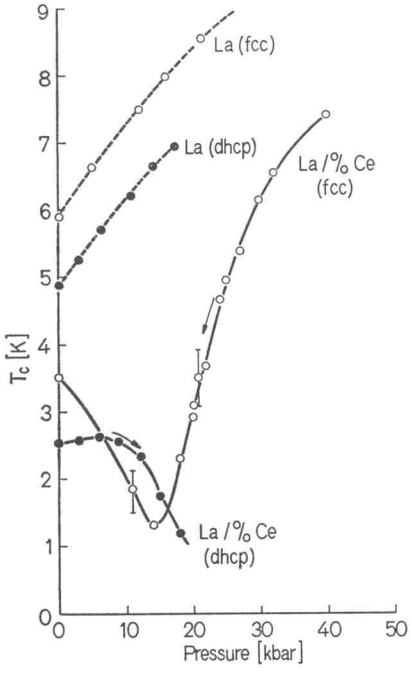

Fig. 1

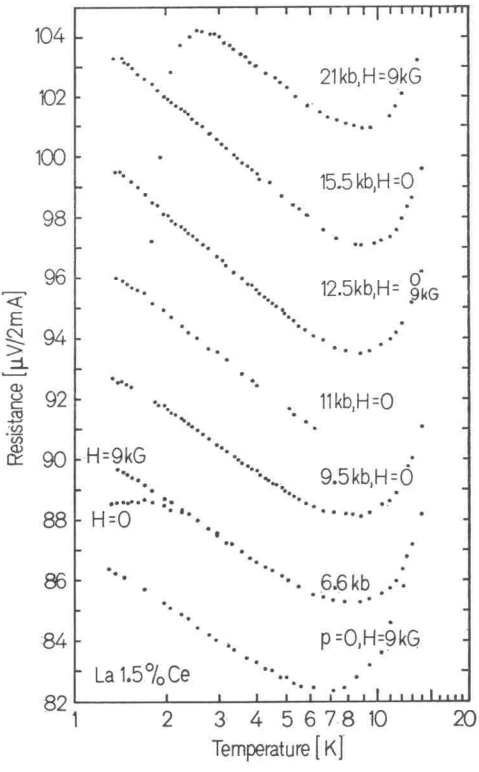

Fig. 2

Fig. 1. Pressure dependence of the superconducting transition temperature of pure La (Maple *et al.*[7]) and of La 1% Ce (present work)

Fig. 2. Variation of the Kondo resistance anomaly in La 1.5% Ce with pressure

for this alloy. We observed that the R vs. $\ln T$ curve already reached a plateau at 0.3 K and that upon further increase of the field to 12 and 15 kG, the plateau changes over into a maximum. The onset of the maximum was shifted to higher temperatures and the level was depressed. So we infer that the resistance curve at low temperatures is strongly influenced by a magnetic field. A determination of T_k by resistance measurements seems in principle, therefore, to be impossible for low concentration LaCe alloys.

The pressure experiments were performed in an apparatus described earlier[9]. Samples with dimensions of $0.02 \times 0.2 \times 2$ mm required for these experiments were prepared by cold rolling. Due to this preparation

9 Buckel, W., Gey, W.: Z. Physik **176**, 336 (1963).

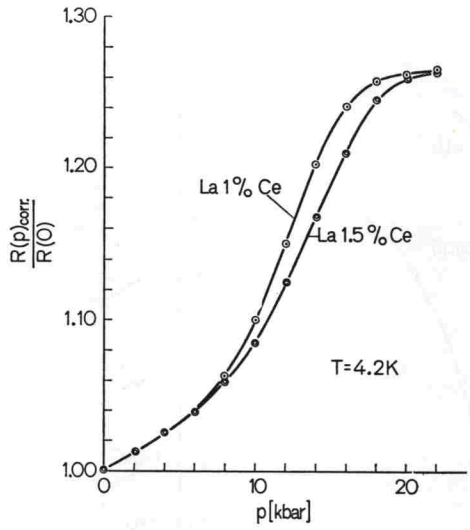

Fig. 3. Pressure dependence of the resistance of La 1% Ce and La 1.5% Ce at 4.2 K

the transition temperature decreases. For pure La Schwidtal[10] has found a decrease of 0.3 K. The LaCe alloys measured in this work showed a considerably greater depression of T_c (approximately 1 K).

Similar discrepancies are known for the effect of pressure on T_c in La[7]. In Fig. 1 we show as an example, the behaviour of $T_c(p)$ of our dhcp La 1% Ce alloy which is pressurized at liquid helium temperature. After an initial increase of T_c, which is due to the increase of T_{c0} for pure La, the growing pair-breaking effect dominates and leads to a drop in T_c which could be recorded up to 18 kbar. Because of the transformation into the fcc phase at ca. 20 kbar, the pressure was increased immediately to 40 kbar; and the sample was then warmed up to room temperature to have the phase transformation as complete as possible. Then T_c was measured with decreasing pressure. In accordance with the measurements of Maple *et al.* the depression of T_c has its maximum at 14 kbar.

To test whether a pressure dependence of the Kondo temperature $T_k(p)$ appears, two procedures have been used. At first the normal resistance $R(T)$ was measured at different pressures. It is found that $R(T)$ always exhibits a minimum near 8 K and then shows a linear increase with $\ln T$ down to 1.5 K, or the lowest temperature to which superconductivity can be suppressed by 9 kG, the maximum field

10 Schwidtal, K.: Z. Physik **169**, 564 (1962).