with the sole exception of a slight danger of oxygen pick-up, but this is easily dealt with by suitable control of the melting conditions. The incorporation of necessary alloys or other additions is much facilitated by the fact that, when the currents have finished their melting work, they promote a vigorous "electromagnetic rotation" in the molten metal and so bring about a most efficient mixing of the charge.

Since the furnace itself is of such a simple design and the heat is generated entirely within the metal to be melted, the crucible, if suitably packed within a silica sheath, can be picked up with the gloved hand for the molten contents to be cast. In the early days the high-frequency currents were generated by means of a spark-gap operated in hydrogen in conjunction with a large bank of condensers. In the more modern equipment these currents are produced by valves somewhat resembling those used in radio transmission.

Nevertheless, it is quite evident that the high-frequency induction furnace is not necessarily the last word in the long story of the evolution of the melting of platinum and its alloys.

Recent developments in the electrical, electronic and chemical industries have shown that even the most minute traces of impurities may profoundly affect the physical and chemical properties of metals called into use today; modern research is therefore confronted with the problem of producing metals in a state of ultra-purity. This involves, in the case of platinum, rigid purification of the compounds from which the metal is prepared and careful control of the melting conditions to avoid contamination with impurities derived from the refractories and the melting atmosphere. There is little doubt, therefore, that sooner or later methods will be devised for melting platinum without using refractories and without allowing molten metal to come into contact with gases likely to lead to contamination.

Iridium Electrodeposits from a Molten Salt Bath

HIGH TEMPERATURE OXIDATION RESISTANCE

The high temperature strength of molybdenum would make it a most attractive constructional material for a number of components in jet engines and missiles were it not for the very severe oxidation which occurs when this metal is heated in air; the search for a reliable method of protecting molybdenum from oxidation has therefore become one of the most vigorously pursued of metallurgical studies.

An unusual approach to this problem was reported to the American Electroplaters' Society Convention held last year in Montreal and is now published in the Society's Forty-fourth Annual Technical Proceedings. This paper, presented by James C. Withers and Dr. Paul E. Ritt of Melspar Inc., Falls Church, Virginia, under the title "Iridium Plating and its High Temperature Oxidation Resistance", describes a study of the electrodeposition of iridium from a molten mixture of sodium and potassium cyanides. Iridium complexes, probably $K_2Ir(CN)_6$ and $Na_2Ir(CN)_6$, were first formed in the bath by electrolysis at 500°C with alternating current, and plating was then carried out with direct current at 600°C. An iridium concentration of 400 to 500 mg per 100 gm of fused salt gave good fine grained deposits at current densities of 10 to 20 amp./sq. ft.

Iridium deposits only 0.0005 inch in thickness were found to give a considerable degree of protection from oxidation to molybdenum exposed at 1000°C for 30 minutes. This leads the authors to conclude that thicker deposits of iridium might well offer complete protection to molybdenum at high temperatures.