}{R}\right)\right] = 2R\bar{U}_G.$$

Because of this the curve for $\bar{U}_G$ in Fig. 4 is displaced upwards. The two curves of $\bar{U}_G$ and $\bar{U}_L$ will intersect at

$$X = 1 \quad \text{for} \quad n = m$$

and

$$X = \pi^{0.5(n-m)} \quad \text{for} \quad n \neq m.$$

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