shows the close agreement of the values of Baron and others and the disagreement of the values of Smith and Brown. Only the 392° F. values lie generally within 2% of the other sets.

SELECTION OF RECOMMENDED VALUES

The data of Baron and others made selection of recommended values for the viscosity of ethane much easier. The agreement of their values with the data of this investigation is significant and many of the previous discrepancies can be resolved adequately on this basis alone. Also, the agreement among the atmospheric pressure data made quantitative use of the residual viscosity concept possible.

Recommended values for the regions of temperature and pressure of this experimental investigation were selected by reading the values from large scale, smoothed viscosity-pressure, viscosity-temperature, and residual viscosity-density plots. Except at a few scattered points where the data were inconsistent, the same viscosity value was obtained from each plot.

Much emphasis has been placed on the residual viscosity concept. It is believed that the residual plot represents the best available method for predicting fluid viscosity for a large range of conditions from a comparatively small quantity of experimental data. Of course, accurate atmospheric pressure viscosity values are essential and the experimental data must cover a sufficient range of densities. Therefore, the recommended values for extreme pressures and densities above 0.10 gram per cc. were read from a large scale residual viscosity–density plot similar to Figure 3. To determine the viscosity of ethane for the highest pressures at 70° and 100° F. the smooth curve was extended slightly.

Because of the low density data separation, the residual plot could not be used to predict low density viscosity accurately at high temperatures. The problem of determining the best values for this region was resolved from the fact that the low pressure data nearly parallel the atmospheric pressure values when plotted as viscosity *vs.* temperature. This behavior, shown in Figure 6, is predicted from kinetic theory. Thus, accurate extrapolations of the low pressure curves to higher temperatures should be possible, using the atmospheric curve as a base.

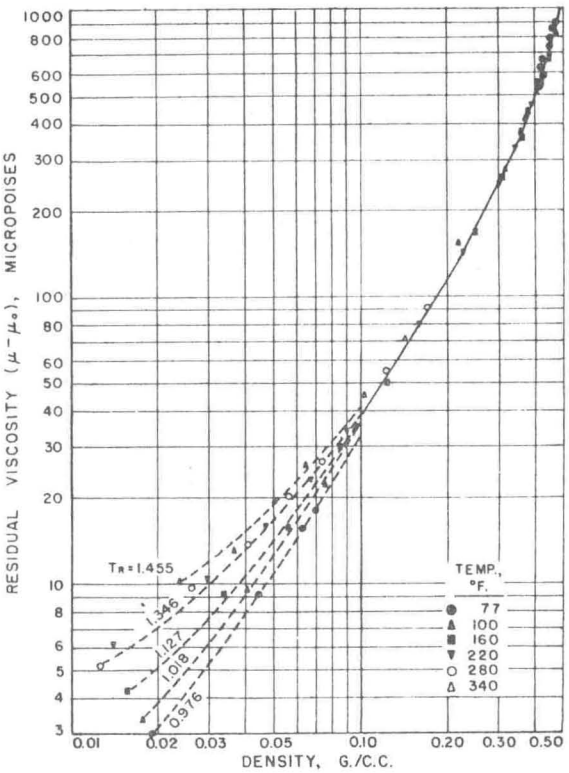

Figure 4. Residual ethane viscosity *vs.* density
Logarithmic coordinates

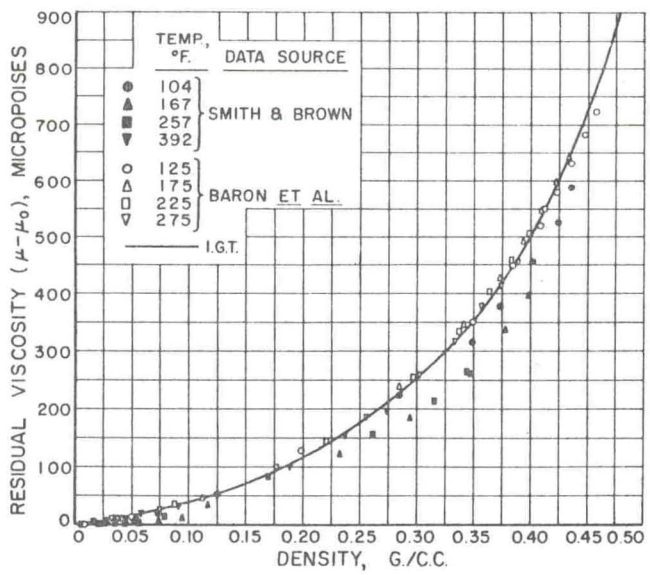

Figure 5. Comparison of IGT ethane viscosity data with those of other investigators

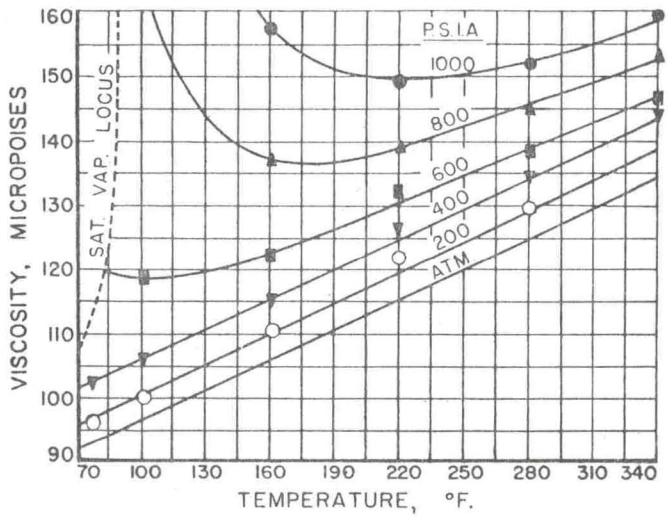

Figure 6. Experimental ethane viscosity *vs.* temperature for low pressures

Recommended values for the viscosity of ethane are presented in Table I. Values corresponding to the region of this investigation are believed to be accurate within ±0.5% for most points. The remainder of the table is believed accurate within ±2%.

COMPARISON WITH CORRELATIONS

Two generalized viscosity correlations were tested by comparing the recommended ethane viscosity values with the predicted values. The correlation of Uyehara and Watson (22) predicts ethane viscosity values which are generally higher than the recommended values. For temperatures from 100° to 460° F., their values are generally within 10% of the recommended values. However, at 70° F.