Wave Inception in Falling Vertical Films

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In the recent communication by S. Portalski (*1*) on falling vertical films, there are two numerical errors. Equations (12) and (13) for wavy or pseudo-laminar flow should read

$$N_{Fr} = \frac{1}{2.4}\,\frac{Q}{\nu} \qquad (12)$$

and

$$N_{Re} = 9.6\,N_{Fr} \qquad (13)$$

the numbers 2.4 and 9.6 replacing the erroneous 4 and 16, respectively, of the original communication. The corresponding equation for laminar film flow remains as

$$N_{Re} = 12 N_{Fr} \qquad (9)$$

(Nomenclature and numbering of equations as in Portalski communication.) Conclusions drawn by the author are in no way affected by these changes.

It is interesting to note, consequently, that Jackson's (*2*) criterion for wave inception

$$N_{Fr}' = \sqrt{N_{Fr}} = 1 \qquad (1)$$

is equivalent to the statement that at the wave inception point $N_{Re} = 9.6 - 12$, according to Equations (13) and (9). Furthermore, his actual tabulation of experimental data showed values on N_{Fr}' for wave inception ranging from 0.70 to 1.44, which corresponds to $N_{Fr} = 0.490 - 2.074$. Again, according to Equations (13) and (9), the equivalent Reynolds range is 4.7 to 24.9. These results are in excellent agreement with the summary of experimental information for vertical falling films given by Bird et al. (*3*), according to which rippling starts in laminar flow at a Reynolds number somewhere between 4 and 25.

LITERATURE CITED

1. Portalski, S., *A.I.Ch.E. Journal,* **10,** 584 (1964).
2. Jackson, M. I., *A.I.Ch.E. Journal,* **1,** 231 (1955).
3. Bird, R. B., W. E. Stewart, and E. N. Lightfoot, "Transport Phenomena," p. 41, Wiley, New York (1960).

Yield and Molecular Size Distributions in Batch and Continuous Linear Condensation Polymerizations

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Continuous polymerizations in perfectly mixed, stirred reaction vessels, under steady state conditions, involving propagation of active chains (x units in length) of the type

$$P_x + M_1 \xrightarrow{k'} P_{x+1}$$

were discussed by Denbigh (*1*) and others (*2, 3*). The first author concluded that, in the case of short mean lifetime of growing chains compared with mean residence time in the reactor, the molecular size distribution of the resulting polymer in continuous polymerization should be narrower than in batch polymerization; in the case of short mean residence time compared with mean chain lifetime, continuous polymerization should produce a broader distribution than batch.

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TABLE 1. c_x-VALUES CALCULATED FROM (2)

x	c_x	x	c_x
1	$10{,}000{,}000 \times 10^{-7}$	11	$16{,}796{,}000 \times 10^{-3}$
2	$10{,}000{,}000 \times 10^{-7}$	20	$17{,}672{,}628 \times 10^{2}$
3	$20{,}000{,}000 \times 10^{-7}$	30	$10{,}022{,}411 \times 10^{8}$
4	$50{,}000{,}000 \times 10^{-7}$	40	$68{,}042{,}387 \times 10^{13}$
5	$14{,}000{,}000 \times 10^{-6}$	50	$50{,}955{,}055 \times 10^{19}$
6	$42{,}000{,}000 \times 10^{-6}$	60	$40{,}594{,}296 \times 10^{25}$
7	$13{,}200{,}000 \times 10^{-5}$	70	$33{,}748{,}317 \times 10^{31}$
8	$42{,}900{,}000 \times 10^{-5}$	80	$28{,}944{,}758 \times 10^{37}$
9	$14{,}300{,}000 \times 10^{-4}$	90	$25{,}422{,}145 \times 10^{43}$
10	$48{,}620{,}000 \times 10^{-4}$	100	$22{,}750{,}589 \times 10^{49}$