

Physics. — *On the superconductivity of the gallium.* By W. J. DE HAAS and J. VOOGD. (Communication N^o. 199d from the Physical Laboratory Leiden).

(Communicated at the meeting of June 29, 1929).

In a preceding paper ¹⁾ we described the occurrence of the superconductivity of gallium, this metal thus being registered by us as the sixth superconductor known ²⁾.

The gallium used in those experiments contained a trace of indium. As we did not know the part played by this admixture of indium in the occurrence of the superconductivity, we directly planned a repetition of the research with spectroscopically pure gallium.

Prof. JAEGER, Groningen, kindly sent us 160 mg spectroscopically pure gallium. We gladly express him our thanks.

From this gallium the resistance-rod. Ga—4—28 was made.

For the low helium temperatures required we made use of the apparatus constructed by KEESOM for experiments at exceedingly low temperatures. We also gladly express him our thanks ³⁾.

Below 1.38° K. the vapour pressure was diminished gradually, so that during the experiments with changing temperatures, the vapour pressure of the helium was measured with a Mac.Leod manometer in a glass tube open at the lower end and placed in the liquid helium. The preliminary corrections for thermo-molecular difference in pressure have been applied.

For the calculation of the temperature we used the vapour pressure formula of VERSCHAFFELT ⁴⁾.

In table 1 and fig. 1 the results of the measurements are to be found.

The total fall of the resistance takes place between 1.10° K. and 1.07° K. These measurements with spectroscopically pure gallium evidently confirm the earlier determinations, while the whole curve down to the immeasurableness of the resistance at 1.07° K. could be determined.

¹⁾ Proc. Roy. Acad. Amsterdam, Vol. 32, p. 214, Comm. Leiden 193b.

²⁾ MEISSNER found since the superconductivity of Tantalum and Thorium. Physik Zeits. 29, 897, 1928, Naturw. 17, 390, 1929.

³⁾ Proc. Roy. Acad. Amsterdam, Vol. 32, N^o. 6. Comm. Leiden. 195c.

⁴⁾ Comm. Leiden Suppl. 49.

T	ρ_{helium} in mm	R
4.21	77.0	0.000608
1.38	2.01	0.000599
1.09	0.274	0.000593
1.07 ⁵	0.248	0.000533
1.07 ⁵	0.245	0.000516
1.07	0.243	0

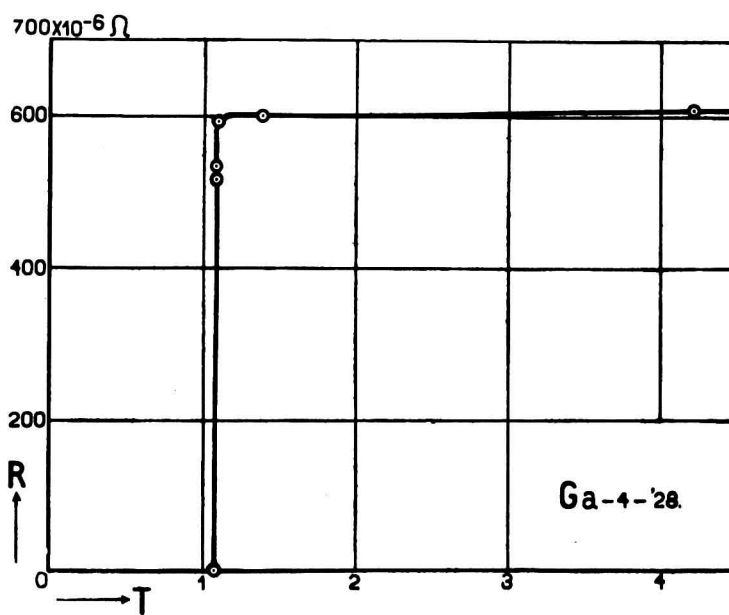


Fig. 1.