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Erratum: An Application of Probability Considerations to the Mechanism of the Photochemical Polymerization of Acetylene

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where

$$\left\langle\left(\frac{\Delta M}{\bar{M}}\right)^2\right\rangle_{Av}=\frac{\Sigma\,\Delta M_i^2\gamma_i}{\bar{M}_2}\text{ etc.}$$

This equation indicates that the dispersion of the molecular weight influences the slope and curvature of the plot of $H(g/\tau)$ *versus* g.

We have mixed in equal weights two of the fractions mentioned in the previous letter and carefully measured the turbidity of the mixture in methyl ethyl ketone. The intercept of the mixture corresponds to a molecular weight of 172,500 which is equal to the weight average $\frac{1}{2}$ (95,000 +250,000) = 172,500, the excellent agreement being fortuitous.

The curved line in Fig. 1 is a plot of Eq. (7), the constants having been evaluated from the slopes and intercepts of the pure fraction lines, assuming C is zero. For comparison, the lower (straight) line represents the plot which would be expected if the width of the mixture were not taken into account; that is, its slope is the average of the two pure fraction lines. Our data follow well the plot of Eq. (7), but our precision is not sufficient to consider this as more than an indication of the correctness of Eq. (7).

We have confirmed experimentally that the measurement of turbidity yields the weight average molecular weight and the above treatment indicates that with the aid of more precise apparatus (now under construction) a measure of the width of the distribution curve may be obtained.

The work of Debye referred to in the previous letter[1] appears in the April issue of the *Journal of Applied Physics*.

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[1] P. M. Doty, B. H. Zimm, and H. Mark, J. Chem. Phys. **12**, 144 (1944).
[2] P. Debye, private communication.
[3] T. Alfrey, A. Bartovics, and H. Mark, J. Am. Chem. Soc. **65**, 2319 (1943).
[4] H. Mark, *Physical Chemistry of High Polymeric Systems* (Interscience Publishers, Inc., New York, 1940).

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