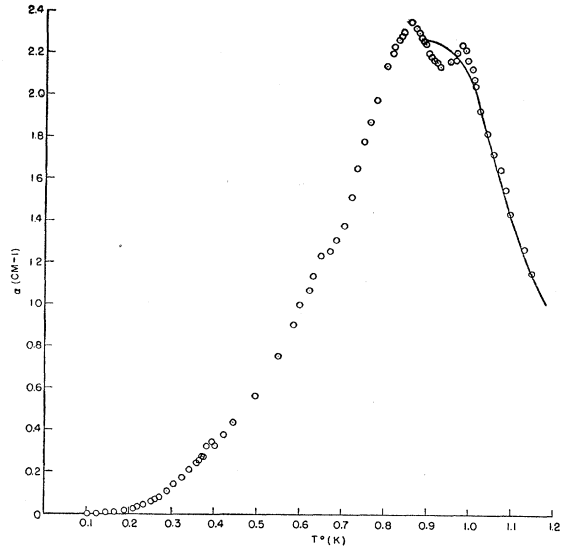

FIG. 1. Attenuation of sound in liquid helium. Solid curve, earlier results (reference 1); circles, present results (12.1 Mc/sec).

The circles represent the experimental points; the full curve indicates the results of earlier measurements.[1] The twin maxima in the attenuation in the neighborhood of 0.9°K are clearly resolved, and provide direct evidence for the existence of two distinct relaxation times in agreement with the prediction of Khalatnikov.[2,3] A full report will be published shortly.

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Remark Concerning the Absolute Value of Avogadro's Number

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IN an earlier article[1] it was proposed to accept for x-ray work the value of

$$N_0 = 0.602567 \times 10^{24} \text{ (phys) or } 0.602403 \times 10^{24} \text{ (g mole)}^{-1} \text{ (chem)} \quad (1)$$

for Avogadro's number, for reasons explained in detail in the article.

DuMond and Cohen[2] have recommended the value

$$N_{\text{universal}} = (0.602472 \pm 0.000036) \times 10^{24} \text{ (g mole)}^{-1} \text{ (phys)} \quad (2)$$

for the same and other purposes. However they did not mention that their method of computation gave also a new conversion factor,[3] $\lambda_g/\lambda_s = 1.002063$, instead of the now generally accepted value 1.00202. If the new factor is used for the computation of N_0 by the author's Eq. (4)[1] for calculation of N_0 from N_s (Siegbahn's Avogadro number), the following value is obtained:

$$N_0' = (0.602489 \pm 0.000030) \times 10^{24} \text{ (g mole)}^{-1}, \quad (3)$$

which agrees completely with (2) within the error limits. The agreement between (2) and (3) shows that in both cases $(\lambda_g/\lambda_s)^3 \times N$ is the same within the error limits, and that the x-ray crystal density method is by no means less accurate than other exact methods. Furthermore, if $(\lambda_g/\lambda_s)^3$ and N are used simultaneously in one term, as for instance for the calculation of x-ray molecular weight, density, or the number of molecules per unit cell, both recommendations (1) and (2) are identical, and give the same result.

However, it is questionable whether the new conversion factor of 1.002063 will be accepted in x-ray spectroscopy and in precision determination of lattice parameters. It seems to the author that a new conversion factor will not be accepted until it is substantiated by new precision measurements of x-ray wavelengths by means of gratings. Until such time as a new conversion factor is generally accepted, to avoid confusion, it seems desirable to use the old conversion factor of 1.00202. By substituting this factor for λ_g/λ_s in Eq. (4),[1] the above-mentioned Avogadro number (1) is obtained (physical or chemical scale). This N_0 therefore, was, and still is, recommended for x-ray work because it is in correct relationship with the accepted conversion factor of 1.00202 and Siegbahn's Avogadro number N_s, which was used for the computation of the fundamental value for the lattice spacing of calcite, and consequently for the determination of x-ray wavelengths.

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Fermi-Dirac Degeneracy in Liquid He^3 below 1°K*

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THE temperature dependence of the nuclear magnetic susceptibility of liquid He^3 has been measured directly down to 0.23°K by observing the strength of the nuclear magnetic resonance absorption signal. In a previous communication[1] we reported measure-