

gressively, finally—under extreme conditions of test—becoming detached from the basis metal. During a normal soldering operation, however, very little alloy formation was found, and the authors conclude that negligible brittleness would be expected to be present in a joint.

These conclusions are supported by the company's industrial experience; in a period of almost four years in which some millions of palladium plated spring connections used in telephone equipment and computers have been soldered, no difficulties with joints have been reported.

J. E. P.

Continuous Temperature Control in the Blast Furnace

A NEW IMMERSION THERMOCOUPLE

An improved means of controlling the thermal balance of a blast furnace in order to achieve smoother operation and high-quality iron has been developed by K. H. Gee and M. H. Schmidt at Bethlehem Steel Company.

In the course of studies on slag basicity some few years ago, it was found by taking several immersion thermocouple measurements of iron temperatures during each cast that a pattern developed reflecting the condition of the furnace, suggesting that an accurate method of continuous measurement of iron temperature might have operational value. To this end a new design of platinum:rhodium-platinum thermocouple was devised suitable for continuous immersion in the

stream of molten iron leaving the furnace. In this construction the couple wires are protected from the metal by an impervious inner ceramic sheath and an outer graphite sheath. Compressed air is used to cool and purge the interior of the thermocouple holder. By means of the usual type of recorder, a chart of the iron temperature is made throughout the duration of a cast.

This instrument has now been in routine use at two of the Bethlehem plants for more than three years and has proved its value as a simple and practical means of control.

Exclusive rights in this thermocouple have been granted by Bethlehem to Electro-Nite Carbon Company of Philadelphia.



The Gee continuous immersion thermocouple in position in the stream of molten iron flowing from a blast furnace in one of the Bethlehem Steel Company's plants