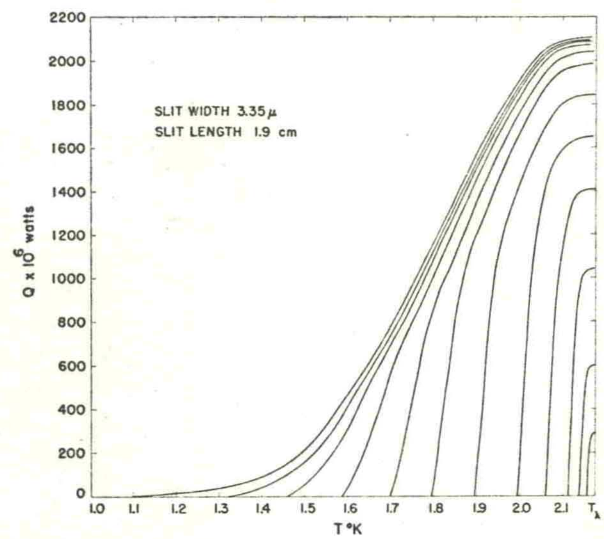

FIG. 3. Family of experimental heat flow curves (*1*); $d = 3.36\ \mu$

is plotted against T_0 for various reduced values $(T_1 - T_0)/(T_\lambda - T_0)$ of the heating curves for both slits. (For Figs. 5 and 6 the experimental curves were graphically interpolated to obtain points at even values of the temperature.) It is seen that the behavior of the two slits is remarkably parallel and that for $T_0 < 1.8°K$ nowhere is the agreement poorer than 20%. Another way of presenting the comparison is shown in Fig. 6 where $[(X_{obs} - X_{calc})/X_{obs}] \times 100$ is plotted against $(T_1 - T_0)/(T_\lambda - T_0)$ for various values of T_0; here X equals either $\dot{Q}$ or P_f, both for the 3.36 μ slit. Generally the fountain pressure calculations exhibit deviations from the experimental results closely similar to those for corresponding heat flow calculations. Although in the regions of $T_0 \leqq 1.3°K$ and low T_1 and of $T_0 > 2.0°K$ and high T_1 the correspondence between the observed $\dot{Q}$ and P_f is somewhat poorer, the calculated fountain pressures nevertheless are in quite good agreement with the measurements. We have already remarked (*2*) upon the low temperature deviations and indicated that the cause most probably does not involve turbulence. The high temperature deviations are discussed in Section V.

The entire discussion thus far has been based on the assumption that the mutual friction force $\mathbf{F}_{sn}(\mathbf{v}_s - \mathbf{v}_n)$ is responsible for the observed nonlinear effects and that such forces as $\mathbf{F}_s(\mathbf{v}_s)$ and $\mathbf{F}_n(\mathbf{v}_n)$, which act on each velocity field independently and which might be included in the equations of motion (1) and (2), are negligible. The conclusion which may be drawn from the data represented in Fig. 6 indicates the validity of this assumption as well as the appli-