Schwefeldioxyd," by L. Riedel, *Zeitschrift für die Gesamte Kälte-Industrie*, vol. 46, 1939, p. 22.

68 "An Empirical Equation for Thermodynamic Properties of Light Hydrocarbons and Their Mixtures," by M. Benedict, G. B. Webb, and L. C. Rubin, *The Journal of Chemical Physics*, vol. 8, 1940, p. 334.

Discussion

K. S. Pitzer.[4] This paper is very interesting to the writer because we are just completing a somewhat similar study of compressibility deviations for nonpolar molecules of irregular shape. The present study on polar gases should supplement our work. The selection of the reduced dipole moment parameter appears to be sound theoretically and the resulting correlations are very successful for molecules of compact and nearly spherical shape, but with increasing dipole moments. The deviations shown in Figs. 2 and 3 for elongated molecules of low dipole moment are to be understood in terms of the theory which we are proposing. The only other molecules showing significant deviation are methyl alcohol and ethyl alcohol. In these cases the dipole moment is concentrated in a portion of the molecule and it is not surprising that the behavior is more complex than for the other examples.

[4] Dean, College of Chemistry, University of California, Berkeley, Calif.

Authors' Closure

The authors are pleased to acknowledge the discussion of Dean Pitzer. One additional comment regarding experimental *P-V-T*. data would appear to be in order. Early in the course of the study, it soon became apparent that despite the abundance of gases involved in industrial processes, accurate information in so far as number of gases involved and/or the pressure and temperature range covered was quite limited. While the results presented here represent an effort to improve the status of gas-property knowledge in a very real sense, it also indicates a continuing need for experimental data covering wider ranges of pressure and temperature for pure gases and mixtures.