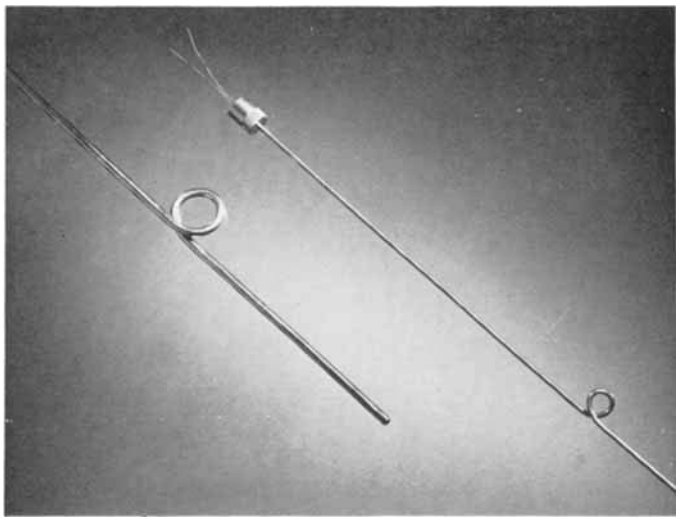
Metal-sheathed mineral-insulated platinum thermocouples provide flexibility with resistance to thermal shock as well as accuracy and reliability over long periods. Even greater stability has now been achieved in a new type of construction.



however, has little effect upon the thermoelectric power of the couple.

A sheathed thermocouple of this sort was recently tested at 1450°C by the Atomic Energy Research Establishment, Harwell (2). Tests were made in air, and the indicated temperatures were compared to those given by a 20/40 rhodium-platinum thermocouple of simple bare wire construction which was inserted into the furnace about once every 24 hours. The results obtained over a 30-day period of test showed no steady drift in calibration and only slight random variations (in general less than 1°C) between the temperature indications of the two thermocouples. Slight grain growth of the sheath alloy near the hot junction was the only visible evidence of deterioration.

A. S. D.

References

1 Johnson Matthey, Br. Pat. Appln No. 24409/69
2 P. J. Skelton, Stability Test on Pt 6 per cent Rh v Pt 30 per cent Rh Thermocouple with Pt 5 per cent Rh Sheath, R.R.D. Dev. Rep. 54, January 30th, 1969

Disposal of Radioactive Wastes

STABILITY OF PLATINUM CRUCIBLES EXPOSED TO MOLTEN GLASS

The disposal of radioactive waste material from atomic reactors presents many problems and the U.S. Atomic Energy Commission therefore is developing methods of concentrating liquid residues and converting them to stable solid glass, as has been reported previously in this journal (1).

Platinum and its alloys are used widely in the glass industry because of their resistance to corrosion by the constituents of glass. This property has led naturally to their use in two methods for the fixation of radioactive residues in glass. These are the spray calciner process of the Pacific Northwest Laboratory and the continuous phosphate glass process of the Brookhaven National Laboratory.

E. J. Tuthill, G. Strickland and G. G. Weth, from Brookhaven, have now reported on the comparative merits of platinum and its alloys as crucibles in the latter process, together with long-term studies of the creep of platinum and of its corrosion resistance (2).

A bench-scale platinum crucible 3 inches diameter and 10 inches high with a 40 mil wall withstood 300 thermal cycles to 1200°C with only slight distortion and less than 4 microns transgranular corrosion over 1000 hours' exposure. A pilot plant vessel 8 inches diameter and 24 inches high supported by a platinum flange and ceramic baseplate has operated for 1400 hours at 1250°C, the glass-making temperature.

F. J. S.

1 *Platinum Metals Rev.*, 1965, **9**, (3), 89
2 *Ind. Eng. Chem., Process Des.Dev.*, 1969, **8**, (1), 36