**Physics.** — "*On the measurement of very low temperatures.* XX. *Influence of the deviations from the law of* BOYLE-CHARLES *on the temperature measured on the scale of the gas-thermometer of constant volume according to observations with this apparatus.*" By Prof. H. KAMERLINGH ONNES and C. BRAAK. Comm. N°. 102d from the Physical Laboratory at Leiden.

§ 1. In Comm. N°. 97b (Jan. '07) under XV the formula of CHAPPUIS (see Comm. N°. 95e (Oct. '06) form. (3)) for the calculation of the temperatures according to the hydrogen thermometer of constant volume was compared with formula (6) of XIV of the same Communication, in which formula attention has been paid to the deviations from the law of BOYLE, whereas they are neglected in CHAPPUIS' formula. As the result of this comparison we stated there that for a dead space of $^1/_{100}$ the mean relative coefficient of pressure between 0° and 100 is to be increased with 2 units of the 7th decimal, and the coefficient of pressure of the hydrogen thermometer at 1090 mm. zero point pressure was, therefore, to be put at 0,0036629 instead of at 0,0036627, a modification which is, however, so slight, that it just coincides with the limit of the errors of observation. We have just found out that for this calculation inaccurate values of $B^{(p)}_{0°}$ and $B^{(p)}_{10}$ have been used. New calculations have revealed that the difference is much smaller than was stated just now, so that it is to be taken into account only for much higher values of the dead space and, with the exception of carbonic acid, has no influence even on CHAPPUIS' last decimal (the 8th). That the use of the incorrect $B^{(p)}$ was not detected, was due to the fact that the calculation of neglections indicated in XV had accidentally led to the same result, here, however, because the four corrections, as has been mentioned in XV, had been erroneously taken with the same sign, whereas they almost entirely cancel each other. We shall therefore in future keep to the unchanged coefficient of pressure 0.0036627.

A consequence of the improved calculation is also that table XVIII of Comm. N°, 97b (Jan. '07) can be dispensed with. The first two corrections derived in XIV § 3 of the Communication mentioned, now become so small that they fall outside the region of observation. The correction calculated at the end of § 3 becomes somewhat smaller for CHAPPUIS' carbonic acid thermometer than has been given there, viz. $-0.22 \times 10^{-6}$, to which another correction of $-0.8 \times 10^{-7}$ is to be added, if also the expansion by the pressure of the gas is to be taken into consideration.

§ 2. The restoration of our former value 0.0036627 further involves the following modifications, which are all of no importance as they do not exceed the errors of observation, but should be applied to make the agreement in the calculations complete:

1. that in table XVI of Comm. N°. 97$^b$ (Jan. '07) in the first column the values of table XII are restored, and so all the numbers in the last decimal are increased by a unit. The latter holds also for the values of the second column of table XVI,

2. that in table XVII of the same Communication the values of the first column, except the last two, are increased by a unit in the last decimal,

3. that no further corrections are required for the temperatures in table XVI of Comm. N°. 99$^a$ (June '07) and table XX of Comm. N°. 100$^a$ (Dec. '07) (see conclusion of § 14 of Comm. N°. 99$^a$ and of § 18 of Comm. N°. 100$^a$).

4. that in § 3 of Comm. N°. 100$^b$ (Dec. '07) the value for $pv_{A100°.2}$ and the corresponding virial coefficients are subjected to small changes, which, however, are of no importance,

5. that the last line of Comm. N°. 101$^a$ (Dec. '07) must be left out,

6. that in § 1 of Comm. N°. 101$^b$ (Dec. '07) $\alpha_{AV} = 0{,}0036619$ changes into 0,0036617, and $T_{0°C.} = 273°.08$ into 273°.10, while $T_{0°C} = 273°.07$ of note [1]) in the § mentioned changes into $T_{0°C.} = 273°.09$ and that in § 2 $t = -273°.08$ C. becomes $-273°.10$ C., the changes in $B'_{100}$ and in the values of table XXV being imperceptible,

7. that the numerical values in §§ 1 and 3 of Comm. N°. 102$^b$ (Dec. '07) require the emendations which have been applied in the translation in the Proceedings (Febr. 29 '08) (See footnote 1 there).

**Physics.** — "*On the condensation of helium.*" By Prof. H. KAMERLINGH ONNES. Communication N°. 105 of the Physical Laboratory at Leiden.

(Not communicated here, see next communication).

**Physics.** — "*Experiments on the condensation of helium by expansion.*" By Prof. H. KAMERLINGH ONNES. Communication N°. 105 of the Physical Laboratory at Leiden.

In the last session I communicated what I had observed in expanding helium, which at a temperature of — 259° C. had been strongly compressed. I made the experiment in consequence of my determinations of the isotherms of helium at different temperatures i. a. also