TABLE 1

Noise thermometry under high pressure at room temperature

		Balanced resistance (Ω)	Temp. obtained by noise (K)	Temp. obtained by thermocouple (K)
Atmospheric pressure	R_s	601.1	294.2	294.5
	R_r	602.1	294.7	294.7
30 kbar	R_s	509.1	294.2	294.7
	R_r	509.9	294.7	294.7

bomb. A broken line in Fig. 3 shows this standard pressure correction, and a chain line shows the Hanneman's result [6]. The trends of these curves agree with each other.

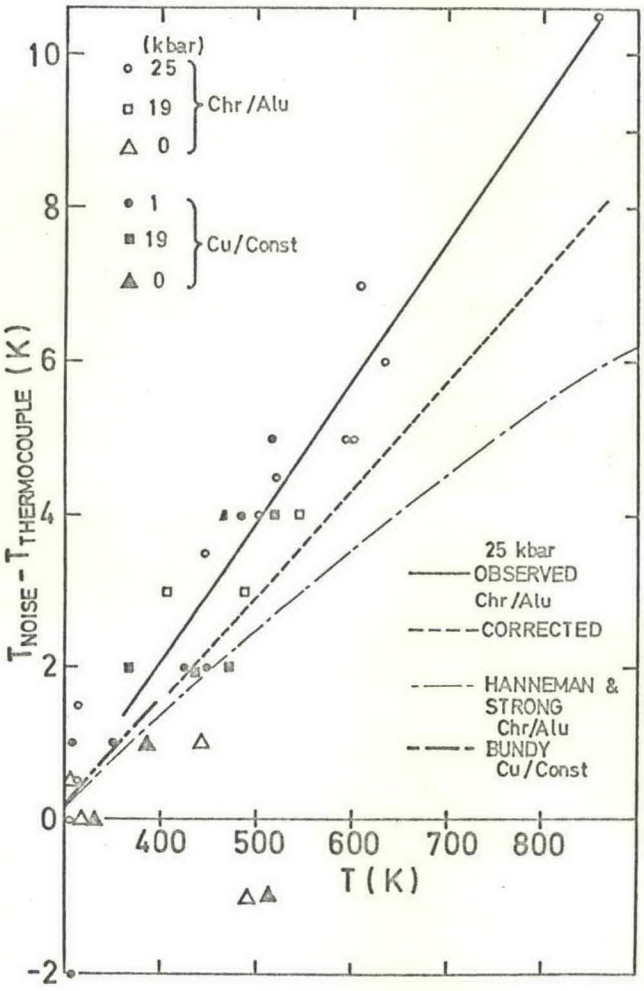

FIG. 3
Pressure correction of thermocouples.

As for the correction of Cu/Const thermocouple, the balancing method (a) was employed. The results are shown in Fig. 3. In this measurement, R_s was 800 Ω under high pressure, and the duration of integrating time is 60 s. The points represented are the average values of $5 \sim 10$ measurements. The result almost agrees with the extrapolation of Bundy's measurement obtained by the Belt apparatus.

The outputs of the calibrated thermocouple and those of the noise thermometer showed agreement within the range of 0.1 % at room temperature and of 0.3 % at 900 K, under the atmospheric pressure for the integrating time of 15 min. In principle, the accuracy of the measurement is increased by the extension of the duration of integrating time, but in the high pressure experiment, the difficulty of maintaining the pressure and temperature conditions in the pressure cell may restrict the total accuracy of the experiment. For the full discussion of the problem, it is desired to make much more measurements by this technique at high pressures, far beyond 30 kbar.

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