Physics. — *The melting curve of hydrogen to* 245 kg/cm². By W. VAN GULIK † and W. H. KEESOM. (Comm. N⁰. 192*b* from the Physical Laboratory at Leiden.)

(Communicated at the meeting of November 24, 1928).

§ 1. This communication refers to a first continuation of the investigation on the melting curve of hydrogen, the first results of which have been published in Comm. N⁰ 184*a* [1]). Whereas then the measurements went from the triplepoint to a pressure of 55 kg/cm², the measurements are continued now to a pressure of 245 kg/cm², corresponding to a temperature of 20.35° K.

§ 2. The method was the same as that of Comm. N⁰. 184*a*. The apparatus described in Comm. N⁰. 184*b* [2]) was used, except that the glass tube F was omitted, and the cryostat, into which liquid hydrogen was now poured, was simpler.

The temperature was measured with the platinum thermometers Pt_{32} and Pt_{36}, which had been used too for the measurements of Comm. N⁰. 184*a*, and which were calibrated with a helium thermometer. The pressure was measured with a metal manometer going to 400 kg/cm² [3]). This manometer was, for the purpose of a better observation, provided for this experiment with a more accurately divided scale. The intention was to calibrate this manometer again after the experiments with the pressure-balance of the VAN DER WAALS-foundation at Amsterdam; this intention was frustated however, because the manometer became defective before this could be done. The corrections were deduced therefore from a comparison with the above mentioned pressure-balance to 253 kg/cm², made in Sept. 1926. The change of the zeropoint, which was caused by the taking off and replacing of the pointer on the occasion of the affixing of the new scale, was deduced from a comparison with the closed hydrogen-manometer M_{120}, performed on Dec. 17th 1926 and Jan. 25th 1927.

§ 3. The results are given in Table I.

In Fig. 1 these results are represented, indicated by ⊙, together with those of Comm. N⁰. 184*a*, indicated by △, It appears that the results of

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[1]) H. KAMERLINGH ONNES and W. VAN GULIK. These Proceedings **29**, 1184, 1926.

[2]) W. H. KEESOM. These Proceedings **29**, 1136, 1926.

[3]) The same as mentioned in Comm. Leiden N⁰. 184*b* p. 14 note 2.

these new measurements can be very well combined with the previous ones to a smooth curve.

TABLE I.

Melting curve of hydrogen (Jan. 18, 1927)		
Temp. °K	Pressure	
	Kg/cm²	Atm.
20.34⁵	245	237
19.69	215	208
18.36	161	155
17.27	114	110
16.31	97	94

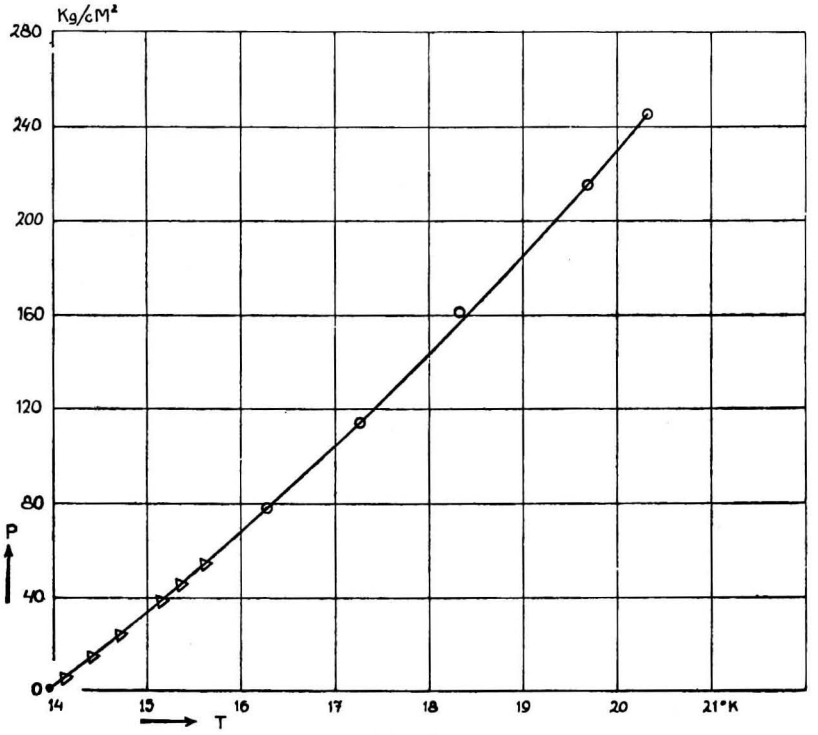

Fig. 1.

The upwards curvature, which the melting curve already proved to possess in the part then investigated (compare Fig. 1, Comm. N⁰. 184*a*), has now been further accentuated.