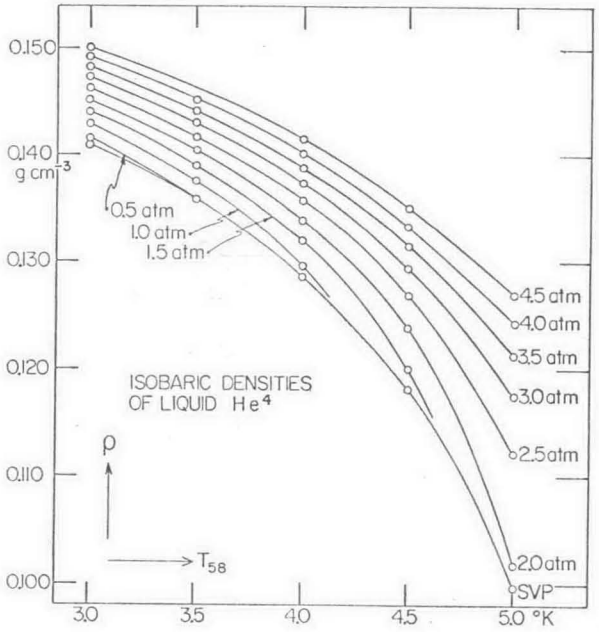

FIG. 2. Isobaric densities of liquid He^4 as a function of temperature for pressures up to 4.5 atmospheres.

value by more than 2%. We believe that the resulting uncertainty in k_T is about $\pm 3\%$, except for one point at the SVP at 5.000° K where the uncertainty is about 15%. Figure 3 shows these isothermal compressibility results as a function of pressure along the five isotherms. Keesom and Keesom (Keesom 1942, p. 243) obtained a smoothed graph of $(\partial\rho/\partial P)_T$ against T from which the isothermal compressibility of liquid helium may be obtained at 2.5 atmospheres and 3.0, 3.5, and 4.0° K to compare with the present measurements. After correction to the 1958 scale of temperatures, Keesom and Keesom's values are between 2 and 5% higher than our present results.

Table I also shows values of the ratio of heat capacities γ calculated from equation (3.4). Atkins and Stasior's (1953) smoothed values of u_1 were used, interpolating graphically where necessary. If these u_1 values are uncertain by $\pm 2\%$, then our γ values are uncertain by $\pm 5\%$. As no measurements have been made of u_1 at 4.500° K or 5.000° K, no calculation of γ was possible for those two isotherms.

Finally, Table I shows values of the liquid structure factor $\mathscr{L}_0$ calculated entirely from the results of the present measurements, using equation (3.5). The estimated uncertainty in $\mathscr{L}_0$ is the same as that for k_T, namely $\pm 3\%$, except for the one point at the SVP at 5.000° K where the uncertainty is about 15%. Gordon, Shaw, and Daunt (1954) have measured scattering of X rays down to angles of 1.5° at 4.2° K at the SVP. Their data extrapolated to zero angle gives $\mathscr{L}_0 = 0.575 \pm 0.040$.* Our results listed in Table I may be

*Due to a misprint, their paper states 0.475, but their Fig. 2 shows that 0.575 is meant for this quantity.