sheath. This check was effected by immersing the unit in water for 24 hours and then measuring the resistance of the magnesia insulation that separates the thermocouple wires from the sheath and from each other. Such a measurement was also taken after the noble metal part of the sheath had been immersed in liquid nitrogen for a few hours.

In both cases the megohmeter recorded values in excess of 10^4 megohms for the insulation resistance. Had any imperfections been present in the sheath, the magnesia would have absorbed water and the insulation resistance would have dropped to a few hundred ohms. These test results demonstrated that the thermocouple unit was entirely leak tight.

The Use of the Thermocouple

The hot end of the thermocouple was coiled around the uranium dioxide specimens in the reaction chamber. This 3-inch long coil was $\frac{3}{4}$ inch in diameter and consisted of 4 or 5 turns, showing the flexibility of the thermocouple unit.

In the first experiment the temperature recorded initially was 1235°C. Rearrangement of the fuel elements caused the temperature to drop to 1180°C, stabilising at this value after two hours. This reading was maintained for 13 of the 16 days of irradiation. During the final three days the temperature reading increased to 1205°C; this change was due mainly to a further adjustment of the fuel elements. It is possible, however, that transmutation of the thermocouple elements also contributed slightly to the change in reading. However, no drift in reading due to this phenomenon was observed over the first 13 days of the experiment.

That temperature most relevant to the experiment was the equilibrium temperature achieved a few hours after the start of radiation. The subsequent changes in temperature were of secondary interest only; hence the thermocouple has been completely successful. The radiation level in the first experiment was 5×10^{19} neutrons/cm^2/sec and further experiments are in progress at the moment. Each single experiment will consume a new thermocouple as the reaction chamber is not re-usable.

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Platinum Contacts in Automatic Landing Systems

All BEA Trident aircraft are equipped with the Smiths' Series 5 flight control system. This "blind landing" system has steadily increased in application since its first use in June 1965. At the present time 100 or more automatic landings using this system are made by Trident aircraft every month. This demonstrates the very real lead in fully automatic operations which has been achieved by wholly British technology.

The circuitry of this flight control system incorporates some 2,000 micro relays of the single-pole changeover type which are hermetically sealed. The 10 per cent rhodium-platinum contacts in each relay are gold-plated and are suitable for switching either very low signal energies or higher powers up to 15 VA. The relay is designed with a strong accent on reliability which is clearly of prime importance in this application.

The 10 per cent rhodium-platinum is used in order to guarantee a contact resistance of less than 0.1 ohm. The alloy is in the form of 0.017 inch diameter wire which is gold-plated to a depth of 150 micro-inches. Some three inches of this wire is used in each relay.

The relay is sealed by passing the rhodium-platinum wires through a glass pellet and fusing the glass on to the rhodium-platinum at 1000°C. This glass-to-metal sealing work is carried out on Smiths' behalf by Wesley Coe Ltd, of Cambridge.