then becomes

$$\bar{\alpha} = (1/a_0)\,(B + C[t + t_0]) \qquad (3)$$

where $t \neq t_0$. Equation (3) was used to calculate the average linear expansion coefficient for any desired temperature range within the range of the experimental measurements.

The instantaneous linear thermal expansion coefficient, α_t, is defined as

$$\alpha_t = (1/a_0)\,(\partial a/\partial t) \qquad (4)$$

By taking the first derivative of eqn. (1) for a as a function of t, we have

$$\alpha_t = (1/a_0)\,(B + 2Ct) \qquad (5)$$

Equation (5) was used to calculate the instantaneous linear thermal expansion coefficient for any desired temperature within the range of the experimental maesurements.

RESULTS

The X-ray patterns of $LaRu_2$, $CeRu_2$ and $PrRu_2$ showed two or three very weak front reflection lines in addition to the cubic Laves phase lines. These extra lines were indexed as ruthenium lines, in agreement with metallographic results which showed some undissolved ruthenium in the arc-cast buttons.

The lattice parameters as a function of temperature for each compound were measured to as high a temperature as possible and are shown in Fig. 1*. Reaction of the samples with the quartz capillaries limited the maximum temperatures that could be attained to 850°, 955° and 700°C for $LaRu_2$, $CeRu_2$ and $PrRu_2$, respectively.

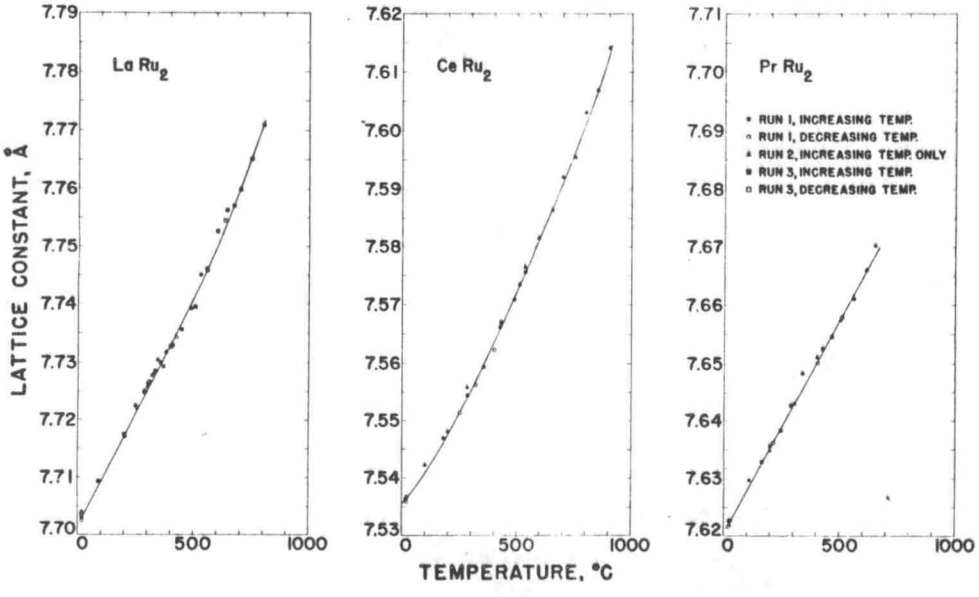

Fig. 1. Lattice parameters of $LaRu_2$, $CeRu_2$ and $PrRu_2$ as a function of temperature.

* The lattice parameter data are available upon request from the authors.