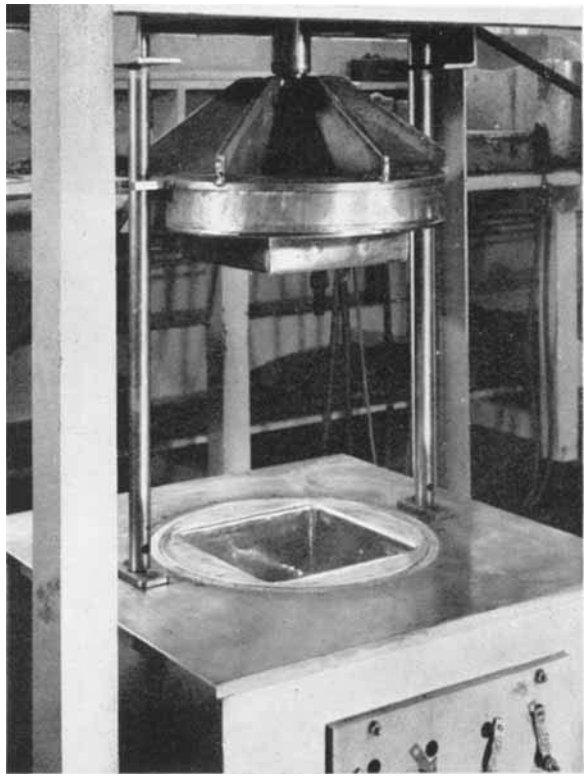
The furnace chamber and the box-section lid lined with platinum



at high temperatures with certain base metals, in this case principally chromium, contamination of the platinum can result from the diffusion of these elements into its surface, leading to embrittlement and subsequent failure. To avoid this risk, a barrier was placed in the path of the diffusing elements between the platinum liner and the Inconel support, this taking the form of a thin layer of a proprietary aluminium silicate fibre. This material, which can withstand temperatures in the region of 1000°C, has proved highly successful in protecting the platinum liner and also serves as a soft buffer layer between the metal surfaces.

Once this contamination problem and the difficulty of finding a suitable gasket material were overcome the construction of the furnace was completed. The furnace construction and assembly were carried out by R. M. Catterson-Smith Limited, the platinum lining being manufactured and fitted to the furnace by Johnson Matthey & Co Limited.

J. A. S.

Determination of Thermal Conductivity

PLATINUM AS A REFERENCE STANDARD

The growing demand for materials to operate at high temperatures has brought a need for accurate knowledge of the manner in which they conduct heat. Reliable figures for thermal conductivity are, however, notoriously difficult to determine, and standard reference materials would be invaluable for checking the reliability of testing equipment and as standards in comparative methods.

Platinum has many advantages as a standard for use at high temperatures, but the values previously determined by various authorities for thermal conductivity up to about 1000°C have shown significant differences. A careful redetermination at the National Physical Laboratory over the range 0° to 950°C has now been reported by R. W. Powell and R. P. Tye (*Brit. J. Appl. Phys.*, 1963, **14**, 662), who have for the first time used substantial bars of platinum for the measurements. Two sets of observations were made on bars having diameters of $\frac{1}{4}$ and $\frac{1}{2}$ inch respectively; with both samples the conductivity was found to remain constant within 0.5 per cent of 0.73 w cm^{-1} deg C^{-1} over the whole range. This result is as much as 20 per cent lower than four out of the five previous determinations, but yields values of Lorenz function in much closer agreement with the theoretical.

J. C. C.