Young et al. and Coriell et al.) were to be expected. Quantitative estimates of bubble velocities for $Pe > 1$ would require numerical calculations, but presently no such analysis seems to be available.

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Reply by Authors to H. Klein and A. Bewersdoff

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IN their Comment, Klein and Bewersdorff point out that the Young, Goldstein, and Block[1] formula gives a valid estimate of bubble velocities only when $Ma \ll 1$. We agree with this observation and have not suggested otherwise.[2,3] However, although the expected bubble velocities for $Ma > 1$ will be reduced compared to the Young et al. estimate, they will still *increase* as Ma increases. Thus, we maintain that the orders of magnitude discrepancy between the expected bubble velocities and our observed bubble immobility is signifiicant. In later papers, we described experiments and calculations designed to further investigate this discrepancy, and we were able to identify contamination as the most probable cause for the immobility of bubbles in our low-gravity experiments.[4,5] Well controlled experiments are still required in order to establish the precise nature of thermocapillary bubble motion in a low-gravity environment and its dependence on material properties. In addition, research on bubble migration velocity for $Ma > 1$ is currently in progress.[6]

References

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Errata: An Approach for Estimating Vibration Characteristics of Nonuniform Rotor Blades

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[AIAA J, 17, 995-1002 (1979)]

THE data for Illustrative Examples on page 998 should read as follows:

$$EI_1(x)\ddagger = \begin{cases} 2.5\times10^7 \text{ lb in.}^2, & 0 \le x \le 0.2R \\ (4.332005 - 15.366799x + 26.696032x^2 & \\ \quad - 15.153439x^3)\times10^7 \text{ lb in.}^2, & 0.2R < x \le R \end{cases}$$

$$m(x)\S = \begin{cases} 0.397549 + 93.7898x - 462.665x^2 \text{ lb}_m/\text{in.}, & \\ 0 \le x \le 0.2R \quad 1.101767 - 0.512333x \text{ lb}_m/\text{in.}, & \\ 0.2R < x \le R \end{cases}$$

In the metric system, these become

$$EI_1(x) = \begin{cases} 7.174175\times10^4 \text{ Nm}^2, & 0 \le x \le 0.2R \\ (12.431425 - 44.097642x + 76.608802x^2 & \\ \quad 43.485369x^3)\times10^4 \text{ Nm}^2, & 0.2R < x \le R \end{cases}$$

$$m(x) = \begin{cases} 7.09943 + 1674.8982x - 8262.2716x^2 \text{ kg/m}, & \\ 0 \le x \le 0.2R \quad 19.675355 - 9.149243x \text{ kg/m}, & \\ 0.2R < x \le R \end{cases}$$

The errors are only of a typographical nature, and therefore, they do not affect the results presented in the published paper.

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